

PUBLIC WORKS NOTES:

- All requirements relative to City Code and Public Works Design and Construction Standards shall be submitted and approved before release of site plans.
- All required bonds, escrows, insurances, cash, etc., shall be submitted and approved before release of site plans.
- Plan and profile shall be submitted (inked on mylar size 24" x 36") for all storm sewers and street projects in public right-of-ways or public easements and approved before release of site plans.
- Contractor is responsible to notify all utility companies before construction begins.
- All datum shall be based on USC and GS datum.
- Bonds shall not be released until the receipt and approval by the City of as-built site plan, plans and profiles, etc.
- All underground utilities and transformers shall be shown on site plan and confirmed per location on as-built plan.
- The owner shall notify the Director of Public Works in Writing three days prior to the beginning of all street or storm sewer work shown on the site plan.
- The installation of improvements as required in this article shall in no case serve to bind the city to accept such improvements for the maintenance, repair of operation thereof, but such acceptance, shall be subject to the existing regulations concerning the acceptance of each type of improvement.
- No lane closures are permitted on West Broad Street before 9:30 AM and after 3:00 PM. Only one lane may be closed at a time. VDOT requirements for traffic control will govern.
- Normal construction hours are 7:00 AM to 9:00 PM Monday, through Friday and 9:00 AM to 9:00 PM on weekends and holidays.
- Permits are required for construction work located within the established City right-of-way.

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FIRE MARSHAL NOTES:

All requirements relative to City Fire Code and Virginia Building Code must be complied with.

- Use group classification R-2 FOR COMMON HOUSE; HOMES GOVERNED BY IRC
- Type of construction VB
- Fire flow @ hydrant. Q20 = 2100 GPM HYDRANT #40-3-99 (SEE SHEET C-0401 FOR LOCATION)

NOTE: NFPA-13D SPRINKLER PACKAGE PROPOSED

PUBLIC UTILITIES NOTES:

FAIRFAX WATER WATER MAIN CONSTRUCTION NOTES

- ALL WATER MAIN CONSTRUCTION, TESTING AND SAMPLING SHALL COMPLY WITH THE REQUIREMENTS AND SPECIFICATIONS OF FAIRFAX WATER'S CONSTRUCTION PRACTICE MANUAL AND THE REQUIREMENTS OF THE FAIRFAX COUNTY PUBLIC FACILITIES MANUAL. ALL WATER MAIN, FITTINGS AND APPURTENANCES SHALL COMPLY WITH FAIRFAX WATER'S "APPROVED PRODUCTS LIST". THE CONSTRUCTION PRACTICE MANUAL AND APPROVED PRODUCTS LIST MAY BE FOUND ON THE FW WEBSITE AT WWW.FAIRFAXWATER.ORG.
- THE DEVELOPER SHALL REQUEST INSPECTION BY FAIRFAX WATER THREE DAYS PRIOR TO COMMENCING CONSTRUCTION OF THE WATER MAIN (PHONE NUMBER 703-289-6388 OR 6389).
- NO WATER MAIN CONSTRUCTION IS PERMITTED OR VALVES OPERATED WITHOUT PRIOR NOTIFICATION OF FAIRFAX WATER (PHONE NUMBER 703-289-6388 OR 6389).
- MAXIMUM WORKING PRESSURE SHALL BE 50 PSI.
- THE DEVELOPER WILL BE RESPONSIBLE FOR ANY RELOCATION OR REMOVAL OF WATER MAINS AND APPURTENANCES DUE TO THE DEVELOPMENT OF THIS PROPERTY. SERVICE LINES WHICH WILL NO LONGER BE USED SHALL BE REMOVED AND DISCONNECTED AT THE WATER MAIN BY THE DEVELOPER, AND THE CORPORATION STOP SHUT-OFF AND CAPPED, OR REMOVED AND PLUGGED (WITH A TAPERED PLUG) AS DIRECTED BY THE FAIRFAX WATER INSPECTOR. THE DEVELOPER MAY ALSO BE REQUIRED TO USE ADDITIONAL PIPE RESTRAINT OR ALTERNATIVE CONSTRUCTION METHODS NOT SHOWN ON THE PLANS IF FIELD CONDITIONS WARRANT, AS DETERMINED BY THE FAIRFAX WATER INSPECTOR.
- ALL NEW AND EXISTING VALVE BOXES MUST BE FULLY ADJUSTED TO CONFORM TO THE FINAL ASPHALT GRADE. NO PAVING ADJUSTERS WILL BE PERMITTED.
- ALL NEW D.I.P. WATER MAIN SHALL BE WRAPPED WITH 4 MILLIMETER CROSS-LAMINATED POLYETHYLENE ENCASEMENT (SINGLE WRAPPED - LESS THAN 24"; DOUBLE WRAPPED - 24" AND LARGER). THERE SHALL BE A 6 INCH ENVELOPE OF 21A SELECT FILL FOR ALL POLYETHYLENE WRAPPED WATER MAIN. SEE THE TRENCH DETAILS ON THE CURRENT VERSION OF FW STANDARD DETAILS. THESE DETAILS MAY BE FOUND ON THE FW WEBSITE AT WWW.FAIRFAXWATER.ORG.
- WHEN CONNECTING TO AN EXISTING WATER MAIN, CONTRACTOR MUST EXCAVATE AND EXPOSE NEAREST VALVE IN THE PRESENCE OF A FAIRFAX WATER INSPECTOR IN ORDER TO DETERMINE THE CONDITION OF ITS RESTRAINT. IF FW INSPECTOR DEEMS IT NECESSARY, CONTRACTOR MUST RESTRAIN THE VALVE OR REPLACE THE RESTRAINT SYSTEM.
- DURING WET TAP INSTALLATIONS THE CONTRACTOR SHALL SAVE AND TAG THE COUPON CLEARLY SHOWING THE DATE, LOCATION, DIAMETER AND PIPE MATERIAL. THE TAGGED COUPON SHALL BE GIVEN TO FAIRFAX WATER'S INSPECTOR FOR FURTHER PROCESSING. IF ANY PIPE IS TO BE ABANDONED, PRIOR TO CAPPING THE MAIN, A SMALL SECTION OF PIPE SHALL BE REMOVED, TAGGED AS DESCRIBED ABOVE AND GIVEN TO THE FAIRFAX WATER INSPECTOR.
- FIRE LINES SHALL BE PRIVATELY OWNED AND MAINTAINED BY THE PROPERTY OWNER. FAIRFAX WATER'S OWNERSHIP AND MAINTENANCE RESPONSIBILITY INCLUDES AND STOPS AT THE BRANCH VALVE AT FAIRFAX WATER'S MAIN IN THE RIGHT-OF-WAY OR EASEMENT.
- USE Q20 = 2100 GPM

PLANNING NOTES:

SPECIAL EXCEPTION:

A SPECIAL EXCEPTION FOR COTTAGE HOUSING MODIFICATION IN AN R-1A DISTRICT APPROVED BY CITY COUNCIL ON SEPTEMBER 11, 2017 INCLUDING THE FOLLOWING MODIFICATION:

"A MODIFICATION TO SECTION 48-241(A)(14)(A) IS HEREBY APPROVED, TO REDUCE THE 20 FOOT BUFFER FROM A PUBLIC RIGHT OF WAY TO TWELVE FEET TO ALLOW FOR EIGHT-FOOT WIDE EASEMENT ON THE SUBJECT PROPERTY ALONG THE SOUTHERN EDGE OF RAILROAD AVENUE, WHICH SHALL BE GRANTED PRIOR TO SITE PLAN APPROVAL, AND WHICH SHALL BE USED FOR OVERFLOW PARKING, OR UPON ORDER OF THE FIRE MARSHALL, FOR PERMANENT PUBLIC SAFETY VEHICLE ACCESS."

SEE VOLUNTARY CONCESSIONS ON SHEET C-0203.

ARBORIST NOTES:

RPI MAP INFORMATION:

RPC 52-102-032, 52-102-031, 52-102-030

Lot(s) 4, 4A, 5 Block LUCINDA GASKINS PARTITION

MISCELLANEOUS NOTES:

- Upon satisfactory completion of the installation of required improvements, as shown on the approved site plan or a section thereof, the developer shall submit to the Department of Planning five copies of an as-built site plan certified by the engineer, architect and/or surveyor for approval for conformity with the approved site plan.
- The As-Built Site Plan shall be submitted and approved prior to the issuance of the final Occupancy Permit.
- Final approval by the Planning Commission of this site plan shall expire one year after the day of such approval if building permits have not been obtained for construction in accordance therewith, unless an extension is granted by the City.
- In any development involving a condominium, cooperative, automatic owners' association or other form of ownership in which there is common area within the development, the documents pertaining to this form of ownership shall be approved by the City Attorney prior to issuance of any Occupancy Permit.
- Any proposed changes or revisions during the execution of or subsequent to implementation of the approved site plan shall be subject to City review and approval.
- The federal emergency management agency's flood insurance rate map for the City of Falls Church, Virginia, map number 5100540001c, revised date July 16, 2004, designates the property as being in zone x, "Areas determined to be outside the 0.2% annual chance floodplain."

WAIVERS:

- LANDSCAPE WAIVERS:

NORTHERN PROPERTY LINE 48-1183.2.a
±232 LF 20' BUFFER TYPE A
REDUCE REQUIRED PLANTING DENSITY TO THAT SHOWN ON SHEET C-1204.

SOUTHERN PROPERTY LINE 48-1183.2.a
±600 LF 10' BUFFER TYPE A
REDUCE REQUIRED PLANTING DENSITY TO THAT SHOWN ON SHEET C-1204.

WESTERN PROPERTY LINE 48-1183.2.a
±185 LF 10' BUFFER TYPE A
REDUCE REQUIRED PLANTING DENSITY TO THAT SHOWN ON SHEET C-1204.

MODIFICATION REQUEST FOR DECK WITHIN 10' SETBACK FOR UNIT 3 (1024 RAILROAD AVE.) AS SHOWN ON SHEET C-0401 PER SECTION 48-241(a)(14)c.

VARIANCE:

MISCELLANEOUS NOTES:

Easement(s):

- VACATION EXISTING 10' SANITARY SEWER EASEMENT
- PROPOSED 10' SANITARY SEWER EASEMENT
- PROPOSED 10' STORM SEWER EASEMENT
- PROPOSED FCWA EASEMENT

Subdvision(s) and Consolidation(s):

CONSOLIDATION OF PARCELS 52-102-032, 52-102-031, 52-102-030

Dedication(s):

N/A

Site Plan Approval:

APPROVALS

PLANNING COMMISSION FINAL APPROVAL:

SPECIAL USE PERMIT (Date(s) of Approval by BZA):

BOND(S) POSTED (Date(s) and Amount(s)):

FINAL STAFF APPROVAL:

Planning _____ Signature : _____ Date : _____
Public Works _____

SUBSEQUENT ACTIONS:

BUILDING PERMIT ISSUED (Date) : _____
AS-BUILT APPROVED (Date) : _____
COMMON AREA DOCUMENTS APPROVED (Date) : _____
LANDSCAPE ESCROW ACCEPTED (Date) : _____
CERTIFICATE OF OCCUPANCY (Date) : _____
OTHER : _____

Revisions Approved prior to Certificate of Occupancy:

Description	Date Approved

RAILROAD COTTAGES
NAME OF PROJECT
1008 RAILROAD AVENUE
ADDRESS
RAILROAD, LLC C/O ROBERT YOUNG 703-356-8800
OWNER TELEPHONE #
800 W BROAD ST. #333 | FALLS CHURCH, VA 22046 | ATTN: ROBERT YOUNG
ADDRESS FAX. #

WALTER L. PHILLIPS
INCORPORATED
ESTABLISHED 1945



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

Site Plan **MUNIS # 2017-0220** **C-0101**

Certification



Signature

CONSTRUCTION NOTES

CONTRACTOR AND DEVELOPER ARE ADVISED THAT ANY ELECTRONIC FILES ASSOCIATED WITH THE PREPARATION OF THESE PLANS WILL NOT BE RELEASED TO OTHERS FOR USE IN CONSTRUCTION STAKEOUT OR RELATED SERVICES.

- THE EXISTING UNDERGROUND UTILITIES SHOWN HEREON ARE BASED UPON AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES BEFORE COMMENCING WORK AND FOR ANY DAMAGES WHICH MAY OCCUR BY HIS FAILURE TO LOCATE OR PRESERVE THESE UNDERGROUND UTILITIES. IF DURING CONSTRUCTION OPERATIONS THE CONTRACTOR SHOULD ENCOUNTER UTILITIES OTHER THAN THOSE SHOWN ON THE PLANS, HE SHALL IMMEDIATELY NOTIFY THE ENGINEER AND TAKE NECESSARY AND PROPER STEPS TO PROTECT THE FACILITY AND ASSURE THE CONTINUANCE OF SERVICE.
- THE CONTRACTOR SHALL DIG TEST PITS AS REQUIRED FOLLOWING NOTIFICATION AND MARKING OF ALL EXISTING UTILITIES BY MISS UTILITY TO VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES. TEST HOLES TO BE PERFORMED AT LEAST 30 DAYS PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE OWNER AND ENGINEER. REDESIGN AND APPROVAL BY REVIEWING AGENCIES SHALL BE OBTAINED IF THIS INSTANCE OCCURS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE OWNER AND THE ENGINEER OF ANY CHANGES OR CONDITIONS ATTACHED TO PERMITS OBTAINED FROM ANY AUTHORITY ISSUING PERMITS.
- THE CONTRACTOR SHALL VISIT THE SITE AND SHALL VERIFY EXISTING CONDITIONS PRIOR TO STARTING CONSTRUCTION.
- THE CONTRACTOR SHALL CLEAR THE SITE OF ALL TREES, BUILDINGS, FOUNDATIONS, ETC. WITHIN THE LIMITS OF CONSTRUCTION UNLESS OTHERWISE SPECIFIED, AND SHALL BE RESPONSIBLE FOR CAUSING EXISTING UTILITIES TO BE DISCONNECTED.
- THE DEVELOPER SHALL PROVIDE OVER-LOT GRADING TO PROVIDE POSITIVE DRAINAGE AND PRECLUDE PONDING OF WATER.
- FINISHED GRADES SHOWN FOR FINISHED TOP OF CURB GRADES ON EXISTING ROADS SHALL BE FIELD ADJUSTED AS REQUIRED TO CONFORM TO THE INTENT OF THE TYPICAL SECTION USING THE EXISTING EDGE OF PAVEMENT AS THE CONTROL POINT. A SMOOTH GRADE SHALL BE MAINTAINED FROM THE CENTERLINE OF THE EXISTING RIGHT-OF-WAY TO THE FACE OF CURB TO PRECLUDE THE FORMING OF FALSE GUTTERS AND/OR THE PONDING OF WATER ON THE ROADWAY. THE EXISTING PAVEMENT SHALL BE RECAPPED AND/OR REMOVED AND REPLACED AS REQUIRED TO ACCOMPLISH THIS REQUIREMENT. CURB FORMS SHALL BE INSPECTED AND APPROVED FOR HORIZONTAL AND VERTICAL ALIGNMENT BY CITY OF FALLS CHURCH INSPECTORS PRIOR TO PLACING OF CONCRETE. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR FINISHED GRADES ON TOP OF STRUCTURED PARKING DECK.
- ALL AREAS, ON OR OFF-SITE, WHICH ARE DISTURBED BY THIS CONSTRUCTION AND WHICH ARE NOT PAVED OR BUILT UPON, SHALL BE ADEQUATELY STABILIZED TO CONTROL EROSION AND SEDIMENTATION. THE MINIMUM ACCEPTABLE STABILIZATION SHALL CONSIST OF PERMANENT GRASS, SEED MIXTURE TO BE AS RECOMMENDED BY THE CITY AGENT. ALL SLOPES 3:1 AND GREATER SHALL BE SODDED AND PEGGED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY CITY OF FALLS CHURCH.
- EXISTING WELLS SHALL BE PERMANENTLY ABANDONED IN ACCORDANCE WITH VIRGINIA STATE WATER CONTROL BOARD REQUIREMENTS.
- ALL OVER HEAD POLE LINES SHALL BE RELOCATED AS REQUIRED BY THE OWNING UTILITY COMPANIES AND AT THE DEVELOPERS EXPENSE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ALL ARRANGEMENTS AND COORDINATING ALL WORK REQUIRED FOR THE NECESSARY RELOCATIONS.
- SUBBASE MATERIAL SHOWN ON THE TYPICAL STREET SECTION SHALL CONFORM TO VDOT SPECIFICATIONS SECTION 209. PAVEMENT THICKNESS AS SHOWN ON THE PLAN ARE BASED ON AN ASSUMED SOIL SUPPORT VALUES (S.S.V.) OF 10 UNLESS OTHERWISE NOTED. A QUALIFIED SOILS TESTING FIRM SHALL BE ENGAGED BY THE CONTRACTOR TO DETERMINE THE ACTUAL S.S.V. IN ACCORDANCE WITH "A DESIGN GUIDE FOR SUBDIVISION PAVEMENTS IN VIRGINIA" BY N.K. VASWANI, OCTOBER 1973, WHRC 73-821 AS AMENDED. SOIL SUPPORT VALUES SHALL BE OBTAINED AT EACH CHANGE IN SUBGRADE SOILS AND AT A MAXIMUM SPACING OF 500 FEET WHERE SUBGRADE SOILS REMAIN CONSTANT. S.S.V. SHALL BE FURNISHED TO THE ENGINEER AND THE ENGINEER SHALL REVISE THE PAVEMENT DESIGN THICKNESS TO SHOW THE ACTUAL DEPTH OF PAVEMENT MATERIAL REQUIRED AND SHALL SUBMIT THE REVISION TO THE CITY OF FALLS CHURCH FOR REVIEW AND APPROVAL. THE CONTRACTOR IS ADVISED NOT TO BRING THE AREA SUBJECT TO THIS REVISION TO FINISHED GRADE UNTIL AFTER THE REVISED PAVEMENT SECTION IS APPROVED.
- PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL VERIFY FROM THE ARCHITECTURAL DRAWINGS ALL DIMENSION, DETAILS, AND TREATMENTS FOR THE PROPOSED BUILDINGS, WALKWAYS, AND OTHER PROPOSED CONSTRUCTION WHERE INDICATED ON THE PLANS. ANY DISCREPANCIES SHALL IMMEDIATELY BE REPORTED TO DESIGN ENGINEER.
- THE CONTRACTOR IS TO VERIFY INVERT, SIZE AND LOCATION OF BUILDING UTILITY CONNECTIONS WITH THE MECHANICAL PLANS PRIOR TO PLACEMENT OF UNDERGROUND UTILITIES.
- NO UNDERGROUND SOILS INVESTIGATION HAS BEEN PERFORMED BY WALTER L. PHILLIPS, INC. ALL SOILS INFORMATION PRESENTED AS PART OF THIS SITE PLAN HAS BEEN PREPARED BY OTHERS AND IS INCLUDED AS REQUIRED FOR CITY OF FALLS SITE PLAN APPROVAL.
- THE CONTRACTOR SHALL REMOVE EXISTING BUILDINGS, FENCES AND OTHER EXISTING PHYSICAL FEATURES AS REQUIRED.
- ALL PROPOSED SIDEWALK, CG-6, CG-2 OR CG-6R IS TO BE CONSTRUCTED WITH A MINIMUM 4" AGGREGATE BASE.
- EXISTING CONSTRUCTION SHALL BE REMOVED TO NEAREST JOINT. NEW CONSTRUCTION SHALL BE PROVIDED AS SHOWN AND ANY DAMAGED AREA SHALL BE REPAIRED TO MATCH CONDITIONS EXISTING PRIOR TO CONSTRUCTION.
- DAMAGE TO ANY EXISTING ENTRANCES, CURB AND GUTTER, PAVEMENT OR OTHER EXISTING STRUCTURES NOT PROPOSED TO BE DISTURBED WITH THIS DEVELOPMENT, WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE REPAIRED TO THE SATISFACTION OF THE CITY OF FALLS CHURCH, THE VIRGINIA DEPARTMENT OF TRANSPORTATION AND ANY ADJOINING OWNERS THAT MAY BE AFFECTED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING A SMOOTH TRANSITION TO EXISTING CURB.
- ALL PRIVATE BUILDING CONNECTIONS ARE TO BE INSTALLED IN ACCORDANCE WITH THE CURRENT PLUMBING CODE.

- SEE ARCHITECTURAL AND/OR LANDSCAPE DRAWINGS FOR DIMENSIONS AND DETAILS FOR ALL RETAINING WALLS. ALL ON-SITE RETAINING WALLS ARE SUBJECT TO A SEPARATE BUILDING PERMIT TO BE OBTAINED BY OWNER. THIS PLAN IS FOR APPROXIMATE LOCATION AND PROPOSED GRADING ONLY. GEOTECHNICAL AND STRUCTURAL DESIGN TO BE ACCOMPLISHED BY OTHERS. RETAINING WALLS SHOWN ON THIS PLAN ARE FOR THE PURPOSES OF DEMONSTRATING THE PROPOSED TOP AND BOTTOM ELEVATIONS AND LOCATION OF THE WALLS ONLY. RETAINING WALLS ARE TO BE MAINTAINED BY THE PROPERTY OWNERS.
- TOPS OF EXISTING STRUCTURES WHICH REMAIN IN USE ARE TO BE ADJUSTED IN ACCORDANCE WITH THE GRADING PLAN. ALL PROPOSED STRUCTURE TOP ELEVATIONS ARE TO BE VERIFIED BY THE CONTRACTOR WITH THE SITE GRADING PLANS. IN CASE OF CONFLICT, THE GRADING PLAN SHALL SUPERSEDE PROFILE ELEVATIONS. MINOR ADJUSTMENTS TO MEET FINISHED GRADE ELEVATIONS MAY BE REQUIRED.
- SEE LANDSCAPE PLAN FOR ALL ON-SITE SIDEWALK, PLANTING AND IRRIGATION DETAILS.
- THE DESIGN, CONSTRUCTION, FIELD PRACTICES AND METHODS SHALL CONFORM TO THE REQUIREMENTS SET FORTH BY THE CITY OF FALLS CHURCH AND ITS CURRENT ZONING ORDINANCE AND CONSTRUCTION STANDARDS MANUAL. FAILURE TO COMPLY WITH THE CODE, APPLICABLE MANUALS, PROVISIONS OF THE CONSTRUCTION AND ESCROW AGREEMENTS OR THE PERMITS SHALL BE DEEMED A VIOLATION.
- THE APPROVAL OF THESE PLANS SHALL IN NO WAY RELIEVE THE OWNER/DEVELOPER OR HIS AGENT OF ANY LEGAL RESPONSIBILITIES WHICH MAY BE REQUIRED BY THE CODE OF VIRGINIA OR ANY ORDINANCE ENACTED BY THE GOVERNING AGENCY.
- A MINIMUM PERMISSIBLE GRADE OF 1.00% IS REQUIRED FOR PAVEMENT TO ASSURE POSITIVE DRAINAGE. IF THERE IS EXISTING PAVEMENT WHICH IS TO REMAIN DISTURBED DURING CONSTRUCTION AND IS LESS THAN 1.00%, THEN THE CONTRACTOR IS TO CHECK TO MAKE SURE THE SITE AREA WILL HAVE ADEQUATE DRAINAGE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE SURE THAT ANY EXISTING LANDSCAPING WHICH IS TO BE RELOCATED ON THE SITE WILL BE CAREFULLY STORED IN A DESIGNATED AREA BEFORE BEING REPLANTED. COORDINATION WITH THE OWNER FOR MUTUALLY AGREEABLE STORAGE LOCATIONS FOR LANDSCAPE MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF PLANT MATERIAL THAT DOES NOT SURVIVE STORAGE AND REPLANTING.
- CONSTRUCTION STAKEOUT SHALL BE UNDER THE DIRECT SUPERVISION OF A LICENSED LAND SURVEYOR IN THE COMMONWEALTH OF VIRGINIA.
- NO EVIDENCE OF GRAVES OR BURIAL SITES HAS BEEN FOUND ON THIS PROPERTY.
- A WALL CHECK SURVEY WILL BE REQUIRED WHEN THE BUILDING RISES ABOVE GRADE DURING CONSTRUCTION.
- THE PROPERTY OWNER(S) HEREBY JOIN IN THE SITE PLAN AND AGREE TO BE BOUND BY ALL PLAN REQUIREMENTS.

SIGNATURE: *[Signature]*
 NAME: ROBERT A. YOUNG
 DATE: 4/12/17
 TITLE: MANAGING MEMBER

CITY OF FALLS CHURCH SEWER MAIN CONSTRUCTION NOTES

- Sewer main construction shall comply with the latest issues of the City of Falls Church Technical Specifications and Standard Details for Sewer Main Construction, DEQ/VDH Manual of Practice for Sewerage Systems, VDOT Road & Bridge Specifications & Standards, and Fairfax County Public Facility Manual (PFM).
- Prior to commencing the sewer main construction, the Contractor shall verify of all the underground utilities (Power, Gas, Telephone, TV Cables, Water, Storm Sewer, within the project site. The contractor shall notify MISS UTILITY @ 811 Three (3) working days in advance. The Contractor shall be solely and entirely liable for any accident and/or damage caused by the construction of this project.
- The Contractor shall notify the City of Falls Church, Department of Public Works, 703-248-5350, of any conflict with other existing utilities in the field at least (3) working days in advance, in order for the City to correct or adjust the design prior to installing the affected portion of sewer.
- All sewer mains shall be PVC pipes SDR-35, unless otherwise approved by the City of Falls Church.
- There is no sewer main less than eight (8) inches in diameter allowed to be permanently installed in the City of Falls Church Sewer System.
- Sewer house service connection (lateral) and sewer tap to the main shall be privately owned and maintained. The City's responsibility stops at the sewer main, located in the street right-of-way or easement.
- All construction must be done in compliance with The Occupational Safety and Health Act (OSHA) of 1970, and all rules and regulations thereto appurtenant.
- The Contractor shall be responsible of any repair and restoration required prior to finish grading and surfacing of the streets and/or easements. Final acceptance will not be considered or granted until after the streets have been resurfaced or the easements finally graded to equal or better than the original condition.
- Tapping into existing manholes for a sewer pipe 10" or less in diameter will be done by coring. Pipe sizes 12" diameter and larger may be connected to the manhole wall with a short length of pipe with a joint within two feet (2') of the inside face of the manhole wall.
- The lateral connection to the main sewer shall be installed at two feet (2') minimum distance from any pipe joint (center to center). This shall also apply to the distance between 2 laterals.
- Manhole frames subject to 115-20 highway loading shall be set in an approved non-shrink groud.
- Sewer subject to vehicle traffic shall be installed with a minimum cover of 6 feet. Otherwise, it shall be protected from effects of traffic with HS-20 highway loading.

BUILDING HEIGHT

UNIT 1 - TINNER		UNIT 2 - TINNER		UNIT 3 - REVERSE TINNER		UNIT 4 - REVERSE TINNER		UNIT 5 - WHITNEY	
EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED
352.60	353.00	352.40	352.80	347.45	347.50	348.22	348.70	348.79	349.70
352.71	353.00	352.80	353.00	346.68	346.50	347.79	348.00	348.24	349.00
350.98	351.50	350.95	351.50	346.90	346.90	347.42	347.50	347.72	348.20
350.98	351.80	350.99	351.50	347.21	347.80	347.55	348.00	348.30	348.60
351.81	352.32	351.78	352.20	347.03	347.17	347.74	348.05	348.26	348.87
LOWEST AVG. GRADE	351.81	LOWEST AVG. GRADE	351.78	LOWEST AVG. GRADE	347.03	LOWEST AVG. GRADE	347.74	LOWEST AVG. GRADE	348.26
MAX. BLDG. HT	376.81	MAX. BLDG. HT	376.78	MAX. BLDG. HT	372.03	MAX. BLDG. HT	372.74	MAX. BLDG. HT	373.26
FF	353.5	FF	353.5	FF	349.5	FF	350	FF	351
BLDG. HT FROM FF		BLDG. HT FROM FF		BLDG. HT FROM FF		BLDG. HT FROM FF		BLDG. HT FROM FF	
	20.94'		20.94'		20.94'		21.38'		21.38'
BLDG. HT. ELEVATION	374.44'	BLDG. HT. ELEVATION	374.44'	BLDG. HT. ELEVATION	370.44'	BLDG. HT. ELEVATION	371.38'	BLDG. HT. ELEVATION	372.38'
TOTAL BUILDING HEIGHT	22.63'	TOTAL BUILDING HEIGHT	22.66'	TOTAL BUILDING HEIGHT	23.41'	TOTAL BUILDING HEIGHT	23.64'	TOTAL BUILDING HEIGHT	24.12'

UNIT 6 - WHITNEY		UNIT 7 - REVERSE TINNER		UNIT 8 - WHITNEY		UNIT 9 - WHITNEY		UNIT 10 - REVERSE TINNER	
EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED
350.72	350.72	350.91	351.40	350.59	351.30	350.07	351.00	348.99	351.00
349.50	350.00	351.09	351.60	350.93	351.40	350.41	351.30	349.80	351.00
348.60	349.00	349.51	349.80	348.31	349.80	348.31	349.50	347.92	349.50
349.45	349.90	349.91	349.80	348.22	349.80	348.22	349.80	348.01	350.00
349.56	349.90	350.35	350.65	349.51	350.57	349.25	350.40	348.68	350.37
LOWEST AVG. GRADE	349.56	LOWEST AVG. GRADE	350.35	LOWEST AVG. GRADE	349.51	LOWEST AVG. GRADE	349.25	LOWEST AVG. GRADE	348.68
MAX. BLDG. HT	374.56	MAX. BLDG. HT	375.35	MAX. BLDG. HT	374.51	MAX. BLDG. HT	374.25	MAX. BLDG. HT	373.68
FF	352	FF	352.5	FF	353	FF	352.8	FF	352.2
BLDG. HT FROM FF		BLDG. HT FROM FF		BLDG. HT FROM FF		BLDG. HT FROM FF		BLDG. HT FROM FF	
	21.38'		21.38'		21.38'		21.38'		21.38'
BLDG. HT. ELEVATION	373.38'	BLDG. HT. ELEVATION	373.88'	BLDG. HT. ELEVATION	374.38'	BLDG. HT. ELEVATION	374.18'	BLDG. HT. ELEVATION	373.58'
TOTAL BUILDING HEIGHT	23.82'	TOTAL BUILDING HEIGHT	23.53'	TOTAL BUILDING HEIGHT	24.87'	TOTAL BUILDING HEIGHT	24.93'	TOTAL BUILDING HEIGHT	24.90'

COMMON HOUSE	
EXISTING	PROPOSED
352.53	352.50
352.24	352.10
351.14	351.90
351.88	351.80
351.94	352.07
LOWEST AVG. GRADE	351.94
MAX. BLDG. HT	376.94
FF	353
BLDG. HT FROM FF	
	21.04'
BLDG. HT. ELEVATION	374.04'
TOTAL BUILDING HEIGHT	22.10'

ZONING TABULATION

EXISTING ZONE: R-1A
 SITE AREA: 54,425 SF OR 1.2494 AC

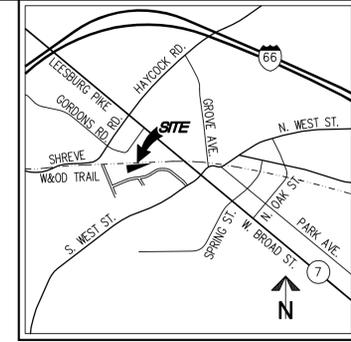
PROPOSED SPECIAL EXCEPTION DEVELOPMENT FOR COTTAGE HOUSING IN ACCORDANCE WITH ZONING ORDINANCE SECTION 48-241(a):

	REQUIRED	PROVIDED
MAX. BUILDING HT.	25 FT. 2 STORIES (2ND STORY TO BE MAXIMUM OF 1/2 FOOTPRINT OF 1ST FLOOR)	SEE BELOW FOR BUILDING HEIGHT PROVIDED 2 STORIES
MIN. YARD REQUIREMENTS:		
FRONT (RAILROAD AVENUE)	20 FT.	20.2 FT.
SIDE (NORTHERN NVRPA PROPERTY)	10 FT.	13.0 FT.
SIDE (WESTERN PROPERTY)	15 FT.	61.4 FT.
REAR (SOUTHERN PROPERTY)	20 FT.	21.4 FT.
DENSITY REQUIREMENTS:		
DWELLING UNITS	54,425 / 10,000 = 5.44 * 2 = 10.89	MAXIMUM 10 UNITS ALLOWED PROPOSED 10 UNITS PROVIDED
COVERAGE:		

IMPERVIOUS AREAS			AREA TOWARDS IMPERVIOUS TOTAL WITH 25% CREDIT FOR PERMEABLE PAVEMENT WALKS/DRIVEWAYS (SF)
ITEM	EXISTING (SF)	PROPOSED (SF)	
BUILDING(S)	0	14261	14261
DRIVEWAYS	1479	4036	3027
WALKS/MISC	0	935	701.25
TOTAL	1479	19232	17990

SITE AREA:	54,425 SF
IMPERVIOUS AREA:	17,990.00 SF
MAX IMPERVIOUS AREA ALLOWED:	35.00%
TOTAL IMPERVIOUS AREA PROVIDED:	33.05%
MAX BUILDING COVERAGE ALLOWED:	30.00%
TOTAL BUILDING COVERAGE PROVIDED:	26.20%

NOTE: MINIMUM 655 SF BUILDING TO BE TREATED WITH SOLAR OR GREEN ROOF TO OBTAIN 5% BONUS BUILDING COVERAGE ALLOWANCE ABOVE 25%. DEVELOPER INTENDS TO USE SOLAR PANELS FOR ENTIRE CARPORT ROOF - FINAL DESIGN TO BE DETERMINED DURING SITE PLAN



VICINITY MAP SCALE: 1"=2000'

PARKING TABULATION

PARKING REQUIRED:
 1.25 SPACES PER UNIT
 10 UNITS X 1.25 = 12.5
 13 SPACES REQUIRED
 13 SPACES PROVIDED

NOTES AND ZONING TABULATIONS

RAILROAD COTTAGES
 CITY OF FALLS CHURCH, VIRGINIA

Engineers • Planners
 Landscape Architects • Arborists
WALTER L. PHILLIPS
 INCORPORATED
 DATE: 04/12/2017, 10:00:00 AM
 SCALE: AS NOTED

11/8/17
 KAREN L. S. WHITE
 Lic. No. 041850

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

RAILROAD COTTAGES

RPC #S 52-102-030, 52-102-031, 52-102-032
CITY OF FALLS CHURCH, VIRGINIA

CONCEPTUAL DEVELOPMENT PLAN

NOTES

- THE PROPERTIES SHOWN HEREIN ARE IDENTIFIED BY THE CITY OF FALLS CHURCH AS REAL PROPERTY CASE (RPC) NUMBERS: 52-102-030, 52-102-031, AND 52-102-032 AND ARE ZONED R-1A.
- THE PROPOSED SPECIAL EXCEPTION DEVELOPMENT FOR COTTAGE HOUSING IN ACCORDANCE WITH ZONING ORDINANCE SECTION 60-204(D).
- THIS PLAN AND THE SURVEY UPON WHICH IT IS BASED SHOW ONLY THOSE IMPROVEMENTS THAT ARE NECESSARY AND CAN BE LOCATED USING PUBLIC SURVEY INFORMATION, AND UTILITY MARKINGS AND EXISTING RECORDS. THERE ARE NO ASSUMED, UNLOCATED OR UNLOCATED UTILITIES. THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED, OR THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THE UNDERGROUND UTILITIES HAVE NOT BEEN PHYSICALLY LOCATED.
- TOTAL AREA OF THE PROPERTY IS 54,435 SQUARE FEET OR 1.254 ACRES.
- THIS PLAN IS BASED ON A FIELD SURVEY PERFORMED ON 6/25/2016.
- THE FEDERAL ENGINEERING MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAPS FOR THE CITY OF FALLS CHURCH, VIRGINIA, MAP NUMBER 5200000000, REVISION 14-1, IS SHOWN. DESIGNATED THE PROPERTY AS BEING IN ZONE V, "AREAS DETERMINED TO BE FLOOD PRONE, BUT NOT SUBJECT TO FLOOD DAMAGE RESULTING FROM THE ACTION OF WAVES OR SURGES."
- EXISTING UTILITIES, CONDITIONS, CONSTRAINTS AND RESTRICTIONS, SHOWN AND/OR NOTED ARE FOR THE TITLE SURVEY DATED BY DATE TITLE, FILE IN RECORD, SAVED BY DATE TITLE SURVEY DATED JUNE 2, 2016.
- THE SITE SHOWN HEREIN IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 AS DERIVED FROM A FIELD SURVEY. CONTROL POINTS AND POINTS (EPOCH 2010.0000) AS COMPUTED FROM A FIELD SURVEY AND HORIZONTAL CONTROL POINTS THAT ARE USED TO COMPUTE THE COORDINATES OF THE POINTS SHOWN TO REMAINS UNCHANGED BY THE NATIONAL DATUM TRANSFORMATION. THE COORDINATE SYSTEM IS THE NAD 83 DATUM. THE COORDINATE SYSTEM IS THE NAD 83 DATUM. THE COORDINATE SYSTEM IS THE NAD 83 DATUM.
- THIS SURVEY WAS PERFORMED AT THE REQUEST OF THE YOUNG GROUP (YOUNG).
- THE PROPERTY IS SUBJECT TO AN AGREEMENT WITH YOUNG GROUP INC. DATED 1/18/14 AT PAGE 23.
- THERE ARE NO RECORDS ON THIS SITE. THERE ARE NO RECORDS FOR THE CITY OF FALLS CHURCH RECORD BOOK 28 & 29, WHICH ARE LOCATED ON RAILROAD AVENUE.

ZONING TABLE

PROPOSED	REQUIREMENTS	REQUIREMENTS
PROPOSED SPECIAL EXCEPTION DEVELOPMENT FOR COTTAGE HOUSING IN ACCORDANCE WITH ZONING ORDINANCE SECTION 60-204(D)	MINIMUM TO BE MET	PROPOSED TO BE MET
MAX. BUILDING HEIGHT	20 FT.	1 1/2 STOREYS
MAX. YARD REQUIREMENTS	20 FT.	420 FT.
FRONT YARD REQUIREMENTS	15 FT.	420 FT.
REAR (SOUTHWEST) PROPERTY	20 FT.	420 FT.

DENSITY REQUIREMENTS

REQUIREMENTS	REQUIREMENTS
MINIMUM TO BE MET	PROPOSED TO BE MET
MINIMUM TO BE MET	PROPOSED TO BE MET

LANDSCAPE NOTES

- THE PROPOSED LANDSCAPE AREAS WILL BE DECIDED UTILIZING APPROPRIATE SPECIES, SIZE, AND PLACEMENT TO PROVIDE VISUAL SCREENING AND PARALLEL TO THE NORTHERN PROPERTY ADJACENT TO RAILROAD AVENUE AS SHOWN ON THE CDP.
- THE APPLICANT WILL WORK WITH THE CITY AGROBEST TO DESIGN A LANDSCAPE PLAN THAT UTILIZES NATIVE TREES, SHRUBS, PERENNIALS AND GRASSES.

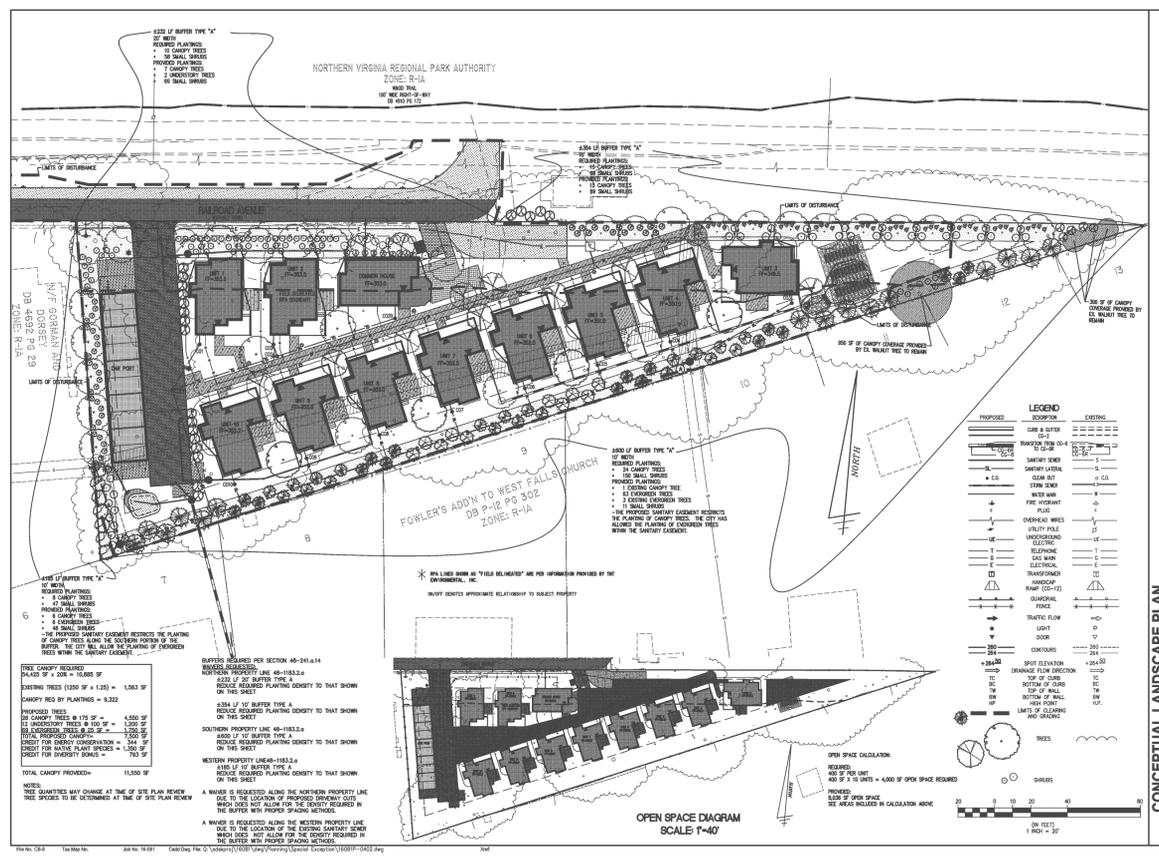
PARCEL DIMENSIONS

PARCEL	AREA (SQ FT)	AREA (AC)
1	10,000	0.23
2	10,000	0.23
3	10,000	0.23
4	10,000	0.23
5	10,000	0.23
6	10,000	0.23
7	10,000	0.23
8	10,000	0.23
9	10,000	0.23
10	10,000	0.23
11	10,000	0.23
12	10,000	0.23
13	10,000	0.23
14	10,000	0.23
15	10,000	0.23
16	10,000	0.23
17	10,000	0.23
18	10,000	0.23
19	10,000	0.23
20	10,000	0.23

CONCEPTUAL DEVELOPMENT PLAN

RAILROAD COTTAGES
CITY OF FALLS CHURCH, VIRGINIA

DATE: 06/25/2016
SCALE: 1"=40'



WALTER L. PHILLIPS
INCORPORATED
11/8/17
KAREN L. S. WHITE
Lic. No. 041850
PROFESSIONAL

CONCEPTUAL LANDSCAPE PLAN
RAILROAD COTTAGES
CITY OF FALLS CHURCH, VIRGINIA

DATE: 06/25/2016
SCALE: AS NOTED

REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED

APPROVED SPECIAL EXCEPTION PLAN

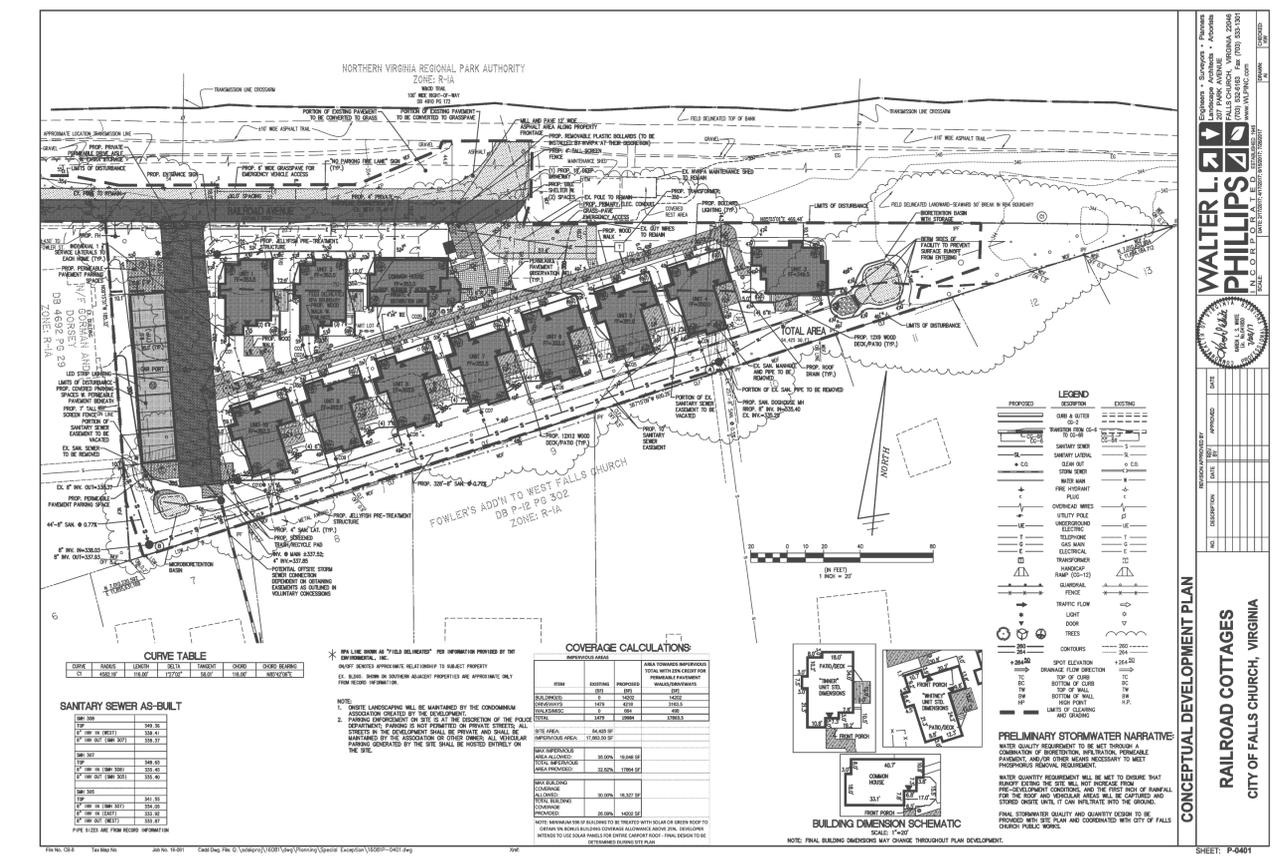
RAILROAD COTTAGES

CITY OF FALLS CHURCH, VIRGINIA

DATE: 06/25/2016
SCALE: AS NOTED

Engineers • Surveyors • Planners
Landscape Architects • Arborists
207 PARK AVENUE
FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 Fax (703) 533-1301
www.WLPHINC.com

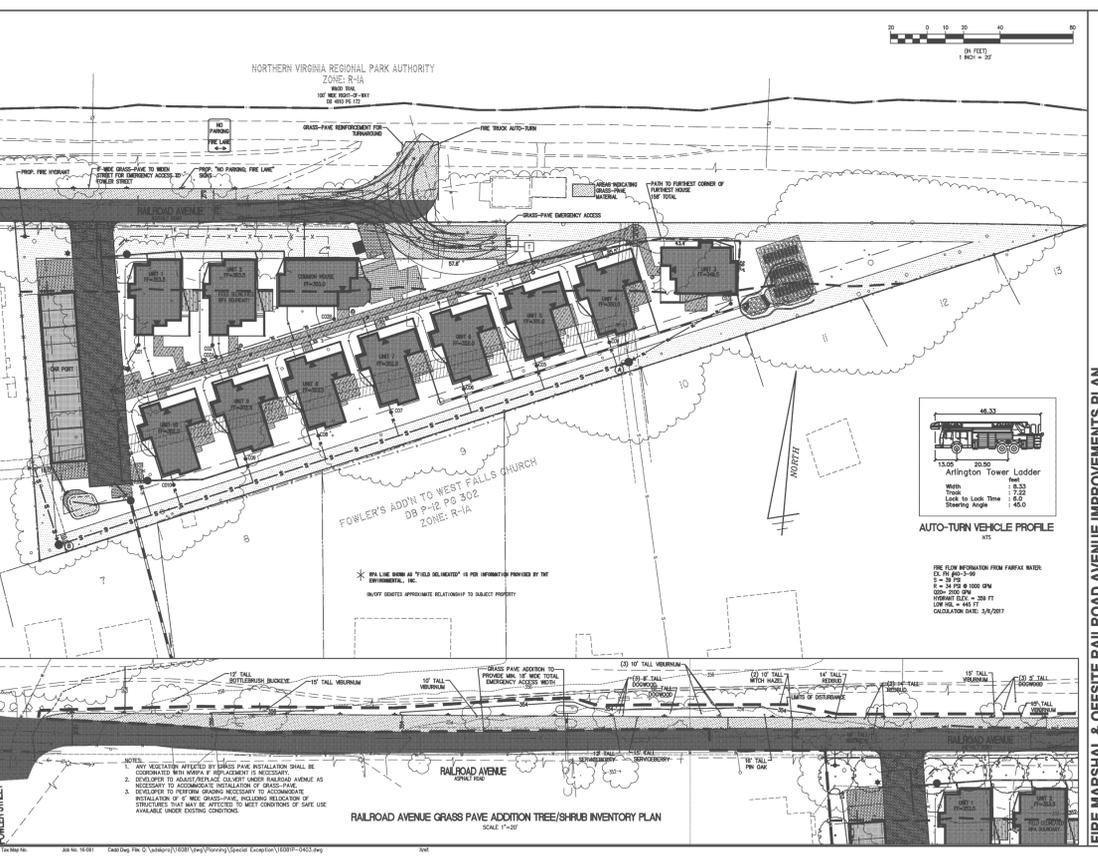
DATE: 06/25/2016, 11/08/2017
ESTABLISHED 1945
CHECKED: KYW
DRAWN: AI



WALTER L. PHILLIPS
INCORPORATED
11/8/17
KAREN L. S. WHITE
Lic. No. 041850
PROFESSIONAL

CONCEPTUAL DEVELOPMENT PLAN
RAILROAD COTTAGES
CITY OF FALLS CHURCH, VIRGINIA

DATE: 06/25/2016
SCALE: 1"=40'



WALTER L. PHILLIPS
INCORPORATED
11/8/17
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Lic. No. 041850
PROFESSIONAL

CONCEPTUAL DEVELOPMENT PLAN
RAILROAD COTTAGES
CITY OF FALLS CHURCH, VIRGINIA

DATE: 06/25/2016
SCALE: 1"=40'

REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED

Engineers • Surveyors • Planners
Landscape Architects • Arborists
207 PARK AVENUE
FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 Fax (703) 533-1301
www.WLPHINC.com

DATE: 06/25/2016, 11/08/2017
ESTABLISHED 1945
CHECKED: KYW
DRAWN: AI

VOLUNTARY CONCESSIONS, COMMUNITY BENEFITS & TERMS AND CONDITIONS

RAILROAD COTTAGES

MUNIS 2017-0220

September 7, 2017

Pursuant to § 48-241 (c) of the Code of the City of Falls Church, Virginia (the "Code") and subject to the City of Falls Church (the "City") approving MUNIS 2017-0220 (the "Application") on the property identified as RPC #52-102-030, 031, and 032 (jointly the "Property"), Railroad, LLC (the "Owner") for itself, any contract purchaser, and its successors and assigns, hereby voluntarily agrees to the following conditions ("Voluntary Concessions"). It has been granted certain bonuses, including increased density, reduced yard setbacks, and other benefits in return for providing certain features, design elements, uses, services, or other amenities desired by the City as more particularly set forth below. In the event the Application is denied, these Voluntary Concessions will be null and void and of no further force and effect.

I. DEVELOPMENT SCOPE

- A. Conceptual Development Plan. Development of the Property shall be in conformance with the plan set titled "Railroad Cottages Conceptual Development Plan" (the "CDP"), consisting of five sheets, prepared by Walter L. Phillips, Inc., dated July 26, 2017.
B. Development Scope. As depicted on the CDP, uses on the Property shall be limited to 10 cottage housing dwelling units (each a "Cottage" and, jointly, the "Cottages"), plus a community clubhouse (the "Common House"), as well as a carport (the "Carport"), accessory parking, accessory structures such as, but not limited to, bicycle racks and trash collection area, as well as private outdoor recreation and open space areas. Uses may also include any uses permitted by special exception in the R-1A zoning district provided that approval of the requisite special exception shall have been obtained in accordance with the Code prior to establishment of such use.
C. Minor Modifications. The City Manager may approve minor deviations from conformance with these documents, as requested by the Owner, provided the deviations do not conflict with what is specifically agreed to in these Voluntary Concessions, are consistent with the purpose and intent of the City Council's approval of this Special Exception, and are either: (i) necessary to permit reasonable construction of the project; or (ii) as determined by the City Manager, improve the project's overall functioning or benefit to the City. The Owner may appeal an adverse decision by the City Manager to the City Council.
D. Age Restriction. Occupancy of the Cottages is intended for, and shall be restricted to, households with at least one full-time resident 55 years of age or older per Cottage in order to qualify as "housing for older persons" in accordance with the

Railroad Cottages Voluntary Concessions Page 3 of 15

State and Federal Fair Housing Acts and the Federal Housing for Older Persons Act of 1995 (Pub. L. 104-76, 109 Stat. 787, approved December 28, 1995), as amended, and as implemented by HUD regulations at 24 CFR part 100. Concurrently with the establishment of a condominium association ("COA") in accordance with Voluntary Concession II.A, the Owner shall submit for review and approval by the City a Declaration of Covenants ("Covenants") in conjunction with the preparation of Association Documents (as defined in Voluntary Concession II.A) which will meet the standards under the Act for housing for older persons, including requiring, in perpetuity, that qualification for occupancy of any dwelling unit on the Property shall be limited to households with at least one full-time resident who is age 55 or older, and that no resident under 18 years of age may reside on the Property. If title to any such dwelling unit shall become vested in any person under the age of 55 by reason of descent, distribution, foreclosure, purchase, or operation of law, the age restriction covenant shall not result in a forfeiture or reversion of title, but rather, such person taking title shall not be permitted to reside in such dwelling unit until such person shall have attained the age of 55 or otherwise satisfies the requirements as set forth herein. Notwithstanding the aforementioned, a surviving spouse shall be allowed to occupy a dwelling unit consistent with the Federal Fair Housing Act and the Virginia Fair Housing Law, as may be amended.

- E. Building Height. As depicted on Sheet P-0101 of the CDP, the maximum building height of the Cottages shall not exceed a height of 25 feet in height from average grade as defined by the Code. Minor reductions in height may be permitted pursuant to Voluntary Concession I.C. Notwithstanding the foregoing, nothing shall preclude the Owner from constructing the Cottages or Common House to a lesser building height than that which is represented on the CDP, provided the configuration of the building footprints remain in conformance with that shown on the CDP.
F. Architectural Guidelines. The character of the architectural design and building materials for the Cottages and Common House shall conform to the character and quality of the architectural elevation document titled "Railroad Cottages Owner Options," prepared by Butz Wilburn Ltd., and included by reference as Exhibit A (the "Design Guidelines"). Such architectural design shall include as minimum: siding, vinyl, or similar exterior trim, as well as sprinklers and exterior strobe lights.
G. Outdoor Amenities For Residents. The Owner shall provide facilities designed to meet the on-site recreational needs of the future residents of the Property, and shall include outdoor furniture, lawn areas, and pedestrian-sealed lighting. Additional facilities may include, but shall not be limited to, walking paths, fitness stations, outdoor kitchen/grills, fire pits, specialty landscaping in excess of that otherwise required by the Code, and outdoor adult exercise areas.
H. Common House. As depicted on Sheet P-0402 of the CDP, the Owner shall provide a Common House. Any amenities contained within or appurtenant to the Common House will be owned and maintained by the Association established pursuant to Voluntary Concession II.A, and made available for all residents of the Cottages. Amenities in the Common House shall include, but shall not be limited to, the

Railroad Cottages Voluntary Concessions Page 3 of 15

following amenities: a multipurpose meeting room/studio, kitchen, and a computer/media room. The Common House shall be constructed and available for use by residents no later than approval of the 10th occupancy permit for the Cottages.

- I. Universal Design. The Cottages shall employ universal design principles in accordance with any state, local or federal program governing such units. Specific elements shall be identified at the time of building plan submission.
J. Historic Commemoration. The Owner shall install a metal plaque on the Property, at or before the time of issuance of the 10th occupancy permit for the Cottages, not including the Common House, which shall be visible to the public along the Property's Railroad Avenue frontage. The language on the plaque shall conform with other applicable regulations concerning such commemorative plaques and the City's Historical Commission for its review and comment, but not necessarily approval, prior to installation. The specific location of, and language on, the plaque shall be determined by the Owner, as approved by the Director of Planning, prior to approval of the site plan for the Property.
K. Water and Sewer. The Property shall be served by public central water supply and sanitary sewer systems. The Owner shall construct and install all water and sewer extensions to the Property and shall provide all connections necessary for development of the Property at no cost to the City or to the Fairfax County Water Authority (the "Water Utility"), and such extensions and connections shall be constructed and installed in accordance with City and Fairfax Water standards. The Owner shall acquire any off-site easements, if needed, to extend public water and/or sanitary sewer lines to the Property and shall dedicate such easements to the City and/or Fairfax Water, as necessary, at no cost to the City or to Fairfax Water. Any existing wells and septic systems on the Property shall be abandoned prior to approval of the site plan for the Property in accordance with Fairfax County Health Department standards and requirements then in effect.
L. Stormwater For Trash/Recycling Storage. As depicted on Sheet P-0401 of the CDP, the Owner shall provide a trash and recycling storage pad on the Property. To minimize negative visual impacts, the base of the storage pad will be constructed of permeable pavement materials and surrounded by a six-foot high wood and PVC lattice fence. All trash and/or recycling from all occupancy of the Project shall be kept and secured within the aforementioned fence.
M. Fire Marshal Coordination. The Owner has coordinated with the Fire Marshal regarding the site design and layout of the Property shown on the CDP. Notwithstanding such coordination, if it is determined during site plan review that elements of the CDP including, but not limited to, adjustments to streetcapes and building House uses, tree plantings, open space, courtyards, tree buffers, and tree preservation areas, require adjustment to allow for required emergency vehicle access or are necessary to respond to subsequent comments from the Fire Marshal,

Railroad Cottages Voluntary Concessions Page 3 of 15

the Owner shall be permitted to relocate, remove, or modify such conflicting elements provided any such modifications are made in consultation with and subject to the approval of the City Manager in accordance with Voluntary Concession I.C.

- II. CONDOMINIUM ASSOCIATION
A. Condominium Association. All residential property owners in the Property shall be members of a condominium association (the "Association"), established to own and maintain common property and facilities and provide standards for the landscaping and use of privately-owned structures within the Property. Documents for the establishment of the Association (the "Association Documents"), including the Covenants, shall be submitted to the City Attorney for review and approval as being consistent with this Special Exception approval, with these Voluntary Concessions and any other applicable regulations concerning such commemorative plaques and the City's Historical Commission for its review and comment, but not necessarily approval, prior to installation. The specific location of, and language on, the plaque shall be determined by the Owner, as approved by the Director of Planning, prior to approval of the site plan for the Property. The declaration establishing the Association shall specify the conditions and obligations set forth in these Voluntary Concessions. Purchasers shall be advised in writing of these Voluntary Concessions prior to entering into a binding contract of sale.
B. General Responsibilities. In addition to any other responsibilities set forth elsewhere in these Voluntary Concessions and in § 48-1147 (Owner's Association) of the Code, the Association shall own and maintain all common areas on the Property, as well as provide for snow removal on common area sidewalks and driveways. The Association shall also be responsible for the maintenance of all common recreational facilities, landscaping maintenance, interior and exterior maintenance of the Common House, exterior maintenance of the cottages including, but not limited to, painting, caulking, roof, and cleaning repairs, all storm drainage easements and stormwater management facilities not maintained by the City, all street lights or other exterior lighting internal to the Property, and all sidewalks and trails on the Property located outside of public right-of-way and not otherwise maintained by the City or the Northern Virginia Regional Park Authority ("NVRPA").
III. TRANSPORTATION
A. Bicycle Storage. Prior to the issuance of the first residential certificate of occupancy for the Cottages, the Owner shall install bicycle racks and one secure bicycle storage locker on the Property. Prior to approval of the site plan for the Property, the Owner shall provide the type, location, and number of bicycle racks to be provided on the Property. The bicycle racks shall be installed prior to the issuance of the first residential occupancy permit for the Cottages.
B. Bicycle Storage. Prior to the issuance of the first residential certificate of occupancy for the Cottages, the Owner shall install bicycle racks and one secure bicycle storage locker on the Property. Prior to approval of the site plan for the Property, the Owner shall provide the type, location, and number of bicycle racks to be provided on the Property. The bicycle racks shall be installed prior to the issuance of the first residential occupancy permit for the Cottages.

Railroad Cottages Voluntary Concessions Page 3 of 15

the Owner shall be permitted to relocate, remove, or modify such conflicting elements provided any such modifications are made in consultation with and subject to the approval of the City Manager in accordance with Voluntary Concession I.C.

- B. Railroads Avenue Improvements. As depicted on Sheet P-0401 of the CDP, and in accordance with the Code, the Owner shall facilitate emergency access for the Property and existing residents along Railroad Avenue by: (1) installing "graspable" or reinforced porous treatment along the north side of Railroad Avenue between Fowler Street and the Property meeting the weight requirements for emergency apparatus and provides a continuous width of 18 feet; (2) installing "No Parking" signage along the north side of Railroad Avenue; (3) providing a one-time contribution of \$50,000.00 to the City to be used to implement a Full Depth Reclamation asphalt rebuilding of Railroad Avenue from the Fairfax County line to the eastern terminus of Railroad Avenue; (4) replacing or modifying the curb under Railroad Avenue; (5) grading the area between the Washington & Old Dominion Railroad Trail (the "W&OD Trail") and the street, as applicable and necessary to accommodate a wider street and make the area safe for all road users and (6) indicate on the site plan an eight-foot-wide easement along the south side of Railroad Avenue along the Property's frontage and indicate the installation of grasspave or reinforced porous treatment within this easement, excepting those areas shown as permeable pavement. Said improvements shall be installed and available for use prior to the issuance of the first residential occupancy permit for the Cottages, or within 30 days after the City completes the Full Depth Reclamation asphalt rebuilding of Railroad Avenue, whichever comes later. Following installation of these improvements and acceptance by the City, the Owner shall not be responsible for maintenance of any off-site improvements not located on the Property.
C. Parking. As depicted on Sheets P-0101 and P-0401 of the CDP, the Owner shall provide a minimum of 13 parking spaces on the Property. All parking for the proposed Cottages and Common House shall occur on the Property and shall not interfere with the required fire apparatus turn-around as required by the Statewide Fire Prevention Code. The Owner shall inform purchasers of the Cottages and visitors to the property that parking in surrounding neighborhoods is discouraged. Notices to this effect shall be placed in a conspicuous location in the common house as well.
D. Parking Areas & Driveway. Parking and private driveway areas for the Property shall be provided as depicted on Sheet P-0401 of the CDP and in accordance with the parking requirements of Code. All parking and driveway areas, including those located within the Carport, shall be constructed of permeable pavement materials with dimensions consistent with Code standards, and shall be maintained by the Association established pursuant to Voluntary Concession II.A.
E. Pedestrian Facilities. Prior to the issuance of the first residential occupancy permit for the Cottages, the Owner shall construct an ADA-accessible variable width wooden walkway, with a minimum width of six feet, to facilitate pedestrian connectivity between the Cottages. The Owner shall be entitled to construct any number of additional private pedestrian connections internal to the Property in conformance with the Code. All private pedestrian connections shall be maintained by the Association, to be established pursuant to Voluntary Concession II.A.

Railroad Cottages Voluntary Concessions Page 6 of 15

- F. Transportation Demand Management. The Owner will implement the transportation demand management ("TDM") program titled "Railroad Avenue Cottage Housing Transportation Demand and Parking Management Plan" and incorporated as Exhibit B to these Voluntary Concessions. The TDM program will conform to these Voluntary Concessions and will be finalized prior to approval of the site plan for the Property.
G. Electric Vehicle Charging Station. The Owner shall provide a minimum of one charging station for electric cars on the Property. The location of the charging station shall be determined in conjunction with the Department of Public Works prior to approval of the site plan for the Property.
H. Construction Parking & Staging Plan. Prior to issuance of any demolition and/or any building permits on the Property, the Owner shall prepare, and obtain the City Manager's approval of, a demolition and staging plan for the project. All demolition and construction of the project shall be done in conformance with the approved demolition and staging plan. Once a contractor has been selected for the project, and prior to issuance of any building permits for the project, the Owner will prepare a construction parking plan and a construction traffic and staging plan to be enforced by the Owner for the entire construction phase of the project, and to obtain the City Manager's approval of the plan as providing sufficient parking or other transportation services, so as to not have an adverse impact on traffic safety. The Owner acknowledges and agrees that violations of these plans during construction can result in a "Stop Work" order and other enforcement measures by the City, until such time as the Owner provides reasonable assurances that it will correct the violations.

IV. LANDSCAPING & ENVIRONMENTAL

- A. Stormwater Management. Prior to approval of the site plan for the Property, the Owner shall demonstrate that development on the Property meets the water quantity and quality requirements, as well as the channel protection and flood protection requirements, pursuant to the latest edition of the Virginia Stormwater Management Handbook, or other such applicable state regulations, as may be currently in effect on the date of submission of the site plan to the Department of Public Works. These requirements will be met through water quality treatment utilizing approved products found on the Virginia Stormwater BMP Clearinghouse website, which may include the purchase of off-site nutrient credits.
B. Landscape Plan. The Owner shall implement the landscape design as shown on Sheet P-0402 of the CDP (the "Conceptual Landscape Plan"), which illustrates the plantings and other features to be provided on the Property. The Conceptual Landscape Plan is conceptual in nature and the tree species, sizes, and planting locations may be modified by the Owner as part of final engineering and building design, provided such modifications: (a) provide a similar quality and quantity of

Railroad Cottages Voluntary Concessions Page 7 of 15

landscaping as that shown on the Conceptual Landscape Plan, and (b) otherwise are in conformance with the CDP.

- 1. Native Species. The Owner shall use principally native species or hardy drought tolerant adaptive plants throughout the Property as selected by the Owner from the City's list of approved plants, provided that the Owner reserves the right to modify any part of site plan approval, in consultation with and approval by the Urban Forestry Division ("UFD") of the Department of Public Works, the exact species to be used, such as where some plant materials are not available or have been deemed by UFD to no longer be appropriate. In the event a substitution of native plants is required to enable the Owner to meet LEED (or an equivalent rating system) criteria, as provided in Voluntary Concession IV.E, the City Manager or his designee may approve a substitute plant or procedure to meet the selected rating agency requirements if the substitute plant is hardy and has a similar growth habit to the original plant.
2. Plant Installation. Plant materials shall be at least the following sizes at installation:
a. Evergreen Trees: Eight to 10 feet in height at planting;
b. Canopy/Shadow Trees: Minimum 2.5-inch caliper at planting; and
c. Shrubs: minimum spread of 14 to 24 inches at planting.
C. Fencing. The Owner shall install a four-foot high fence along the Property's Railroad Avenue frontages of Cottage Unit 1, Cottage Unit 2, and the Common House, as well as a seven-foot high solid wooden fence with an additional two feet of lattice, per Exhibit C, along the Property's entire western frontage adjacent to RPC #52-102-029 starting 20 feet back from front property line and a four-foot board-on-board wooden fence between 10 to 20 feet back from front property line along western frontage.
D. Lighting. In an effort to minimize nighttime light pollution from the Property, all on-site outdoor lighting provided on the Property shall be "dark sky"-compliant, utilize full cut-off fixtures, and be downward directed to the interior of the Property, such that neither the lamp itself nor the lamp image is visible outside the perimeter of the Property. The Owner shall install bollard lighting on the Property. Nothing contained in this Voluntary Concession IV.D shall preclude the up-lighting, accent lighting, or backlighting of signage, entrance features, and related landscaping throughout the Property as permitted by applicable regulations of the Code.
E. EarthCraft Certification. Prior to approval of the site plan for the Property, the Owner will provide documentation to the City Manager certifying that the project has been designed in accordance with the EarthCraft House program certifying

Railroad Cottages Voluntary Concessions Page 8 of 15

that green building elements have been incorporated into the project and would be sufficient to achieve EarthCraft Gold certification.

- 1. Green Building Envelope. Prior to the issuance of the first residential certificate of occupancy for the Cottages, the Owner will provide the City with a \$50,000.00 letter of credit which includes terms approved in advance by the City Manager sufficient to assure the City that the Owner will satisfy its obligations to achieve EarthCraft Gold certification. Such letter of credit will be returned to the Owner if the intended EarthCraft Gold certification is achieved within two years after the date of issuance of the first residential certificate of occupancy for the Cottages. If the project does not achieve the intended EarthCraft Gold certification within two years after the date of issuance of the first residential certificate of occupancy for the Cottages, the City will redeem the letter of credit, with such funds being used for environmental improvements in the City.
2. Equivalent Rating System. Where the Owner has provided evidence sufficient for the City Manager to find that an alternative green building program that is administered by an independent third party, other than the EarthCraft program, will ensure that equivalent environmental and energy efficiency will be achieved in the project, the City Manager may approve the use of such alternative program, subject to such conditions as may be reasonably necessary to ensure that the alternative program will achieve the goals of this Voluntary Concession IV.E.
F. Energy Conservation. The Owner will employ a variety of sustainability techniques across the Property including, but not limited to: geothermal heating, ventilation, and air conditioning units, two-by-six exterior walls with a R-21 insulation, R-50 roof insulation, low thermal emissivity windows, Energy Star appliances, and programmable thermostats. The roof of the Carport shall incorporate photovoltaic arrays (solar panels) to capture energy for the purpose of either providing solar energy to the grid and/or for purposes exclusive to the project.
G. Off-Site Stormwater Improvements. As generally depicted on Sheet P-0401 of the CDP, the Owner shall install a stormwater conveyance system to carry stormwater runoff from Railroad Avenue and transport it across RPC #52-102-028, 52-102-029, and 52-102-019 (the "Adjacent Parcels") and the Property to an existing storm sewer pipe located on RPC #52-102-019. Such improvements shall be at no cost to the City or the owners of the Adjacent Parcels, and shall generally include the installation of two new storm inlets, the replacement of an existing storm inlet, and the installation of an underground storm pipe with a minimum diameter of 12 inches. Final inlet and pipe design for placement and sizes shall be determined at site plan in coordination with the City and owners of the Adjacent Parcels. This Voluntary Concession IV.G shall be specifically contingent upon the Owner's ability to acquire all necessary off-site easements, licenses, and/or permissions from the owners of the Adjacent Parcels. In the event despite the Owner's good faith efforts, the Owner is unable to obtain such permissions from the owners of the

Railroad Cottages Voluntary Concessions Page 9 of 15

Adjacent Parcels within 90 days following approval of this Special Exception, then the obligation contained in this Voluntary Concession IV.G shall be deemed null and void.

- V. AFFORDABLE HOUSING FUND CONTRIBUTION. Prior to issuance of the first residential certificate of occupancy of the Cottages, the Owner shall make a one-time contribution to the City's Affordable Housing Fund in the amount of \$10,000.00. Said contribution shall be used solely for the maintenance of existing affordable housing and to develop additional affordable housing opportunities in the City.
VI. PARK AUTHORITY COORDINATION
A. Western Gateway Off-Site Improvement. Subject to City and NVRPA approval, the Owner shall install improvements to, and in the vicinity of, the existing maintenance shed and covered rest area located W&OD Trail on NVRPA Property. Said improvements may include installation of bicycle racks, landscaping, public art, benches, City of Falls Church gateway signage, and facade/architectural treatments to the existing maintenance shed and covered rest area. The Owner shall work with NVRPA to determine the precise locations for, and extent of, said improvements, which shall be determined prior to approval of the site plan for the Property. In the event the aforementioned improvements are not authorized by NVRPA, the Owner shall make a one-time contribution to the City in the amount of \$10,000.00 to be used at the City's discretion for park or streetcape enhancements. This contribution will be made prior to the issuance of the sixth (6th) occupancy permit by the City.
B. NVRPA Cooperation. Prior to final site plan approval for the Property, the Owner will work with NVRPA to address concerns related to the clearing and grading on the Property, and the stormwater management, the health of any trees located on NVRPA property that have roots on the Property, access between the Property and the W&OD Trail, and the relocation or replacement of any trees and shrubs on NVRPA property which may be damaged or removed by construction of the Railroad Avenue improvements pursuant to Voluntary Concession III.B. The Owner shall apply for and receive all necessary right-of-entry permits from the NVRPA, and the Owner shall execute all necessary permanent construction, stormwater, and maintenance agreements, as necessary, for all work conducted on the NVRPA PROPERTY.
VII. MISCELLANEOUS
A. Non-Transferability. The Owner acknowledges that the Application, as granted, runs with the land and is not transferable to other land.
B. Period of Validity. The Owner acknowledges that this Special Exception will automatically expire without notice, 36 months after the date of approval unless the use has been established or an above-grade building permit has been issued and

Railroad Cottages Voluntary Concessions Page 10 of 15

construction has commenced and been diligently pursued, in accordance with § 48-90 (d) (6) of the Code.

- C. Successors and Assigns. These Voluntary Concessions will bind and inure to the benefit of the Owner and its successors and assigns. Each reference to "Owner" in these Voluntary Concessions shall include within its meaning, and shall be binding upon, the Owner's successor(s) in interest and/or developer(s) of the site or any portion of the site.
D. Disclosure. The Owner shall provide a copy of these Voluntary Concessions to any future owner, heir, successor, and assignee prior to transferring any interest in any part of the Property to such person, firm, corporation, or other entity.
E. Access for Commissioner of Revenue. The Owner agrees that the City's Commissioner of Revenue and/or his/her designated staff shall have access to the parking areas on the Property at all times for inspection of personal property tax vehicle window stickers.
F. Counterparts. These Voluntary Concessions may be executed in one or more counterparts, each of which when so executed and delivered shall be deemed an original document and all of which taken together shall constitute but one in the same instrument.
G. Timing. Notwithstanding the foregoing, upon demonstration that, despite diligent efforts or due to factors beyond the Owner's control, Voluntary Concession commitments have been delayed beyond the timeframes specified herein, the Director of Planning may agree to a later date for completion of such commitments if the Planning Director finds: (1) the Owner is diligently pursuing the commitments; (2) the commitments will be completed in reasonable amount of time; and (3) the City has been provided reasonable assurance that the commitments will be completed by the later date.
H. Terms & Conditions Incorporated in Resolution. The Owner voluntarily submits the foregoing Voluntary Concessions to the City Council to be incorporated by reference with the resolution approving the Application.

[SIGNATURE APPEARS ON FOLLOWING PAGE]

Railroad Cottages Voluntary Concessions Page 11 of 15

TITLE OWNER OF RPC #52-102-030, 031, and 032

RAILROAD, LLC

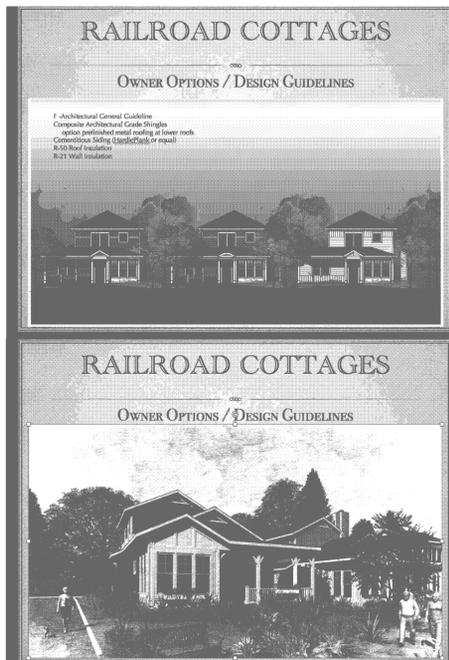
By: [Signature]
Name: Robert A. Young
Title: Managing Member

[SIGNATURES END]

Railroad Cottages Voluntary Concessions Page 12 of 15

EXHIBIT A

Design Guidelines



Transportation Demand Management Program

Purpose: The City's Comprehensive Plan establishes a vision of providing a transportation network that offers choices in travel modes. The Plan also includes a strategy of meeting increased travel demand within, from, and through the City via non-automobile modes. To that end, the City expects redevelopment activity to use Transportation Demand Management (TDM) and Parking Management Techniques that provide a range of transportation options and reduce the reliance on automobiles.

- Goals: This combined TDM and Parking Management Plan is designed to achieve the following goals:
1. Provide travel options that allow residents to "age in place", which means "the ability to live in one's own home and community safely, independently, and comfortably, regardless of age, income, or ability level"
2. Demonstrate that the number of parking spaces provide is consistent with City code and accommodates travel demand

Plan Flexibility: This combined TDM and Parking Management Plan recognizes that travel behavior may change over time. For that reason, this combined plan uses a strategy of adaptive management - monitoring performance and updating the strategies applied as necessary to achieve the stated goals. The success of this TDM and Parking Management Plan will be reviewed periodically and updated as needed to deliver on the goals listed above.

- Plan: The table below summarizes the plan elements. The specific elements are described in more detail below the table. The table is broken into four categories:
1. Site Design, Infrastructure, and Options. These options will be provided when the project is opened for operation.
2. Promotion, Education, and Incentives. These options will be provided while the project is in operation.
3. Monitoring and Enforcement. These techniques will be used to measure performance of the implemented strategies, ensure compliance, and assess whether the strategies applied are meeting the goals of the plan.
4. Adaptive Management. These additional techniques will be used if the implemented strategies are not sufficient to meet the goals of the plan. Note that this list is not exhaustive. Other strategies as needed will be used to be the performance goals.
5. Within thirty (30) days of the issuance of the tenth (10th) occupancy permit, the Condominium Association shall provide City staff with a written report specifying the number of occupants and the number of cars owned by said occupants which are regularly parked on site. If this number exceeds thirteen (13), the Association and Staff shall consider alternative strategies, including permitting parking along the frontage of the property.

Transportation Demand Management Program-FINAL 11-8-2017.docx

Table 1: TDM and Parking Management Plan Elements

Table with 2 columns: Site Design, Infrastructure, and Options; and Promotion, Education, and Incentives. It lists various measures like bike cage provided, shared bicycles, information kiosks, and parking incentives.

Cart provided for loading/unloading. A farm cart will be provided so that owners have a convenient way to transport items (groceries, suitcases, etc.) from cars to cottages.

Shared bicycles and bike cage provided. A secure bike cage holding four (4) shared bicycles will be provided when units are occupied to encourage their use as an alternative to automobiles.

Information kiosk in the community house with information on transit options, bike routes, and walking routes, as well as contact information for Commuter Connection. In addition to such information available in the common house, the same materials plus possible links to relevant resources will be available on the community's website.

Parking spaces will not be sold with individual units. Parking hang tags will be issued by the condo board and monitored by all residents.

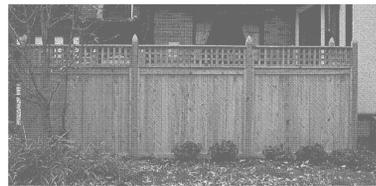
- TDM Coordinator duties assigned to the association vice president, as follows:
• Maintain cart, bicycles
• Maintain the information kiosk and website updates regarding transportation
• Be available to discuss local travel options with residents
• Monitor the usage of the plan and enforce rules where necessary
• Meet with City staff 2 - 4 times per year to review TDM information, including community and resident information packets.

Transportation Demand Management Program-FINAL 11-8-2017.docx

Railroad Cottages Voluntary Concessions Page 15 of 15

EXHIBIT C

Fencing for western frontage



VOLUNTARY CONCESSIONS

RAILROAD COTTAGES
CITY OF FALLS CHURCH, VIRGINIA

Professional seal and contact information for Walter L. Phillips, Inc. (Landscape Architects - Arborists). Includes name, address (207 Park Avenue, Falls Church, VA), phone (703) 532-6163, fax (703) 533-1301, website (www.wlpinc.com), and a circular seal with the text 'WALTER L. PHILLIPS, INC. REGISTERED PROFESSIONAL LANDSCAPE ARCHITECTS - ARBORISTS' and 'ESTABLISHED 1945'.

Professional seal for Robert A. Young, License No. 041950, dated 11/8/17, with the text 'COMMUNITY OF VIRGINIA PROFESSIONAL SEAL'.

Revision control table with columns: NO., DESCRIPTION, DATE, REV., APPROVED BY, DATE. The table is currently empty.

Table with 2 columns: NO., DESCRIPTION. The table is currently empty.

RAILROAD COTTAGES VOLUNTARY CONCESSIONS

Page 15 of 15

DATE: 09/22/2017, 10:00:00 AM

SCALE: AS NOTED

DATE: 09/22/2017, 10:00:00 AM

NOTES:

- MANHOLE TO MEET CURRENT REQUIREMENTS OF A.S.T.M. SPEC. C-476
- ALL REINFORCING STEEL TO MEET CURRENT REQUIREMENTS OF A.S.T.M. SPEC. A-615
- CONCRETE TO BE CLASS A.
- TAPERED JOINT WITH O-RING GASKET TO MEET CURRENT REQUIREMENTS OF A.S.T.M. SPEC. C-361
- PIONEER 301 MASTIC OR APPROVED EQUAL SHALL BE USED IN ADDITION TO THE JOINT SPECIFIED.
- GROUT INVERTS SHALL CONSIST OF A PORTLAND CEMENT CONCRETE MIX TO VIRGINIA DEPARTMENT OF TRANSPORTATION SPECIFICATION FOR CLASS B-2 OR CONTAINING 1 PART CEMENT, 2 PARTS MORTAR SAND AND 3 1/2 PARTS AGGREGATE. THE SURFACE SHALL BE HAND TROWELED SMOOTH WITH NO COARSE AGGREGATE EXPOSED AND THE BENCHES ARE TO HAVE A LIGHT BROOM FINISH.
- FLEXIBLE JOINT REQUIRED ON ALL PIPE CONNECTIONS TO MANHOLE. FLEXIBLE JOINT PIPE TO MANHOLE SLEEVE MAY BE KOR-N-SEAL, INTERSPACE, PRESSWEDGE OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. REFER ALSO TO STD. DETAILS.
- JOINT CONFIGURATION MAY BE CAST BELL-UP OR SPIGOT-UP.

SEE DETAIL THIS DRAWING FOR INSTALLATION OF STRAPPING DEVICE AS SHOWN WHERE MH IS SUBJECT TO WATER VELOCITIES. INDIVIDUAL MHs TO BE STRAPPED AND DETAILS AS TO NUMBER & LOCATION OF STRAPS TO BE SHOWN ON PLANS.

NOTCH FOR O-RING OR SINGLE OFFSET GASKET (SEE DETAIL ABOVE) (TYP.)

3" TAPERED LIFT HOLE, PLUGGED OUTSIDE ONLY WITH RUBBER PLUG, MORTAR OR MASTIC MAX. BASE SECTION TO PROVIDE MIN. 6" CLEARANCE BETWEEN TOP OF PIPE AND BOTTOM OF BELL AND SPIGOT JOINT.

IN FILL AREAS, BASE SECTION FOOTING MUST BE SPREAD A MIN. 8" OR MORE AS DETAILED ON THE PLANS.

MANHOLE BASE TO BE BEDDED IN 6" MINIMUM GRANULAR BEDDING ON FIRM SUBGRADE SEE STD DETAIL S-3 FOR PIPE BEDDING

SCALE: N.T.S.

ISSUED:	6/12/14	DRAWING NO.	S
REVISION:	1.0		
REVISION:	6/12/14		1
APPROVED:	MAH		

STANDARD DETAIL
TYPICAL 4' INNER DIAMETER
PRECAST CONCRETE MANHOLE

CITY OF FALLS CHURCH VA PUBLIC FACILITIES MANUAL

NOTES:

- FRAME AND COVER SHALL BE GRADE 65-45-12 DUCTILE IRON CONFORMING TO ASTM 536
- FRAME AND COVER SHALL BE DESIGNED FOR H-20 LOADING
- WATERTIGHT FRAME AND COVER REQUIRED IN THE 100-YEAR FLOODPLAIN OR AS DIRECTED BY THE CITY ENGINEER
- RAM-NEK OR PIONEER 301 MASTIC OR EQUAL REQUIRED WITH WATERTIGHT FRAME AND COVER
- WATERTIGHT FRAME AND COVER TO BE EAST JORDAN IRON WORKS PRODUCT # 001030M OR APPROVED EQUAL
- STANDARD FRAME AND COVER TO BE EAST JORDAN IRON WORKS PRODUCT #3124 OR APPROVED EQUAL
- FOR FRAME ANCHORAGE SEE DETAIL S-7

SCALE: N.T.S.

ISSUED:	6/12/14	DRAWING NO.	S
REVISION:	1.0		
REVISION:	6/12/14		10.0
APPROVED:	MAH		

STANDARD DETAIL
STANDARD MANHOLE FRAME & COVER

CITY OF FALLS CHURCH VA PUBLIC FACILITIES MANUAL

NOTE :

- CONCRETE TO BE CLASS A.
- ALL REINFORCING TO MEET REQUIREMENTS OF CURRENT A.S.T.M. SPEC. A-615
- MANHOLE SECTIONS TO MEET REQUIREMENT OF CURRENT A.S.T.M. SPEC. C-476
- TAPERED JOINT WITH O-RING GASKET TO MEET CURRENT REQUIREMENTS OF A.S.T.M. SPEC. C-361.
- DOGHOUSE OPENING MAY ONLY BE USED WHEN PLACING A NEW MANHOLE OVER AN EXISTING LINE. OTHERWISE, THE OPENING MUST BE CAST. SIZE, LOCATION & ANGLE OF ENTRY SHALL BE AS REQUIRED BY THE PLANS.
- MANHOLE SECTION TO BE CASE IN THE BASE OF A MINIMUM OF 2".
- JOINT CONFIGURATION MAY BE CAST BELL-UP OR SPIGOT-UP.
- HOLES IN PRECAST UNITS ARE TO BE 4" MIN. TO 8" MAX. LARGER THAN THE OUTSIDE DIA. OF THE PROPOSED PIPE.
- BASE SECTION TO PROVIDE MIN. 6" CLEARANCE BETWEEN TOP OF PIPE OPENING AND BOTTOM OF BELL AND SPIGOT JOINT.

SCALE: N.T.S.

ISSUED:	6/12/14	DRAWING NO.	S
REVISION:	1.0		
REVISION:	6/12/14		4
APPROVED:	MAH		

STANDARD DETAIL
PRECAST CONCRETE MANHOLE
DOGHOUSE BASE

CITY OF FALLS CHURCH VA PUBLIC FACILITIES MANUAL

FOR DETAILS OF ALL COMPONENT PARTS AND GENERAL NOTES- PRECAST- SEE SHEETS 103.01-103.11

SCALE: AS NOTED

SPECIFICATION REFERENCE	103.302	ROAD AND BRIDGE STANDARDS	REVISION DATE	SHEET 1 OF 1
			108.07	

PRECAST MANHOLE
VIRGINIA DEPARTMENT OF TRANSPORTATION

FOR SANITARY STRUCTURE 'A'

Grasspave2 Firelane Detail

NOTE: THIS DETAIL IS SCHEMATIC IN NATURE. DESIGNER SHALL SPECIFY SPACING AND DESIGN OF EDGE TREATMENTS. SPACING WILL VARY WITH TYPICAL SLOPE, FRIE DEPARTMENT REQUIREMENTS, ETC.

NOT TO SCALE

Use this detail for delineating a Grasspave2 firelane

Invisible Structures, Inc.
1600 Jackson Street, Suite 310
Golden, CO 80401
800-233-1510 OR 303-373-1234
FAX: 303-373-1223
www.invisiblestructures.com
rev. 09/2011

1
10F1

**FOR ALL AREAS LABELED AS GRASSPAVE MATERIAL
SEE SHEET C-0206 FOR SPECIFICATIONS**

A.G. Wassenaar Inc.
Geotechnical and Environmental Consultants

2180 South Ivanhoe Street, Suite 5
Denver, Colorado 80222-8710
303-759-8100 Fax 303-759-2920
www.agwassenaar.com

ASTM D1621-10 COMPRESSIVE STRENGTH RESULTS
MARCH 13, 2015

Grasspave2 Sand-filled Ring Units
Source: 100% Recycled HDPE Resins
Form Tested: Four sand-filled Rings attached by grid and confined by taping (see photographs)

Sample No.	Total Load (lbs)	Gross Area Strength (psi)	Net Area Strength (psi)	Deflection (in.)
1	500,000*	15,940	15,940	0.575
2	500,000*	15,940	15,940	0.581
3	500,000*	15,940	15,940	0.579
Average		15,940	15,940	0.578

Note: 1. *Maximum total load was not achieved, 500,000 pounds is the maximum load of this testing machine.
2. Testing Machine: Fomey Model No. F-502F-F96 Serial No. 03040 Capacity: 500,000 pounds
3. Silica Sand: Oglebay/Norton washed silica sand, Colorado Springs, Colorado
4. Sand was confined by taping ring edges.
5. Area calculated is the total gross and net area including the area filled by sand.

NOTE:
ALL DETAILS PROVIDED ON THIS SHEET ARE CURRENT AT TIME OF SITE PLAN PREPARATION. CONTRACTOR IS RESPONSIBLE FOR USING CURRENT DETAILS AT TIME OF CONSTRUCTION

WALTER L. PHILLIPS
INCORPORATED
ESTABLISHED 1945
DATE: 09/22/2017, 10/20/2017, 11/8/2017

Engineers • Surveyors • Planners
Landscape Architects • Arborists
207 PARK AVENUE
FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 Fax (703) 533-1301
www.WLPHINC.com

CHECKED: KYW
DRAWN: AI

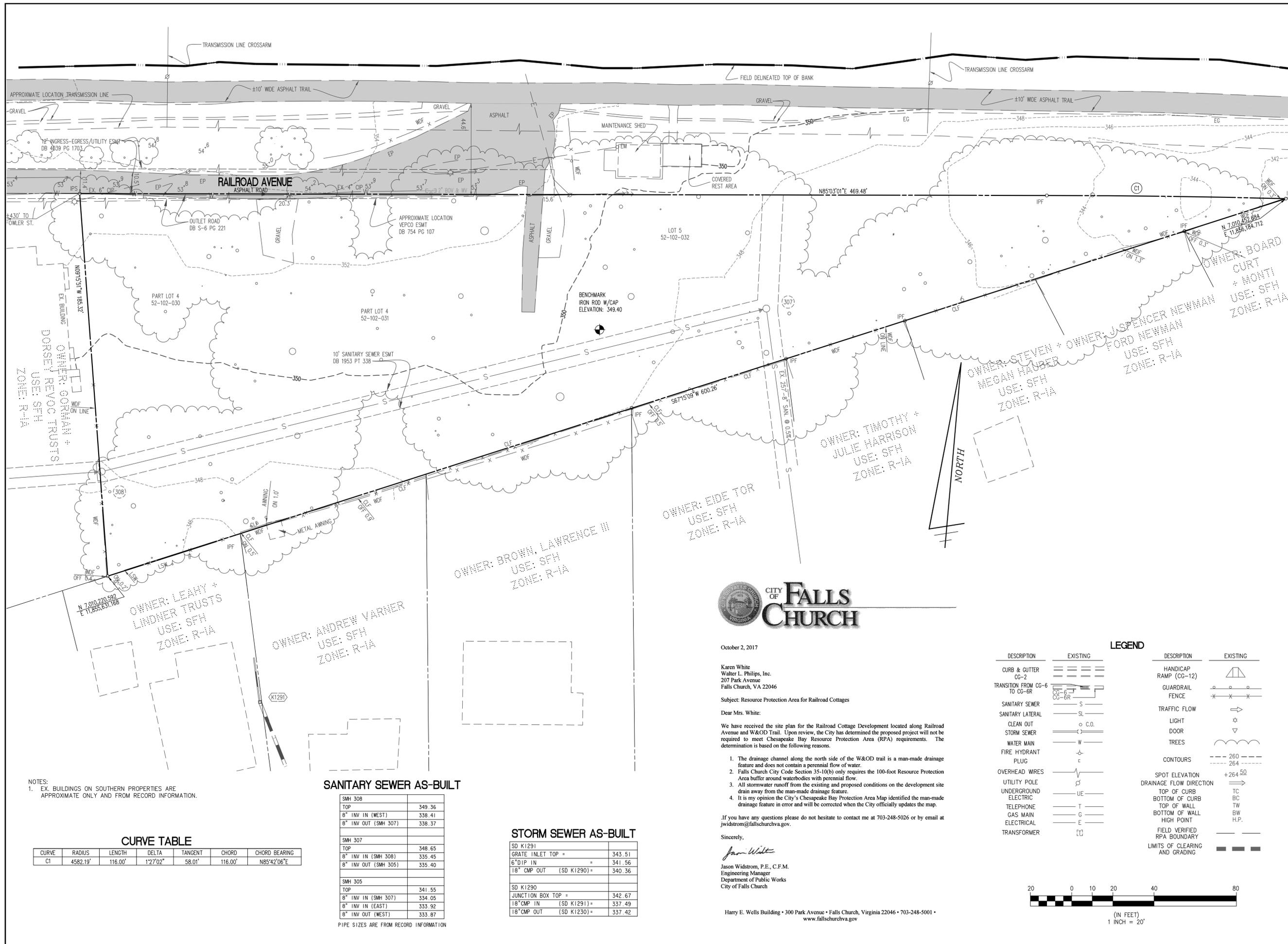
REVISION APPROVED BY

NO.	DESCRIPTION	DATE	BY	APPROVED	DATE

DETAILS

RAILROAD COTTAGES
CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0204



Engineers • Surveyors • Planners
 Landscape Architects • Arborists
WALTER L. PHILLIPS
 INCORPORATED ESTABLISHED 1945
 207 PARK AVENUE
 FALLS CHURCH, VIRGINIA 22046
 (703) 532-6163 Fax (703) 533-1301
 www.WLPHINC.com
 DATE: 9/12/2017, 10/20/2017, 11/8/2017
 SCALE: 1" = 20'
 DRAWN: AI
 CHECKED: KW

NO.	DESCRIPTION	REVISION APPROVED BY		DATE
		DATE	BY	

EXISTING CONDITIONS PLAN

RAILROAD COTTAGES

CITY OF FALLS CHURCH, VIRGINIA



October 2, 2017

Karen White
 Walter L. Phillips, Inc.
 207 Park Avenue
 Falls Church, VA 22046

Subject: Resource Protection Area for Railroad Cottages

Dear Mrs. White:

We have received the site plan for the Railroad Cottage Development located along Railroad Avenue and W&OD Trail. Upon review, the City has determined the proposed project will not be required to meet Chesapeake Bay Resource Protection Area (RPA) requirements. The determination is based on the following reasons.

- The drainage channel along the north side of the W&OD trail is a man-made drainage feature and does not contain a perennial flow of water.
- Falls Church City Code Section 35-10(b) only requires the 100-foot Resource Protection Area buffer around waterbodies with perennial flow.
- All stormwater runoff from the existing and proposed conditions on the development site drain away from the man-made drainage feature.
- It is my opinion the City's Chesapeake Bay Protection Area Map identified the man-made drainage feature in error and will be corrected when the City officially updates the map.

If you have any questions please do not hesitate to contact me at 703-248-5026 or by email at jwidstrom@fallschurchva.gov.

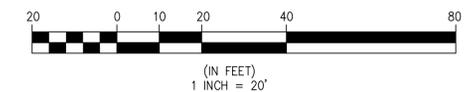
Sincerely,

Jan Walt

Jason Widstrom, P.E., C.F.M.
 Engineering Manager
 Department of Public Works
 City of Falls Church

Harry E. Wells Building • 300 Park Avenue • Falls Church, Virginia 22046 • 703-248-5001 • www.fallschurchva.gov

DESCRIPTION	EXISTING	DESCRIPTION	EXISTING
CURB & GUTTER CG-2		HANDICAP RAMP (CG-12)	
TRANSITION FROM CG-6 TO CG-6R		GUARDRAIL FENCE	
SANITARY SEWER		TRAFFIC FLOW	
SANITARY LATERAL		LIGHT	
CLEAN OUT		DOOR	
STORM SEWER		TREES	
WATER MAIN		CONTOURS	
FIRE HYDRANT PLUG		SPOT ELEVATION	
OVERHEAD WIRES		DRAINAGE FLOW DIRECTION	
UTILITY POLE		TOP OF CURB	TC
UNDERGROUND ELECTRIC		BOTTOM OF CURB	BC
TELEPHONE		TOP OF WALL	TW
GAS MAIN		BOTTOM OF WALL	BW
ELECTRICAL		HIGH POINT	H.P.
TRANSFORMER		FIELD VERIFIED RPA BOUNDARY	
		LIMITS OF CLEARING AND GRADING	



NOTES:
 1. EX. BUILDINGS ON SOUTHERN PROPERTIES ARE APPROXIMATE ONLY AND FROM RECORD INFORMATION.

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
C1	4582.19'	116.00'	1'27"02"	58.01'	116.00'	N85°42'06"E

SANITARY SEWER AS-BUILT

SMH 308		
TOP		349.36
8" INV IN (WEST)		338.41
8" INV OUT (SMH 307)		338.37

SMH 307		
TOP		348.65
8" INV IN (SMH 308)		335.45
8" INV OUT (SMH 305)		335.40

SMH 305		
TOP		341.55
8" INV IN (SMH 307)		334.05
8" INV IN (EAST)		333.92
8" INV OUT (WEST)		333.87

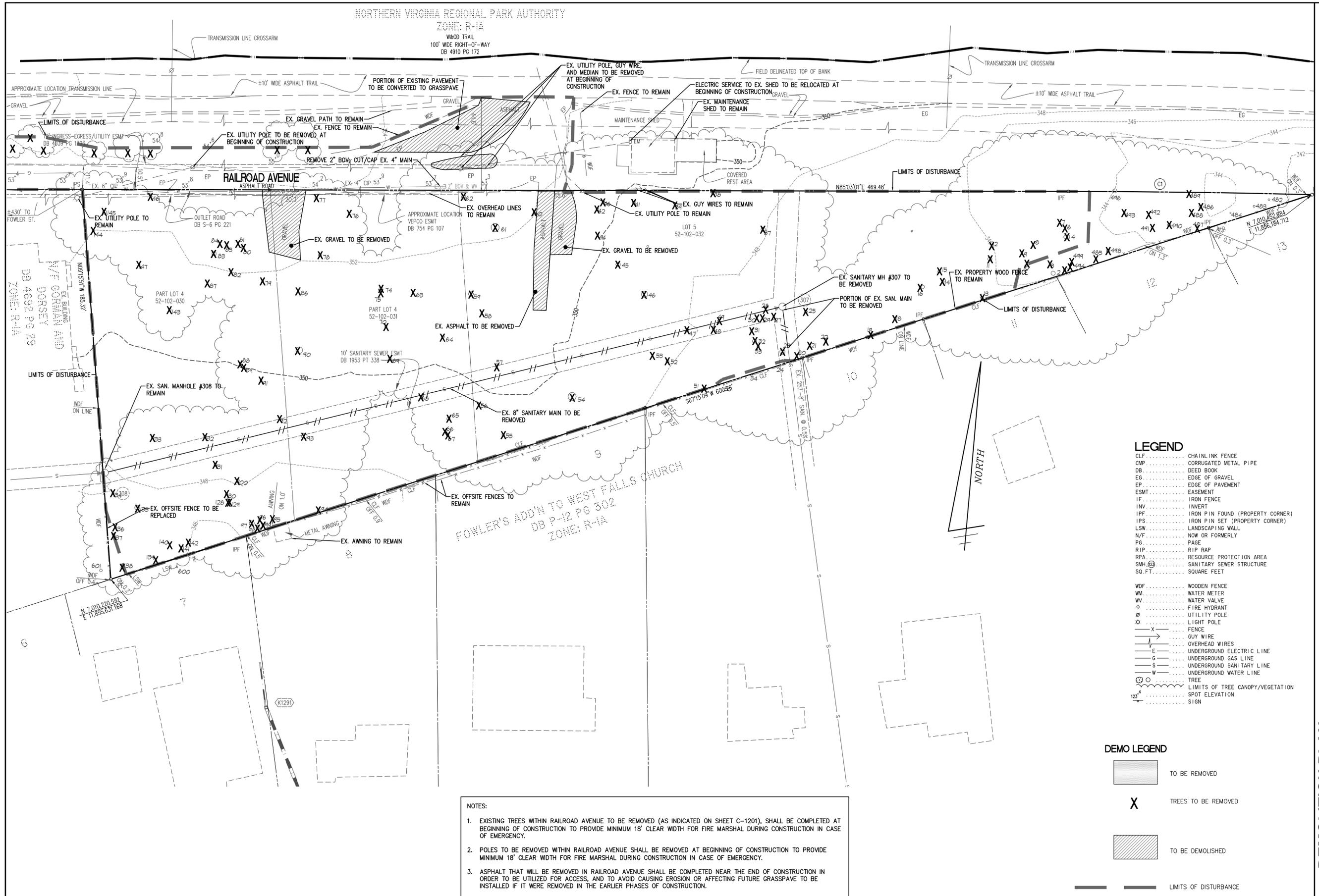
PIPE SIZES ARE FROM RECORD INFORMATION

STORM SEWER AS-BUILT

SD K1291		
GRATE INLET TOP =		343.51
6"DIP IN		341.56
18" CMP OUT (SD K1290) =		340.36

SD K1290		
JUNCTION BOX TOP =		342.67
18" CMP IN (SD K1291) =		337.49
18" CMP OUT (SD K1230) =		337.42

Xref:



NOTES:

- EXISTING TREES WITHIN RAILROAD AVENUE TO BE REMOVED (AS INDICATED ON SHEET C-1201), SHALL BE COMPLETED AT BEGINNING OF CONSTRUCTION TO PROVIDE MINIMUM 18' CLEAR WIDTH FOR FIRE MARSHAL DURING CONSTRUCTION IN CASE OF EMERGENCY.
- POLES TO BE REMOVED WITHIN RAILROAD AVENUE SHALL BE REMOVED AT BEGINNING OF CONSTRUCTION TO PROVIDE MINIMUM 18' CLEAR WIDTH FOR FIRE MARSHAL DURING CONSTRUCTION IN CASE OF EMERGENCY.
- ASPHALT THAT WILL BE REMOVED IN RAILROAD AVENUE SHALL BE COMPLETED NEAR THE END OF CONSTRUCTION IN ORDER TO BE UTILIZED FOR ACCESS, AND TO AVOID CAUSING EROSION OR AFFECTING FUTURE GRASSPAVE TO BE INSTALLED IF IT WERE REMOVED IN THE EARLIER PHASES OF CONSTRUCTION.

- LEGEND**
- CLF..... CHAINLINK FENCE
 - CMP..... CORRUGATED METAL PIPE
 - DB..... DEED BOOK
 - EG..... EDGE OF GRAVEL
 - EP..... EDGE OF PAVEMENT
 - ESMT..... EASEMENT
 - IF..... IRON FENCE
 - INV..... INVERT
 - IPF..... IRON PIN FOUND (PROPERTY CORNER)
 - IPS..... IRON PIN SET (PROPERTY CORNER)
 - LSW..... LANDSCAPING WALL
 - N/F..... NOW OR FORMERLY
 - PG..... PAGE
 - RIP..... RIP RAP
 - RPA..... RESOURCE PROTECTION AREA
 - SMH..... SANITARY SEWER STRUCTURE
 - SQ.FT..... SQUARE FEET
 - WDF..... WOODEN FENCE
 - WM..... WATER METER
 - WV..... WATER VALVE
 - ⊕..... FIRE HYDRANT
 - ⊕..... UTILITY POLE
 - ⊕..... LIGHT POLE
 - X..... TREE
 - GUY WIRE
 - OVERHEAD WIRES
 - E..... UNDERGROUND ELECTRIC LINE
 - G..... UNDERGROUND GAS LINE
 - S..... UNDERGROUND SANITARY LINE
 - W..... UNDERGROUND WATER LINE
 - TREE
 - LIMITS OF TREE CANOPY/VEGETATION
 - 12'..... SPOT ELEVATION
 - SIGN
- DEMO LEGEND**
- [Hatched Box]..... TO BE DEMOLISHED
 - X..... TREES TO BE REMOVED
 - [Solid Line]..... LIMITS OF DISTURBANCE

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WALTER L. PHILLIPS

INCORPORATED ESTABLISHED 1945

DATE: 09/12/2017, 10:00/2017, 11/18/2017

SCALE: 1" = 20'

CHECKED: KY

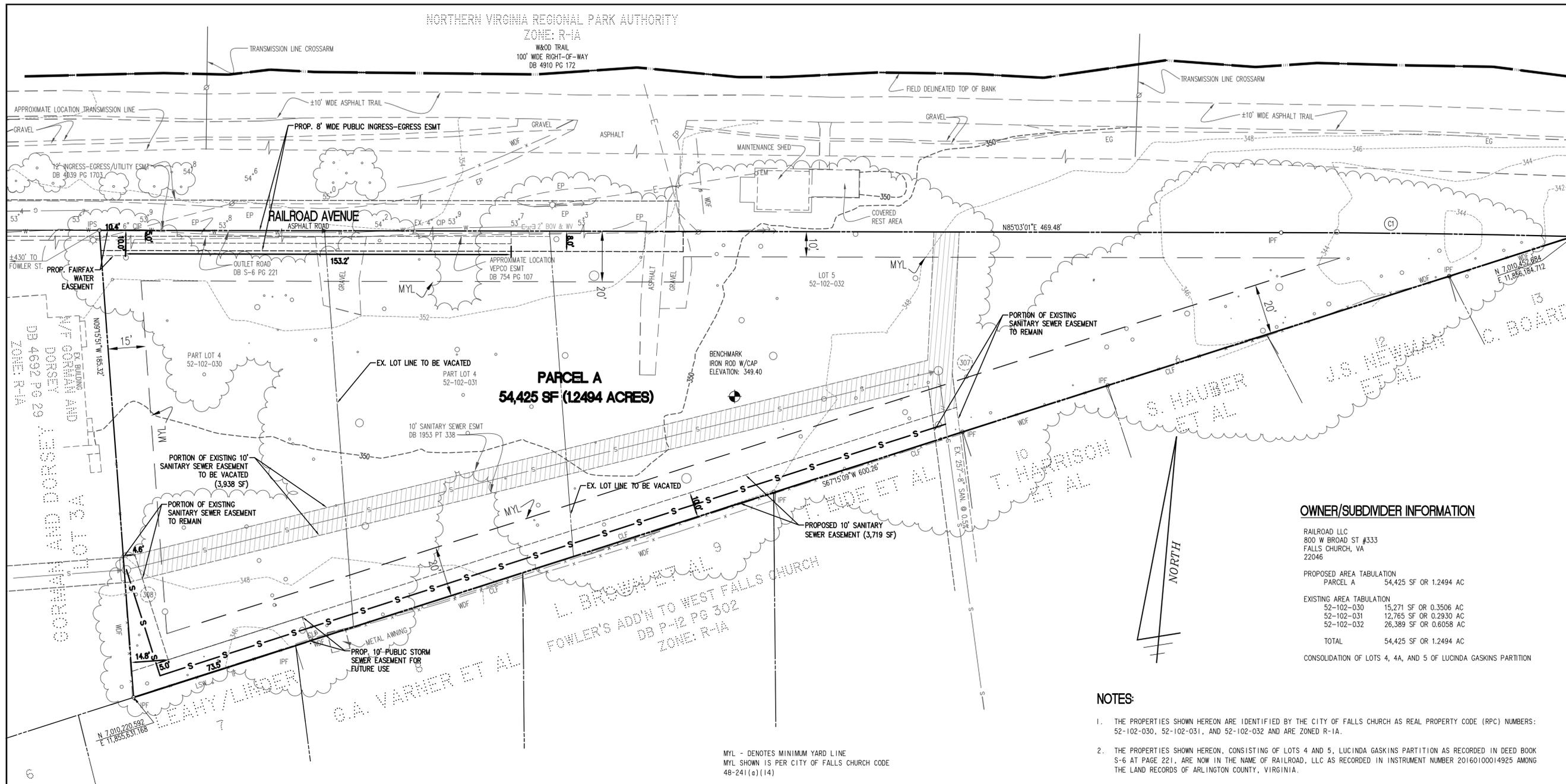
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NO.	DESCRIPTION	DATE	REV.	APPROVED BY	DATE

DEMOLITION PLAN

RAILROAD COTTAGES

CITY OF FALLS CHURCH, VIRGINIA



PARCEL A
54,425 SF (1.2494 ACRES)

OWNER/SUBDIVIDER INFORMATION

RAILROAD LLC
800 W BROAD ST #333
FALLS CHURCH, VA
22046

PROPOSED AREA TABULATION
PARCEL A 54,425 SF OR 1.2494 AC

EXISTING AREA TABULATION
52-102-030 15,271 SF OR 0.3506 AC
52-102-031 12,765 SF OR 0.2930 AC
52-102-032 26,389 SF OR 0.6058 AC

TOTAL 54,425 SF OR 1.2494 AC

CONSOLIDATION OF LOTS 4, 4A, AND 5 OF LUCINDA GASKINS PARTITION

NOTES:

- THE PROPERTIES SHOWN HEREON ARE IDENTIFIED BY THE CITY OF FALLS CHURCH AS REAL PROPERTY CODE (RPC) NUMBERS: 52-102-030, 52-102-031, AND 52-102-032 AND ARE ZONED R-1A.
- THE PROPERTIES SHOWN HEREON, CONSISTING OF LOTS 4 AND 5, LUCINDA GASKINS PARTITION AS RECORDED IN DEED BOOK S-6 AT PAGE 221, ARE NOW IN THE NAME OF RAILROAD, LLC AS RECORDED IN INSTRUMENT NUMBER 20160100014925 AMONG THE LAND RECORDS OF ARLINGTON COUNTY, VIRGINIA.
- THIS PLAT AND THE SURVEY UPON WHICH IT IS BASED SHOWS ONLY THOSE IMPROVEMENTS THAT ARE OBSERVABLE AND CAN BE LOCATED USING NORMAL SURVEY METHODS. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION, MISS UTILITY MARKINGS AND EXISTING RECORDS. THERE ARE NO GUARANTEES, EITHER EXPRESS OR IMPLIED, THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED, OR THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THE UNDERGROUND UTILITIES HAVE NOT BEEN PHYSICALLY LOCATED.
- TOTAL AREA OF THE PROPERTY IS 54,425 SQUARE FEET OR 1.2494 ACRES.
- THIS PLAT IS BASED ON A FIELD SURVEY BY THIS FIRM PERFORMED ON 8/25/2016.
- THE FEDERAL EMERGENCY MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAPS FOR THE CITY OF FALLS CHURCH, VIRGINIA, MAP NUMBER 5100540001C, REVISED JULY 16, 2004, DESIGNATES THE PROPERTY AS BEING IN ZONE X, "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN."
- EASEMENTS, CONDITIONS, COVENANTS AND RESTRICTIONS, SHOWN AND/OR NOTED ARE PER THE TITLE REPORT ISSUED BY EKKO TITLE, FILE M-1605002, DATED BY DAVIS TITLE SERVICES JUNE 2, 2016.
- THE SITE SHOWN HEREON IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 AS COMPUTED FROM A FIELD RUN VERTICAL CONTROL SURVEY AND IS REFERENCED TO THE VIRGINIA COORDINATE SYSTEM OF 1983, [NAD 83(2011) (EPOCH:2010.0000)] AS COMPUTED FROM A FIELD RUN BOUNDARY AND HORIZONTAL CONTROL SURVEY THAT TIES THIS SUBDIVISION BOUNDARY AND THE BENCHMARK(S) SHOWN TO NOAA/NGS MONUMENT PID NUMBER DH7960 LOYB; LOYOLA B COOP CORS ARP. THE COMBINED FACTOR APPLIED TO THE FIELD DISTANCES TO DERIVE THE REFERENCED COORDINATES IS 0.99994791. THE FOOT DEFINITION USED FOR CONVERSION OF THE MONUMENT COORDINATES AND IN THE PERFORMANCE OF THIS SURVEY IS THE U.S. SURVEY FOOT. CONTOUR INTERVAL IS TWO FEET.
- THIS SURVEY WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF, JAMES A. MADISON, JR., L.S., FROM AN ACTUAL (X) GROUND OR () AIRBORNE SURVEY MADE UNDER MY SUPERVISION; THAT THE IMAGERY AND/OR ORIGINAL DATA WAS OBTAINED ON AUGUST 25, 2016; AND THAT THIS PLAT, MAP, OR DIGITAL GEOSPATIAL DATA INCLUDING METADATA MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED.
- THIS SURVEY WAS PERFORMED AT THE REQUEST OF THE YOUNG GROUP (BOB YOUNG).
- THE PROPERTY IS SUBJECT TO AN AGREEMENT WITH VEPCO RECORDED IN DEED BOOK 1181 AT PAGE 329.
- THERE ARE NO BUILDINGS ON THIS SITE. THERE WERE NO ADDRESSES POSTED. CITY OF FALLS CHURCH RECORDS SHOW LOT 5 AS HAVING AN ADDRESS OF 1006 RAILROAD AVENUE.

MYL - DENOTES MINIMUM YARD LINE
MYL SHOWN IS PER CITY OF FALLS CHURCH CODE
48-241(a)(14)

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
C1	4582.19'	116.00'	127.02°	58.01'	116.00'	N85°42'06"E

STORM SEWER AS-BUILT

SD K1291	
GRATE INLET TOP =	343.51
6" DIP IN =	341.56
18" CMP OUT (SD K1290) =	340.36
SD K1290	
JUNCTION BOX TOP =	342.67
18" CMP IN (SD K1291) =	337.49
18" CMP OUT (SD K1230) =	337.42

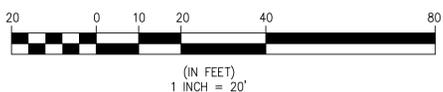
SANITARY SEWER AS-BUILT

SMH 308	
TOP	349.36
8" INV IN (WEST)	338.41
8" INV OUT (SMH 307)	338.37
SMH 307	
TOP	348.65
8" INV IN (SMH 308)	335.45
8" INV OUT (SMH 305)	335.40
SMH 305	
TOP	341.55
8" INV IN (SMH 307)	334.05
8" INV IN (EAST)	333.92
8" INV OUT (WEST)	333.87

PIPE SIZES ARE FROM RECORD INFORMATION

LEGEND

- CLF..... CHAINLINK FENCE
- DB..... DEED BOOK
- EG..... EDGE OF GRAVEL
- EP..... EDGE OF PAVEMENT
- ESMT..... EASEMENT
- IF..... IRON FENCE
- IPF..... IRON PIN FOUND (PROPERTY CORNER)
- IPS..... IRON PIN SET (PROPERTY CORNER)
- LSW..... LANDSCAPING WALL
- N/F..... NOW OR FORMERLY
- PG..... PAGE
- RPA..... RESOURCE PROTECTION AREA
- SMH..... SANITARY SEWER STRUCTURE
- SQ FT..... SQUARE FEET
- SSRPA..... SITE SPECIFIC RESOURCE PROTECTION AREA
- WDF..... WOODEN FENCE
- WM..... WATER METER
- WV..... WATER VALVE
- ∅..... FIRE HYDRANT
- ∅..... UTILITY POLE
- ∅..... LIGHT POLE
- X..... FENCE
- GUY WIRE
- OVERHEAD WIRES
- E..... UNDERGROUND ELECTRIC LINE
- G..... UNDERGROUND GAS LINE
- S..... UNDERGROUND SANITARY LINE
- W..... UNDERGROUND WATER LINE
- TREE
- LIMITS OF TREE CANOPY/VEGETATION
- SPOT ELEVATION
- SIGN



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CHECKED: KY
DRAWN: AI



REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

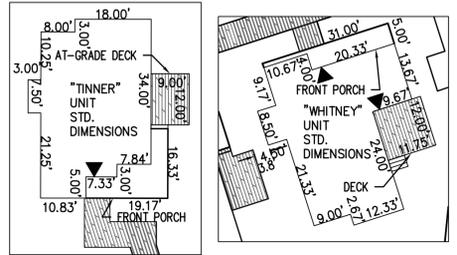
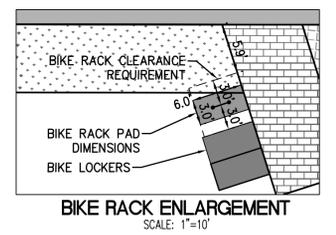
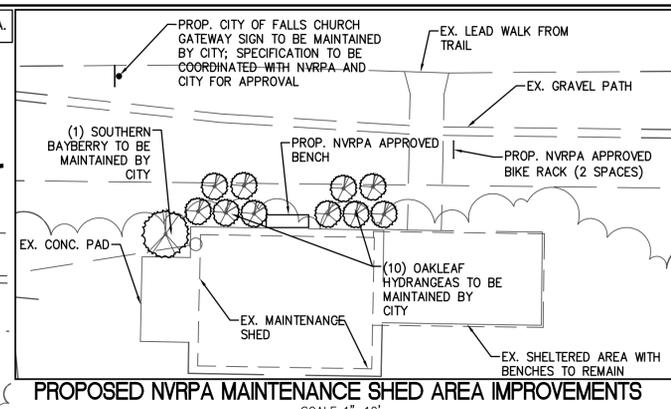
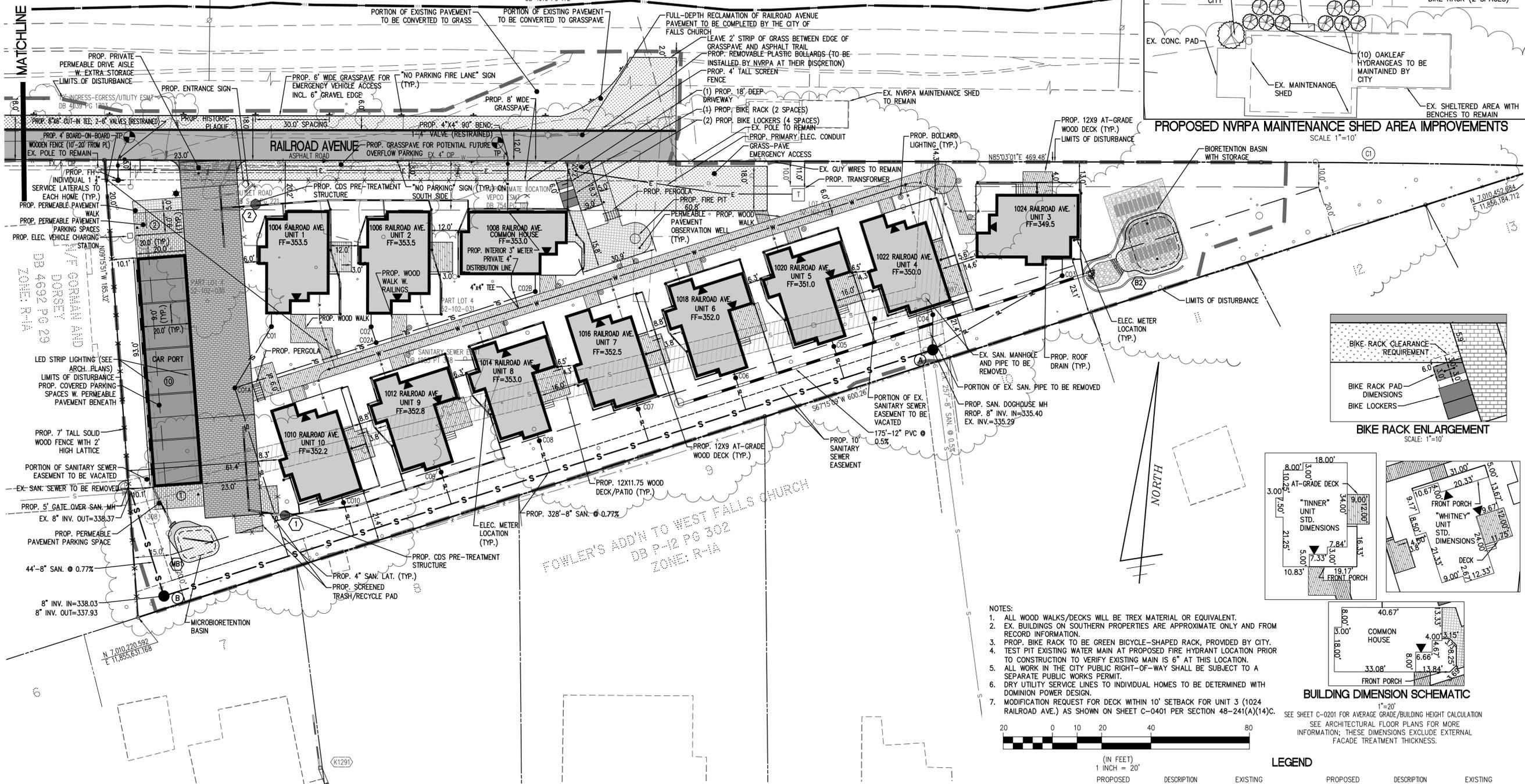
PRELIMINARY SUBDIVISION PLAT

RAILROAD COTTAGES
CITY OF FALLS CHURCH, VIRGINIA

NOTE: THESE IMPROVEMENTS ARE SUBJECT TO APPROVAL BY NVRPA.

NORTHERN VIRGINIA REGIONAL PARK AUTHORITY
 ZONE: R-1A
 W&OD TRAIL
 100' WIDE RIGHT-OF-WAY
 DB 4910 PG 172

MATCHLINE

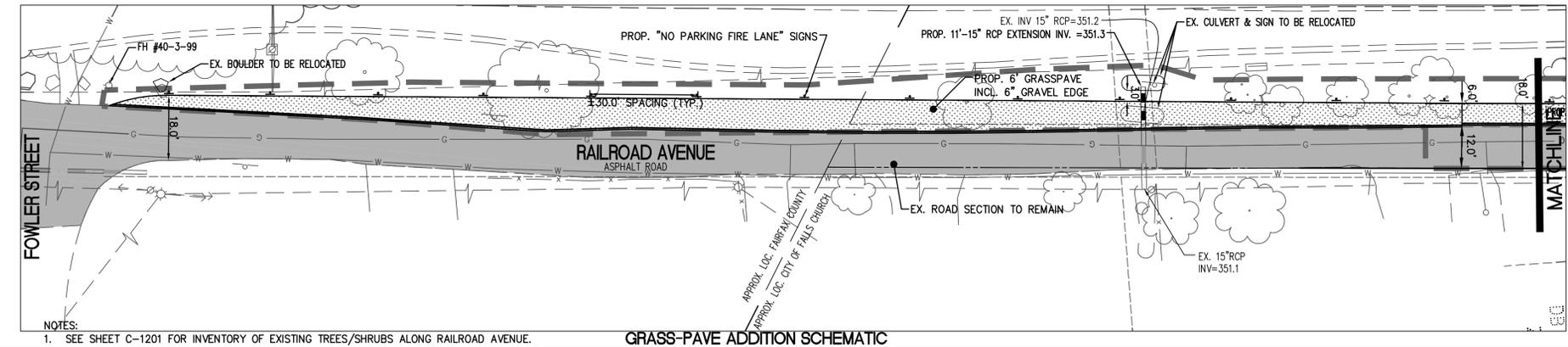


- NOTES:
1. ALL WOOD WALKS/DECKS WILL BE TREX MATERIAL OR EQUIVALENT.
 2. EX. BUILDINGS ON SOUTHERN PROPERTIES ARE APPROXIMATE ONLY AND FROM RECORD INFORMATION.
 3. PROP. BIKE RACK TO BE GREEN BICYCLE-SHAPED RACK, PROVIDED BY CITY.
 4. TEST PIT EXISTING WATER MAIN AT PROPOSED FIRE HYDRANT LOCATION PRIOR TO CONSTRUCTION TO VERIFY EXISTING MAIN IS 6" AT THIS LOCATION.
 5. ALL WORK IN THE CITY PUBLIC RIGHT-OF-WAY SHALL BE SUBJECT TO A SEPARATE PUBLIC WORKS PERMIT.
 6. DRY UTILITY SERVICE LINES TO INDIVIDUAL HOMES TO BE DETERMINED WITH DOMINION POWER DESIGN.
 7. MODIFICATION REQUEST FOR DECK WITHIN 10' SETBACK FOR UNIT 3 (1024 RAILROAD AVE.) AS SHOWN ON SHEET C-0401 PER SECTION 48-241(A)(14)(C).



LEGEND

PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION	EXISTING
EP	EDGE OF PAVEMENT	EP	—	OVERHEAD WIRES	—
MH	MANHOLE	MH	—	UTILITY POLE	—
WV	WATER VALVE	WV	—	UNDERGROUND ELECTRIC	—
WM	WATER METER	WM	—	UNDERGROUND ELECTRIC	—
GM	GAS METER	GM	—	TELEPHONE	—
TCB	TRAFFIC CONTROL BOX	TCB	—	GAS MAIN	—
LP	LIGHT POLE	LP	—	ELECTRICAL	—
LP/S	LIGHT POLE WITH SIGNALS	LP/S	—	TRANSFORMER	—
CG-1	CURB & GUTTER	CG-1	—	HANDICAP RAMP (CG-12)	—
CG-2	TRANSITION FROM CG-6 TO CG-6R	CG-2	—	GUARDRAIL FENCE	—
CG-6R	SANITARY SEWER	CG-6R	—	TRAFFIC FLOW	—
SL	SANITARY LATERAL	SL	—	POLE LIGHT	—
C.O.	CLEAN OUT	C.O.	—	DOOR	—
—	STORM SEWER	—	—	TREES	—
—	WATER MAIN	—	—	LIMITS OF CLEARING AND GRADING	—
—	FIRE HYDRANT	—	—	TEST PIT	—
—	PLUG	—	—	BOLLARD LIGHTING	—



NOTES:
 1. SEE SHEET C-1201 FOR INVENTORY OF EXISTING TREES/SHRUBS ALONG RAILROAD AVENUE.

GRASS-PAVE ADDITION SCHEMATIC

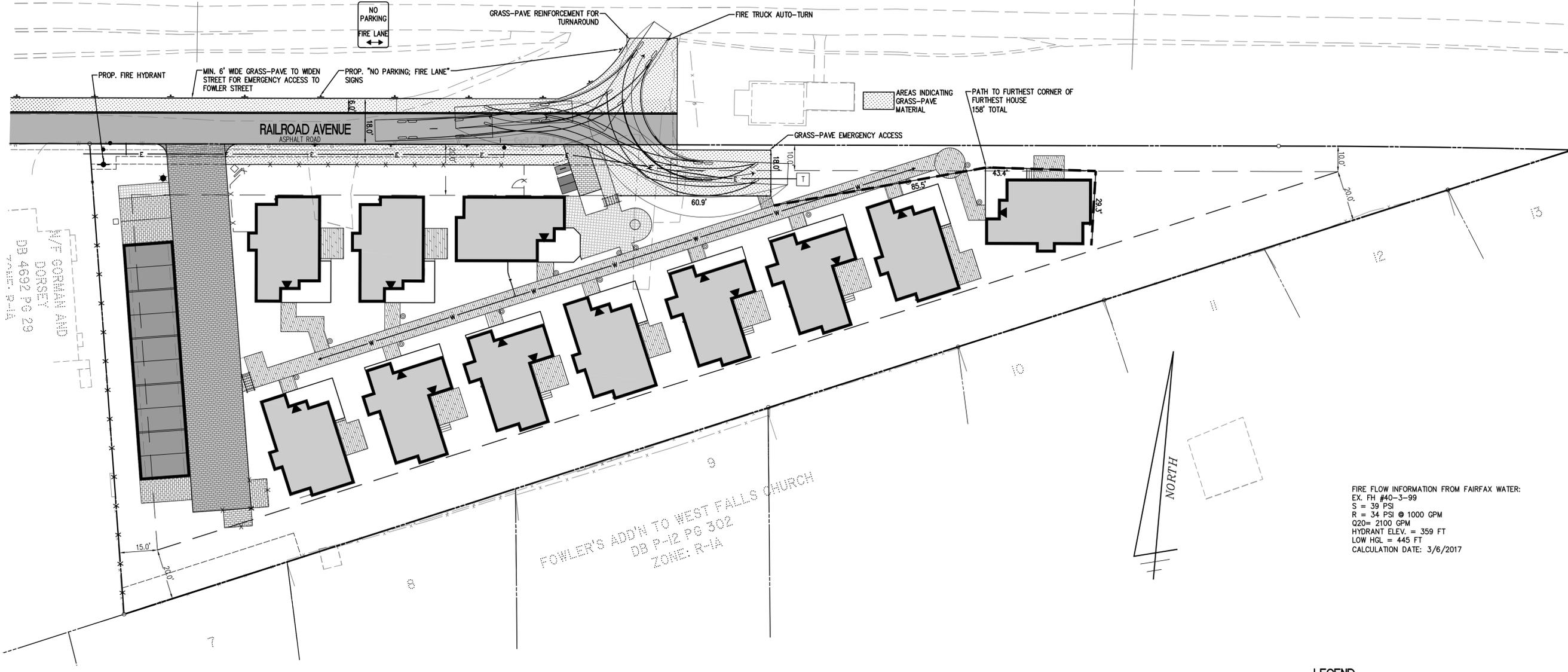
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 CHECKED: KY

REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV.	BY	APPROVED	DATE

LAYOUT PLAN
RAILROAD COTTAGES
 CITY OF FALLS CHURCH, VIRGINIA
 SHEET: C-0401

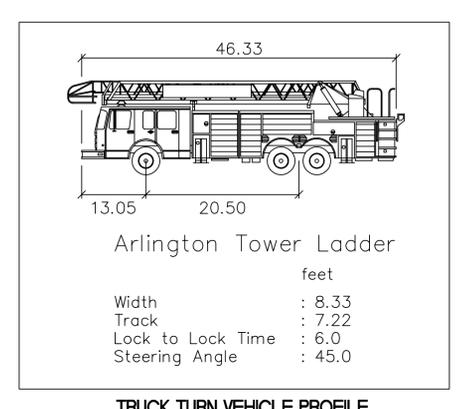
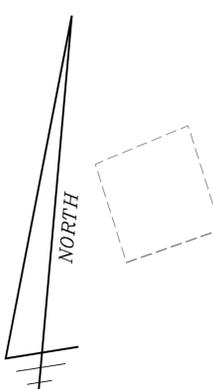
NORTHERN VIRGINIA REGIONAL PARK AUTHORITY
 ZONE: R-1A
 W&OD TRAIL
 100' WIDE RIGHT-OF-WAY
 DB 4910 PG 172



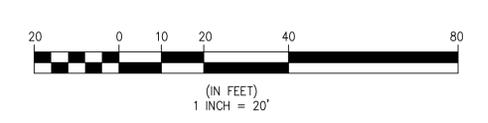
W/F CORMAN AND
 DORSEY
 DB 4692 PG 29
 ZONE: R-1A

FWLER'S ADD'N TO WEST FALLS CHURCH
 DB P-12 PG 302
 ZONE: R-1A

FIRE FLOW INFORMATION FROM FAIRFAX WATER:
 EX. FH #40-3-99
 S = 39 PSI
 R = 34 PSI @ 1000 GPM
 Q20= 2100 GPM
 HYDRANT ELEV. = 359 FT
 LOW HGL = 445 FT
 CALCULATION DATE: 3/6/2017



PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION	EXISTING
EP	EDGE OF PAVEMENT	EP	—	OVERHEAD WIRES	—
MH	MANHOLE	MH	—	UTILITY POLE	—
WV	WATER VALVE	WV	—	UNDERGROUND ELECTRIC	—
WM	WATER METER	WM	—	TELEPHONE	—
GM	GAS METER	GM	—	GAS MAIN	—
TCB	TRAFFIC CONTROL BOX	TCB	—	ELECTRICAL	—
LP	LIGHT POLE	LP	—	TRANSFORMER	—
LP/S	LIGHT POLE WITH SIGNALS	LP/S	—	HANDICAP RAMP (CG-12)	—
CG-2	CURB & GUTTER	CG-2	—	GUARDRAIL	—
CG-6	TRANSITION FROM CG-6 TO CG-6R	CG-6	—	FENCE	—
CG-6R	SANITARY SEWER	S	—	TRAFFIC FLOW	—
SL	SANITARY LATERAL	SL	—	LIGHT	—
C.O.	CLEAN OUT	C.O.	—	DOOR	—
SS	STORM SEWER	SS	—	TREES	—
W	WATER MAIN	W	—	LIMITS OF CLEARING AND GRADING	—
FH	FIRE HYDRANT	FH	—	TEST PIT	—
P	PLUG	P	—		



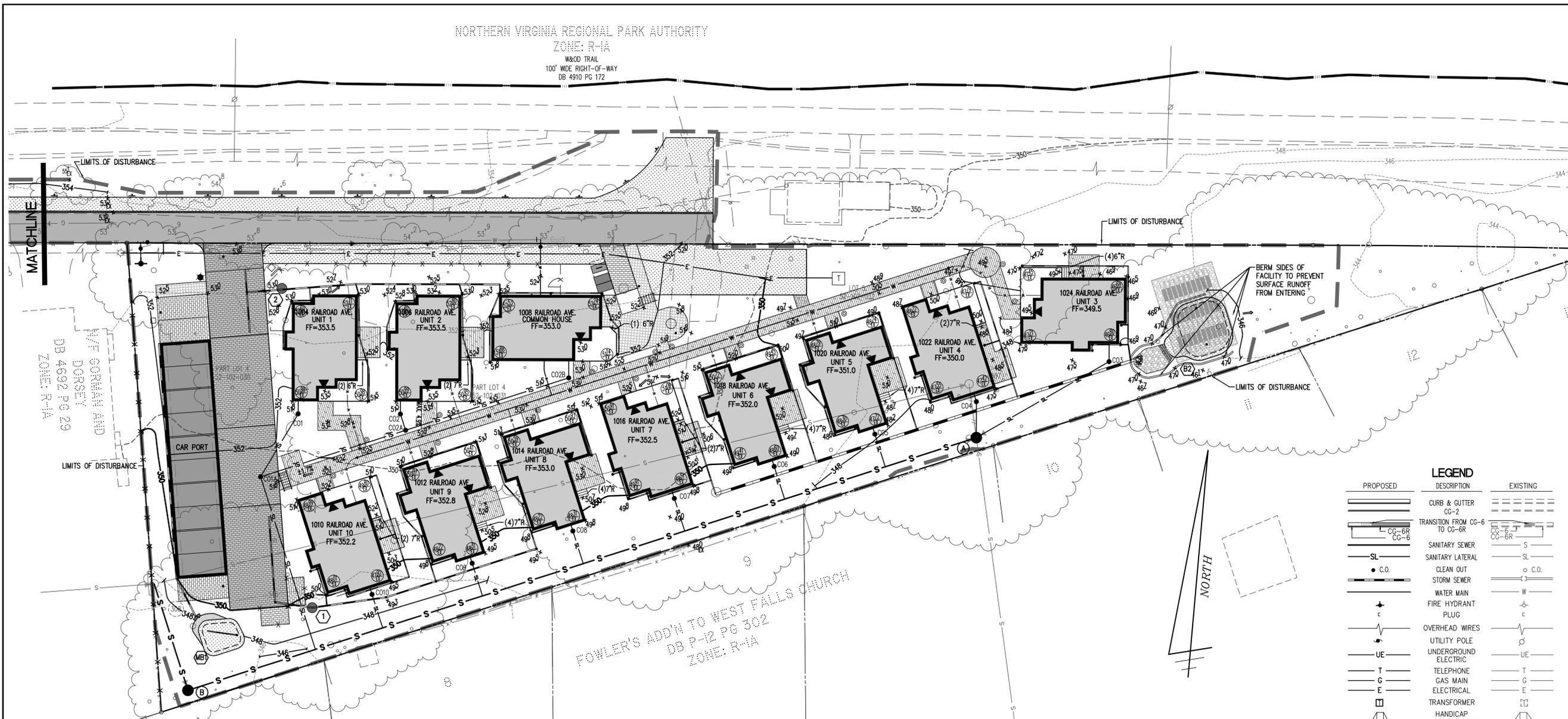
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FIRE MARSHAL, SIGNAGE & MARKING PLAN

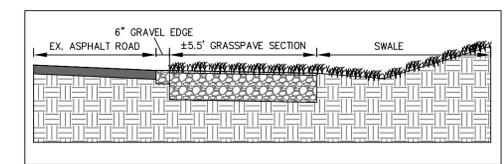
RAILROAD COTTAGES
 CITY OF FALLS CHURCH, VIRGINIA



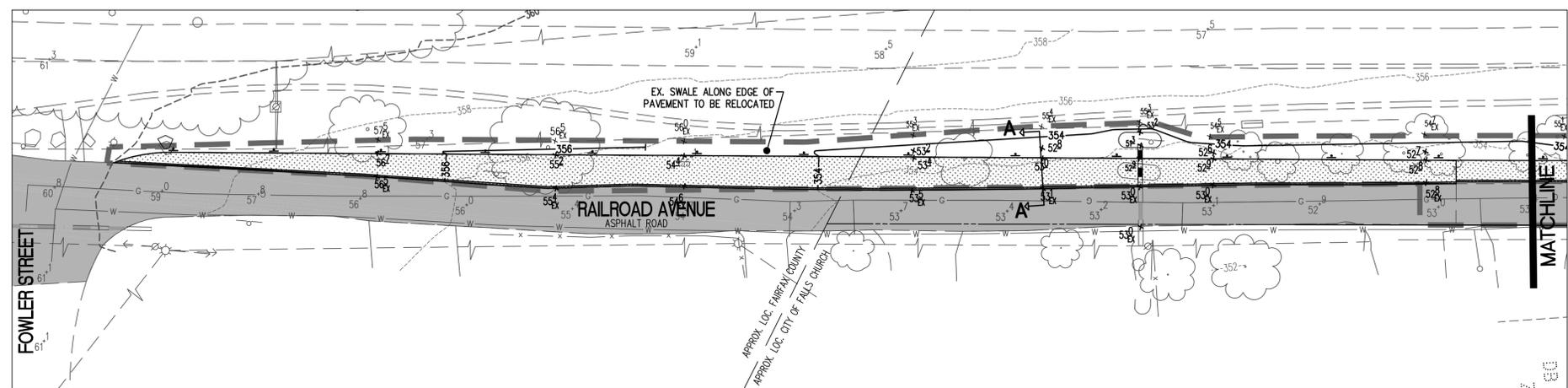
- NOTES:
 1. SEE SHEET C-0201 FOR BUILDING HEIGHT CALCULATIONS.
 2. SEE SHEET C-0706 FOR BIORETENTION DETAILED GRADING.
 3. SPOT ELEVATIONS SHOWN ALONG WALKS ARE BOARDWALK ELEVATION, ELEVATED ABOVE GROUND ELEVATION.

FOWLER'S ADDN TO WEST FALLS CHURCH
 DB P-12 PG 302
 ZONE: R-1A

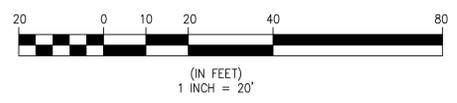
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[Symbol]	SANITARY SEWER	[Symbol]
[Symbol]	SANITARY LATERAL	[Symbol]
[Symbol]	CLEAN OUT	[Symbol]
[Symbol]	STORM SEWER	[Symbol]
[Symbol]	WATER MAIN	[Symbol]
[Symbol]	FIRE HYDRANT PLUG	[Symbol]
[Symbol]	OVERHEAD WIRES	[Symbol]
[Symbol]	UTILITY POLE	[Symbol]
[Symbol]	UNDERGROUND ELECTRIC	[Symbol]
[Symbol]	TELEPHONE	[Symbol]
[Symbol]	GAS MAIN	[Symbol]
[Symbol]	ELECTRICAL	[Symbol]
[Symbol]	TRANSFORMER	[Symbol]
[Symbol]	HANDICAP RAMP (CG-12)	[Symbol]
[Symbol]	GUARDRAIL	[Symbol]
[Symbol]	FENCE	[Symbol]
[Symbol]	TRAFFIC FLOW	[Symbol]
[Symbol]	LIGHT	[Symbol]
[Symbol]	DOOR	[Symbol]
[Symbol]	TREES	[Symbol]
[Symbol]	CONTOURS	[Symbol]
[Symbol]	SPOT ELEVATION	[Symbol]
[Symbol]	DRAINAGE FLOW DIRECTION	[Symbol]
[Symbol]	TOP OF CURB	[Symbol]
[Symbol]	BOTTOM OF CURB	[Symbol]
[Symbol]	TOP OF WALL	[Symbol]
[Symbol]	BOTTOM OF WALL	[Symbol]
[Symbol]	HIGH POINT	[Symbol]
[Symbol]	LIMITS OF CLEARING AND GRADING	[Symbol]



SECTION A-A
 NOT-TO-SCALE



GRASS-PAVE ADDITION GRADING SCHEMATIC



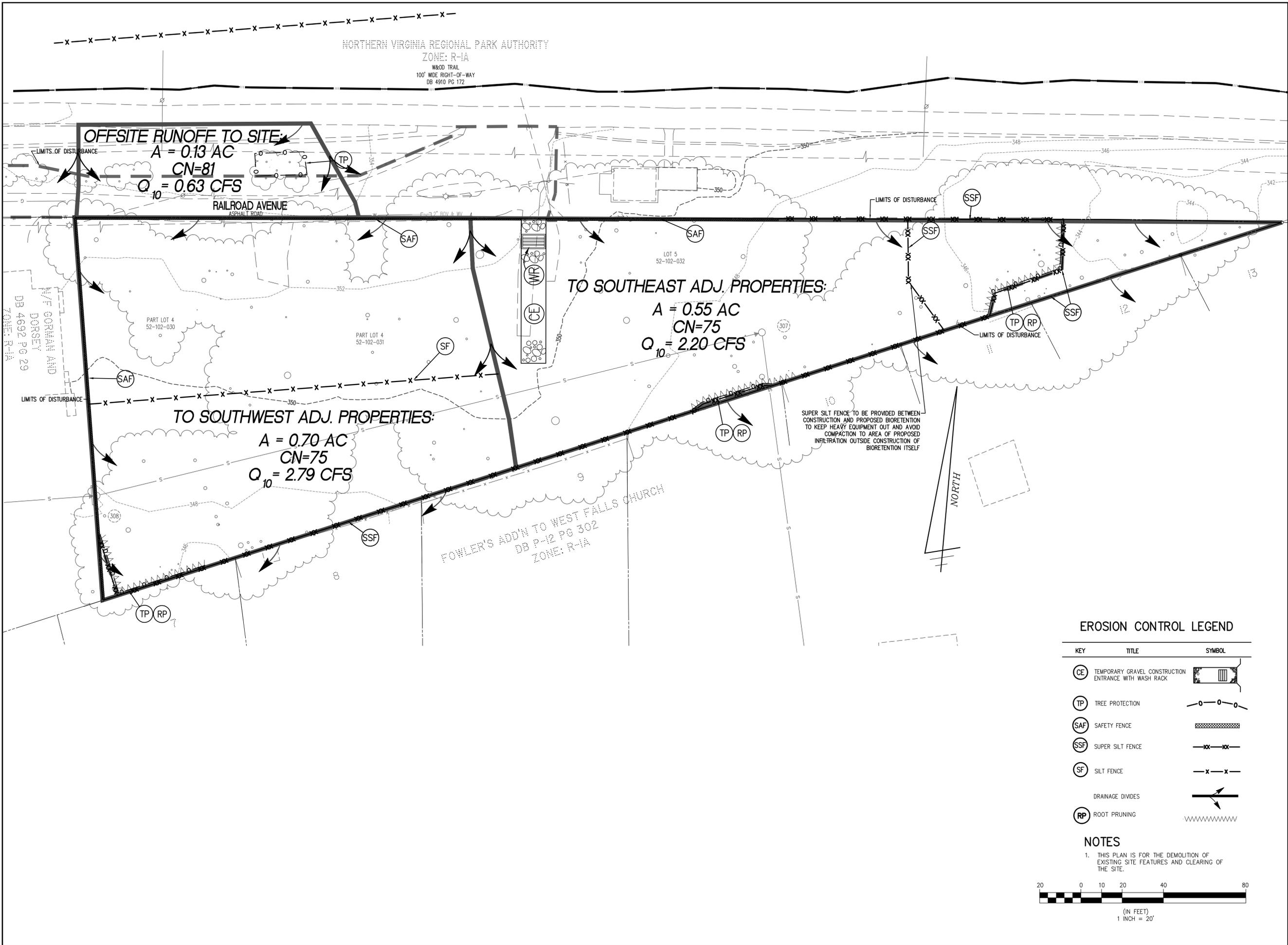
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GRADING PLAN
RAILROAD COTTAGES
 CITY OF FALLS CHURCH, VIRGINIA



NORTHERN VIRGINIA REGIONAL PARK AUTHORITY
 ZONE: R-1A
 W&D TRAIL
 100' WIDE RIGHT-OF-WAY
 DB 4910 PG 172

OFFSITE RUNOFF TO SITE:
 $A = 0.13 \text{ AC}$
 $CN = 81$
 $Q_{10} = 0.63 \text{ CFS}$

TO SOUTHEAST ADJ. PROPERTIES:
 $A = 0.55 \text{ AC}$
 $CN = 75$
 $Q_{10} = 2.20 \text{ CFS}$

TO SOUTHWEST ADJ. PROPERTIES:
 $A = 0.70 \text{ AC}$
 $CN = 75$
 $Q_{10} = 2.79 \text{ CFS}$

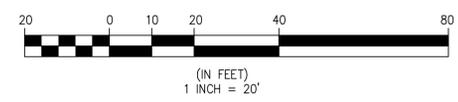
SUPER SILT FENCE TO BE PROVIDED BETWEEN CONSTRUCTION AND PROPOSED BIORETENTION TO KEEP HEAVY EQUIPMENT OUT AND AVOID COMPACTION TO AREA OF PROPOSED INFILTRATION OUTSIDE CONSTRUCTION OF BIORETENTION ITSELF

EROSION CONTROL LEGEND

KEY	TITLE	SYMBOL
CE	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE WITH WASH RACK	
TP	TREE PROTECTION	
SAF	SAFETY FENCE	
SSF	SUPER SILT FENCE	
SF	SILT FENCE	
	DRAINAGE DIVIDES	
RP	ROOT PRUNING	

NOTES

1. THIS PLAN IS FOR THE DEMOLITION OF EXISTING SITE FEATURES AND CLEARING OF THE SITE.



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		DATE	REV. BY	APPROVED	DATE

EROSION & SEDIMENT CONTROL PLAN - PHASE 1

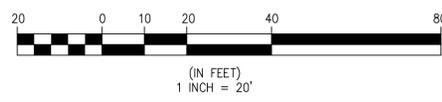
RAILROAD COTTAGES
 CITY OF FALLS CHURCH, VIRGINIA



SUPER SILT FENCE TO BE PROVIDED BETWEEN CONSTRUCTION AND PROPOSED BIORETENTION TO KEEP HEAVY EQUIPMENT OUT AND AVOID COMPACTION TO AREA OF PROPOSED INFILTRATION OUTSIDE CONSTRUCTION OF BIORETENTION ITSELF

EROSION CONTROL LEGEND

KEY	TITLE	SYMBOL
CE	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE WITH WASH RACK	
TP	TREE PROTECTION	
SAF	SAFETY FENCE	
SSF	SUPER SILT FENCE	
IP	INLET PROTECTION	
RP	ROOT PRUNING	



EROSION & SEDIMENT CONTROL PLAN - PHASE 2

RAILROAD COTTAGES
CITY OF FALLS CHURCH, VIRGINIA

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

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INCORPORATED
ESTABLISHED 1945
DATE: 01/22/2017, 10/20/2017, 11/02/2017
SCALE: 1" = 20'

Karen L. S. White
KAREN L. S. WHITE
Lic. No. 041850
11/8/17
PROJ. NO. 16081

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CHECKED: KW

EROSION CONTROL NARRATIVE

PROJECT DESCRIPTION:
THE PURPOSE OF THIS PROJECT IS TO CONSTRUCT (10) COTTAGE HOMES, A COMMON HOUSE, AND A JOINT CAR PORT WITH PRIVATE DRIVE. CONSTRUCTION WILL ENTAIL APPROXIMATELY 64,463 SF OF DISTURBED AREA. OFFSITE CONSTRUCTION WILL BE LIMITED TO ROAD IMPROVEMENTS IN RAILROAD AVENUE, INSTALLATION OF UTILITY CONNECTIONS AND A POTENTIAL NEW STORM SEWER PIPE CONNECTION THROUGH THE ADJACENT PROPERTY TO THE SOUTH IF AN EASEMENT CAN BE OBTAINED.

EXISTING SITE CONDITIONS:
THE EXISTING SITE IS CURRENTLY UNDEVELOPED WITH (2) DRIVEWAYS. THE GRADES ON AVERAGE ARE 4.0-4.5% ACROSS THE ENTIRE SITE.

ADJACENT PROPERTIES:
NORTH: RAILROAD AVENUE AND NVRPA PROPERTY
WEST: SINGLE-FAMILY HOME
SOUTH: SINGLE-FAMILY HOMES
EAST: SINGLE-FAMILY HOMES

SOILS:
SEE THIS SHEET FOR SOILS MAP AND SOILS INFORMATION.

CRITICAL EROSION AREAS:
NO PART OF THE SITE IS CONSIDERED A CRITICAL EROSION HAZARD, HOWEVER VIGILANT MONITORING OF THE EROSION & SEDIMENT CONTROLS, PARTICULARLY THE SUPER SILT FENCE IS IMPORTANT FOR MAINTAINING CONTROL OF SEDIMENT ONTO ADJACENT PROPERTIES TO THE SOUTH.

PHASING NARRATIVE:
THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES WILL BE ACCOMPLISHED IN TWO PHASES. PHASE 1 SHALL BE IN PLACE PRIOR TO CLEARING AND SHALL REMAIN IN PLACE THROUGHOUT THE CLEARING AND DEMOLITION PROCESS. THE GENERAL CONTRACTOR IS TO PROVIDE DUST CONTROL THROUGHOUT LAND DISTURBING ACTIVITIES IN ACCORDANCE WITH VESCH STANDARD 3.29. FOR ALL PHASES, HEAVY EQUIPMENT SHALL BE KEPT OUTSIDE AREAS OF PROPOSED BIORETENTION PRACTICES TO PRESERVE PREVIOUSLY TESTED INFILTRATION RATES AND AVOID COMPACTION.

PHASE 1:
AS THE FIRST ITEM OF CONSTRUCTION, THE CONTRACTOR IS TO PLACE THE SUPER SILT FENCE, SAFETY FENCE PERIMETER CONTROL AROUND THE SITE, AND TREE PROTECTION. REFER TO EROSION AND SEDIMENT CONTROL PLAN—PHASE 1 FOR LOCATION OF THESE MEASURES. THIS ACTIVITY IS TO BE FOLLOWED BY THE PLACEMENT OF THE CONSTRUCTION ENTRANCE AND TEMPORARY WATER SERVICE AS COORDINATED WITH FAIRFAX WATER. A SPRAY NOZZLE IS TO BE PROVIDED ADJACENT TO THE CONSTRUCTION ENTRANCE 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 CLEARING AND GRADING MAY PROCEED.

PHASE 2:
SAFETY FENCE TO BE PROVIDED AROUND THE SITE PERIMETER AS SHOWN ON THE PHASE 2 E&S PLAN. UTILITY IMPROVEMENTS WILL TAKE PLACE IN RAILROAD AVENUE. EROSION AND SEDIMENT CONTROLS ARE TO BE ADJUSTED AS REQUIRED BY THE SITE CONSTRUCTION OR AS DIRECTED BY THE INSPECTOR.

IN ORDER TO ENSURE THAT THE PERMEABLE PAVEMENT DOES NOT GET CLOGGED DURING CONSTRUCTION, THE PERMEABLE PAVERS SHALL BE INSTALLED LAST AND PROTECTED UNTIL THE END OF CONSTRUCTION.

PERMANENT STABILIZATION:
PERMANENT SOIL STABILIZATION SHALL BE IN ACCORDANCE TO VESCH SECTIONS 3.29 TO 3.36. ANY SOIL NOT TO BE BROUGHT TO FINAL GRADE FOR MORE THAN 30 DAYS IS TO BE SEEDED AND MULCHED. THIS IS TO INCLUDE ANY DENUDEED AREAS OR STOCKPILES. AND AREAS LEFT DORMANT OR NOT BROUGHT TO FINAL GRADE SHALL BE PERMANENTLY SEEDED AND MULCHED.

ALL STORM AND SANITARY LINES NOT IN THE STREET SHALL BE MULCHED AND SEEDED WITHIN 7 DAYS AFTER BACKFILL. 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 EXCAVATION 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 INSURE 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:

- ALL EROSION AND SILTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO LAND DISTURBANCE ACTIVITY, FOLLOWING THE IMPLEMENTATION OF TREE PRESERVATION MEASURES.
- SEDIMENT AND EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL ALL GROUND DISTURBING ACTIVITY CEASES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS IS COMPLETE.
- ALL STANDARDS AND SPECIFICATIONS REFER TO THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
- 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.
- 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.
- 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

- NO DISTURBED AREA WILL BE DENUEDED FOR MORE THAN 7 CALENDAR DAYS UNLESS OTHERWISE AUTHORIZED BY THE DIRECTOR OR HIS AGENT.
- ALL EROSION AND SILTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO CLEARING AND GRADING.
- 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.

- ELECTRIC POWER, TELEPHONE, AND GAS SUPPLY TRENCHES AREA TO BE COMPACTED, SEEDED, AND MULCHED WITHIN 5 DAYS AFTER BACKFILL.
- DURING CONSTRUCTION, MONITOR NEAREST INLETS TO ENSURE NO CONSTRUCTION SEDIMENT ENTERS THE INLETS. PROVIDE INLET PROTECTION AND MONITOR THE SEDIMENT LEAVING THE SITE.
- 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.
- 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.
- 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 CONSERVATION DEPOSIT.
- 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

- MAINTENANCE OF THE TEMPORARY CONSTRUCTION ENTRANCE SHALL BE REQUIRED TO PREVENT MUD DEPOSITS IN THE RIGHT-OF-WAY.
- INLET PROTECTION SHALL BE INSPECTED AT THE END OF EACH DAY AND AFTER EACH RAINFALL AND REQUIRED REPAIRS MADE IMMEDIATELY.
- 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.
- FILTER STONE SHALL BE REGULARLY CHECKED TO ENSURE THAT FILTRATION PERFORMANCE IS MAINTAINED. STONE CHOKED WITH SEDIMENT SHALL BE REMOVED AND CLEANED OR REPLACED.

SOIL MAP
N.T.S.



SOIL INFORMATION

Map Unit Description: Wheaton-Glenelg complex, 2 to 7 percent slopes—Falls Church City, Virginia

Falls Church City, Virginia

105B—Wheaton-Glenelg complex, 2 to 7 percent slopes

Map Unit Setting
National map unit symbol: 2218f
Mean annual precipitation: 37 to 49 inches
Mean annual air temperature: 45 to 67 degrees F
Frost-free period: 185 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition
Wheaton and similar soils: 45 percent
Glenelg and similar soils: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wheaton

Setting
Landform: Interfluvus
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Interfluvus
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mine spoil or earthy fill derived from phyllite

Typical profile

H1- 0 to 9 inches: loam
H2- 9 to 60 inches: loam

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

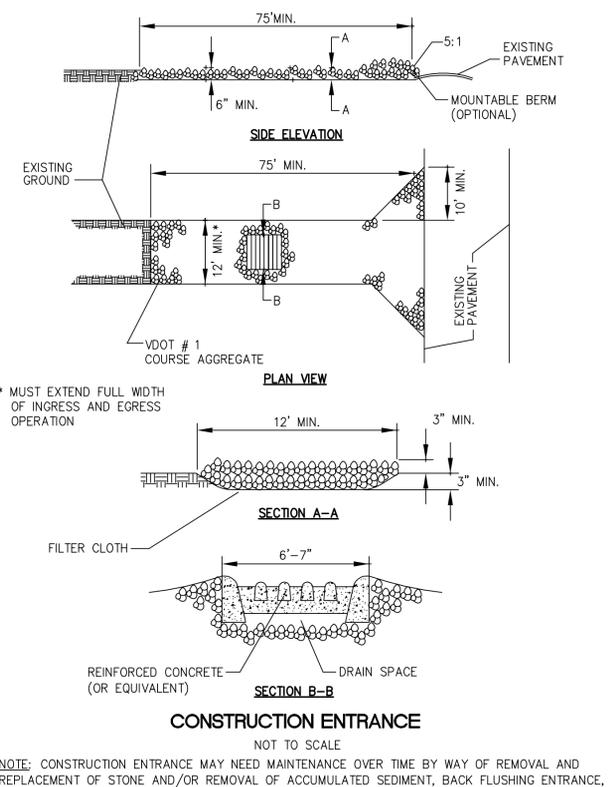
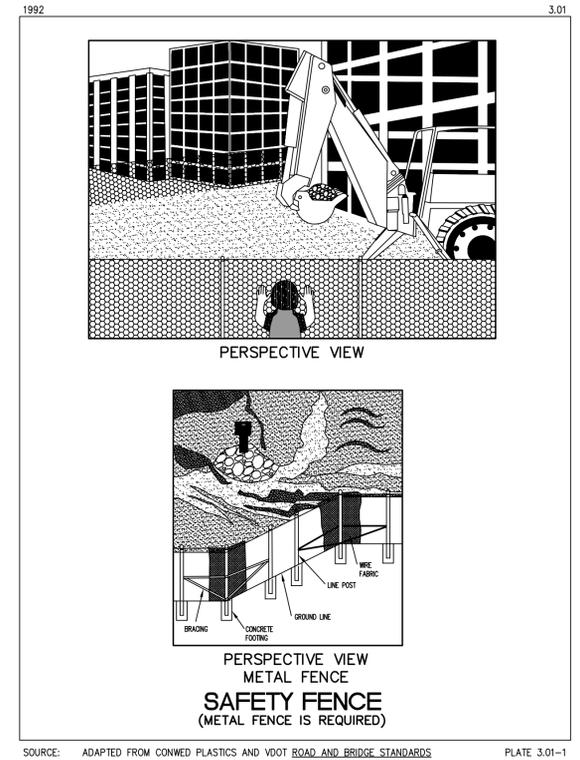
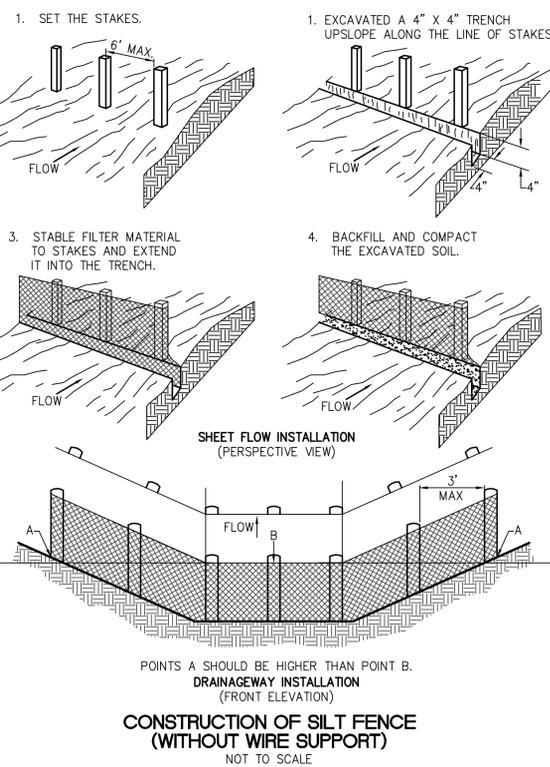
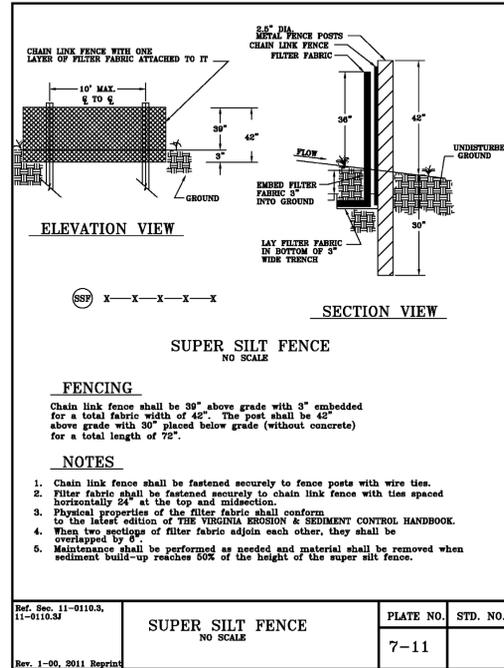
Description of Glenelg

Setting
Landform: Interfluvus

GENERAL EROSION AND SEDIMENT NOTES

- 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.
- 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.
- ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
- A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
- 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.
- 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.
- 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.
- DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
- 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.
- CONTRACTOR IS TO REMOVE MUD/SWEEP STREET AS NEEDED OR DAILY TO KEEP FREE OF SEDIMENT.

FAIRFAX COUNTY PUBLIC FACILITIES MANUAL



EROSION & SEDIMENT CONTROL NARRATIVES & DETAILS

RAILROAD COTTAGES
CITY OF FALLS CHURCH, VIRGINIA

Engineers • Surveyors • Planners
Landscape Architects • Arborists

WALTER L. PHILLIPS
INCORPORATED

207 PARK AVENUE
FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 Fax (703) 633-1301
www.WLPHINC.com

ESTABLISHED 1945
DATE: 9/12/2017, 10/20/2017, 11/8/2017
SCALE: 1" = 20'

CITY OF VIRGINIA PROFESSIONAL SEAL
KAREN L. S. WHITE
Lic. No. 041850
11/8/17

CHECKED: []
DRAWN: []
DATE: []

ROOFS AND PAVEMENT TO
 INFILTRATION FOR 10-YEAR
 $A = 0.23 \text{ AC}$
 $CN=98$

RAILROAD AVENUE
 ASPHALT ROAD

N/W CORNER AND
 DORSEY
 DB 4692 PG 29
 ZONE: R-1A

PART LOT 4
 62-102-031-1S

FOWLER'S ADD'N TO WEST FALLS CHURCH
 DB P-12 PG 302
 ZONE: R-1A

TO SOUTHEAST ADJ. PROPERTIES:
 $A = 0.45 \text{ AC}$
 $CN=74$
 $Q_{10} = 1.74 \text{ CFS}$

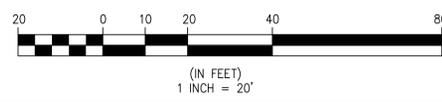
TO SOUTHWEST ADJ. PROPERTIES:
 $A = 0.44 \text{ AC}$
 $CN=76$
 $Q_{10} = 1.82 \text{ CFS}$

ROOFS TO INFILTRATION FOR 10-YEAR
 $A = 0.13 \text{ AC}$
 $CN=98$

NORTH

LEGEND

TITLE	SYMBOL
DRAINAGE DIVIDES	



Engineers • Surveyors • Planners
 Landscape Architects • Arborists
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 SCALE: 1" = 20'
 DRAWN: AI
 CHECKED: KW



NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

PROPOSED DRAINAGE DIVIDES
RAILROAD COTTAGES
 CITY OF FALLS CHURCH, VIRGINIA

RUNOFF REDUCTION COMPLIANCE SPREADSHEET

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: **RAILROAD AVE.**
 Date: **10/17/2017**
 Linear Development Project? No

CLEAR ALL

data input cells
 constant values
 calculation cells
 final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area (acres) → **1.25**

Maximum reduction required: **20%**
 The site's net increase in impervious cover (acres) is: **0.407552801**
 Post-Development TP Load Reduction for Site (lb/yr): **0.81**

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

Pre-Development 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
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed			1.22		1.22
Impervious Cover (acres)			0.03		0.03
Totals					1.25

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 land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed			0.81		0.81
Impervious Cover (acres)			0.44		0.44
Area Check	OK.	OK.	OK.	OK.	1.25

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-Development	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)	1.22	0.81
Weighted Rv(turf)	0.22	0.22
% Managed Turf	97%	96%
Impervious Cover (acres)	0.03	0.03
Rv(impervious)	0.95	0.95
% Impervious	3%	4%
Total Site Area (acres)	1.25	0.84
Site Rv	0.24	0.25

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary-Post (Final)		Land Cover Summary-Post		Land Cover Summary-Post	
Post ReDev. & New Impervious	Post-Development	Post-Development	Post-Development	Post-Development	Post-Development
Forest/Open Space Cover (acres)	0.00	Forest/Open Space Cover (acres)	0.00	Forest/Open Space Cover (acres)	0.00
Weighted Rv(Forest)	0.00	Weighted Rv(Forest)	0.00	Weighted Rv(Forest)	0.00
% Forest	0%	% Forest	0%	% Forest	0%
Managed Turf Cover (acres)	0.81	Managed Turf Cover (acres)	0.81	Managed Turf Cover (acres)	0.81
Weighted Rv (turf)	0.22	Weighted Rv (turf)	0.22	Weighted Rv (turf)	0.22
% Managed Turf	65%	% Managed Turf	96%	% Managed Turf	96%
Impervious Cover (acres)	0.44	ReDev. Impervious Cover (acres)	0.03	New Impervious Cover (acres)	0.41
Rv(impervious)	0.95	Rv(impervious)	0.95	Rv(impervious)	0.95
% Impervious	35%	% Impervious	4%		
Final Site Area (acres)	1.25	Total ReDev. Site Area (acres)	0.84		
Final Post Dev Site Rv	0.48	ReDev Site Rv	0.25		

Treatment Volume and Nutrient Load

Pre-Development Treatment Volume (acre-ft)	0.0250	0.0175
Pre-Development Treatment Volume (cubic feet)	1,088	762
Pre-Development TP Load (lb/yr)	0.68	0.48
Pre-Development TP Load per acre (lb/acre/yr)	0.55	0.57
Baseline TP Load (lb/yr) (0.41 lbs/acre/yr applied to pre-development area excluding pervious land proposed for new impervious cover)		0.35

Treatment Volume and Nutrient Load

Final Post-Development Treatment Volume (acre-ft)	0.0498	Post-ReDevelopment Treatment Volume (acre-ft)	0.0175	Post-Development Treatment Volume (acre-ft)	0.0323
Final Post-Development Treatment Volume (cubic feet)	2,168	Post-ReDevelopment Treatment Volume (cubic feet)	762	Post-Development Treatment Volume (cubic feet)	1,405
Final Post-Development TP Load (lb/yr)	1.36	Post-ReDevelopment TP Load (lb/yr)*	0.48	Post-Development TP Load (lb/yr)	0.88
Final Post-Development TP Load per acre (lb/acre/yr)	1.09	Post-ReDevelopment TP Load per acre (lb/acre/yr)	0.57		
		Max. Reduction Required (Below Pre-Development Load)	20%		
		TP Load Reduction Required for Redeveloped Area (lb/yr)	0.10	TP Load Reduction Required for New Impervious Area (lb/yr)	0.72

¹ Adjusted Land Cover Summary:
 Pre-Development 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-Development 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) **0.81**

Nitrogen Loads (Informational Purposes Only)

Pre-Development TN Load (lb/yr)	4.89	Final Post-Development TN Load (Post-ReDevelopment & New Impervious) (lb/yr)	9.74
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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)	0.29	0.15	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	0.29	0.15	0.00	0.00	0.00	OK.
MANAGED TURF AREA (ac)	0.38	0.43	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 (ft³) **2,168**

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)	631	406	0	0	0	1,037
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	0.82	0.54	0.00	0.00	0.00	1.36
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.46	0.29	0.00	0.00	0.00	0.75
TP LOAD REMAINING (lb/yr)	0.36	0.25	0.00	0.00	0.00	0.62

NITROGEN LOAD REDUCTION ACHIEVED (lb/yr) **3.18** 2.08 0.00 0.00 0.00 5.27

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	1.36
TP LOAD REDUCTION REQUIRED (lb/yr)	0.81
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.75
TP LOAD REMAINING (lb/yr)	0.62
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):	0.07

Total Nitrogen (For Informational Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	9.74
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	5.27
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	4.48

Runoff Volume and Curve Number Calculations

Enter design storm rainfall depths (in):

1-year storm	2.64	2-year storm	3.19	10-year storm	4.90
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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	Total Area (acres): 0.67
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	Runoff Reduction Volume (ft ³): 631
	CN	30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.38	0.00	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.29	0.00	
	CN	98	98	98	98	
CN(D.A. A)						
85						
RV _{Developed} (watershed-inch) with no Runoff Reduction*		1-year storm	2-year storm	10-year storm		
RV _{Developed} (watershed-inch) with Runoff Reduction*		1.29	1.75	3.28		
Adjusted CN*		1.03	1.49	3.02		
		81	81	82		

*See Notes above

Drainage Area B		A Soils	B Soils	C Soils	D Soils	Total Area (acres): 0.58
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	Runoff Reduction Volume (ft ³): 406
	CN	30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.43	0.00	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.15	0.00	
	CN	98	98	98	98	
CN(D.A. B)						
80						
RV _{Developed} (watershed-inch) with no Runoff Reduction*		1-year storm	2-year storm	10-year storm		
RV _{Developed} (watershed-inch) with Runoff Reduction*		0.99	1.39	2.81		
Adjusted CN*		0.79	1.20	2.61		
		76	77	78		

*See Notes above

RUNOFF REDUCTION COMPLIANCE SPREADSHEET

RAILROAD COTTAGES
 CITY OF FALLS CHURCH, VIRGINIA



Engineers • Surveyors • Planners
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 FALLS CHURCH, VIRGINIA 22046
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 www.WLPINC.com
 LICENSED PROFESSIONAL ENGINEER
 LICENSE NO. 041850
 EXPIRES 11/8/17
 SCALE: NONE
 DATE: 9/12/2017, 10/20/2017, 11/8/2017
 DRAWN: AI
 CHECKED: KY

WATER QUANTITY BALANCE EQUATIONS

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 = Qundertained (1.098 CFS) + Qdetained (0 CFS) =	1.098 CFS
I.F. * (Qpre-developed * Rvpre-developed) / RVdeveloped =	
(Rv developed = Rv undertained + RV detained)	
0.8 * (1.543 * 3122) / 2223 =	1.734 CFS
	1.098 CFS < 1.734 CFS

10 YR STORMWATER COMPUTATIONS	
Qdeveloped (detained & undertained) ≤ Qpre-developed	
0 CFS (detained) + 3.55 CFS (undertained) =	3.55 CFS
3.55 CFS < 4.99 CFS pre-development	

OUTFALL NARRATIVE

UNDER EXISTING CONDITIONS, APPROXIMATELY HALF OF THE MOSTLY PERVIOUS SITE OUTFALLS TO THE SOUTHWEST ADJACENT PROPERTIES BY SURFACE RUNOFF, AND THE OTHER HALF OF THE SITE OUTFALLS TO THE SOUTHEAST ADJACENT PROPERTIES BY SURFACE RUNOFF. THE OUTFALL PATHS RUN INTO PARKER BRANCH AND PEARSON BRANCH AND EVENTUALLY OUTFALL TO TRIPPS RUN.

THE REDEVELOPMENT OF THIS SITE WILL RESULT IN AN INCREASE OF IMPERVIOUS AREA. HOWEVER, WITH THE BMP MEASURES PROPOSED TO SEND UNITS 1, 2, 7, 8, 9, 10, AND THE COMMON HOUSE TO INFILTRATION, TO SEND THE CARPORT ROOF TO A MICRO-BIORETENTION BASIN, TO SEND UNITS 3-6 TO A BIORETENTION BASIN, AND TO PROPOSE PERMEABLE PAVEMENT FOR ALL VEHICULAR AND PATIO AREAS, RUNOFF REDUCTION WILL BE ACHIEVED AS DEMONSTRATED IN THE VRRM WORKSHEET ON SHEET C-0702. ADDITIONALLY, STORAGE IS PROVIDED BENEATH THE PERMEABLE PAVEMENT DRIVEWAY AND BENEATH THE BIORETENTION BASIN #2, SIZED TO CAPTURE AND INFILTRATE THE 10-YEAR STORM THAT OUTFALLS TO EACH FACILITY. SEE SHEETS C-0705 AND C-0706 FOR THE SIZING. BECAUSE THE RUNOFF TO THESE FACILITIES INFILTRATE INTO THE GROUND WITHIN THE 48-HOUR ALLOWABLE DRAWDOWN PERIOD, THE RUNOFF IS DISCOUNTED FROM LEAVING THE SITE - SEE DRAINAGE DIVIDES ON SHEET C-0701.

WATER QUALITY

WATER QUALITY REQUIREMENTS ARE PROPOSED TO BE MET THROUGH TREATMENT OF ALL IMPERVIOUS AREAS. ROOF AREAS ARE TREATED WITH INFILTRATION AND BIORETENTION, AND VEHICULAR AREA AND PATIOS ARE TREATED WITH PERMEABLE PAVEMENT. SEE DISTRIBUTION OF TREATMENT ON SHEET C-0705. A REMAINING PHOSPHORUS REMOVAL REQUIREMENT OF 0.07 LBS WILL BE MET THROUGH NUTRIENT CREDIT PURCHASE.

WATER QUANTITY

AS DEMONSTRATED BY THE WATER QUANTITY BALANCE EQUATIONS ABOVE, BOTH THE 1-YEAR AND 10-YEAR STORMS ARE REDUCED FROM EXISTING CONDITIONS (WHICH IS ALMOST ALL PERVIOUS AREA) TO PROPOSED CONDITIONS, BY INFILTRATING THE 10-YEAR STORM ON-SITE. AS REQUIRED BY THE COTTAGE DEVELOPMENT ORDINANCE SECTION 48-241(8), THE FIRST INCH OF RAINFALL SHALL BE CAPTURED AND RETAINED ON-SITE FROM ROOF AND PARKING AREAS. SEE BELOW FOR CALCULATION OF VOLUME OF FIRST INCH OF RAINFALL FROM ROOF AND PARKING AREAS, AND STORAGE PROVIDED. SINCE THE SITE PROPOSES TO RETAIN AND INFILTRATE THE 10-YEAR STORM, THE STORAGE PROVIDED EXCEEDS THE FIRST INCH OF RAINFALL.

DUE TO THE RESULTS OF THIS ANALYSIS AND THE FACT THAT THE PROJECT WILL RESULT IN THE REDUCTION OF RUNOFF FROM THE SITE FROM EXISTING CONDITIONS, 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 BY REDUCING RUNOFF ONTO THEIR SITES.

SITE VOLUME RETENTION CALCULATION

ROOF AREAS	14,261 SF
VEHICULAR AREAS	4,036 SF
TOTAL AREA	18,297 SF
1" RAINFALL	0.0833 SF
TOTAL VOLUME TO BE RETAINED	1,525 CF
STORAGE VOLUME PROVIDED	3,599 CF
	3599 CF > 1524.75 CF

SEE SHEETS C-0705 AND C-0706 FOR STORAGE PROVIDED.



Date: April 21, 2017

To: Railroad, LLC
c/o The Young Group, Inc.
800 West Broad Street, #333
Falls Church, VA 22046

From: Claire Wolanski
Credit Sales Coordinator
Resource Environmental Solutions

Subject: Potomac Watershed - Nutrient Credit Pricing

Project Reference: Railroad Cottages, Falls Church, HUC 02070010

This letter is to confirm the pricing of Nutrient Credits to be sold and debited from one or more of Resource Environmental Solutions, LLC's nutrient bank facilities within the above-referenced watersheds. Upon approval and release by DEQ, all such Nutrient Credits may be used by permit applicants within these watersheds to compensate for nutrient loadings in excess of state or local regulations, as per Virginia Code § 62.1-44.15:35 and § 62.1-44.19:14 and Virginia Administrative Code 9 VAC 25-820-10 et seq. We appreciate the opportunity to assist you with your project. Currently our Nutrient Credit price for your project is as follows:

- 0.07 pounds of Phosphorus Credits = \$2,750.00

This pricing is good for 60 days as of the date of this correspondence.

Please feel free to contact me if you have any questions.

Sincerely,

Claire Wolanski

Claire E. Wolanski
Resource Environmental Solutions
804-591-4060

10055 Red Run Blvd.
Suite 130
Owings Mills, MD
21117

412 N. 4th St.
Suite 300
Baton Rouge, LA
70802

701 E. Bay St.
Suite 306
Charleston, SC
29403

5020 Montrose Blvd.
Suite 650
Houston, TX
77006

1200 Camelia Blvd.
Suite 220
Lafayette, LA
70508

1377½ East Main St.
Suite 210
Oak Hill, WV
25901

33 Terminal Way
Suite 431
Pittsburgh, PA
15219

302 Jefferson St.
Suite 110
Raleigh, NC
27605

1521 W. Main
2nd Floor
Richmond, VA
23220

HYDROGRAPHS

Hydrograph Report

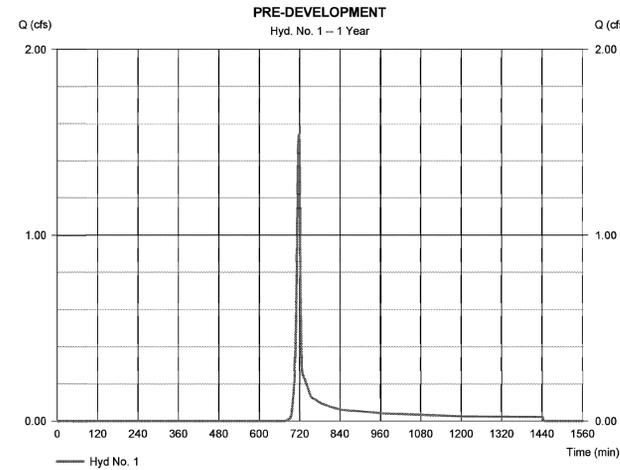
Hydroflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Wednesday, 04 / 19 / 2017

Hyd. No. 1

PRE-DEVELOPMENT

Hydrograph type	= SCS Runoff	Peak discharge	= 1.543 cfs
Storm frequency	= 1 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 3,122 cuft
Drainage area	= 1.250 ac	Curve number	= 75
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

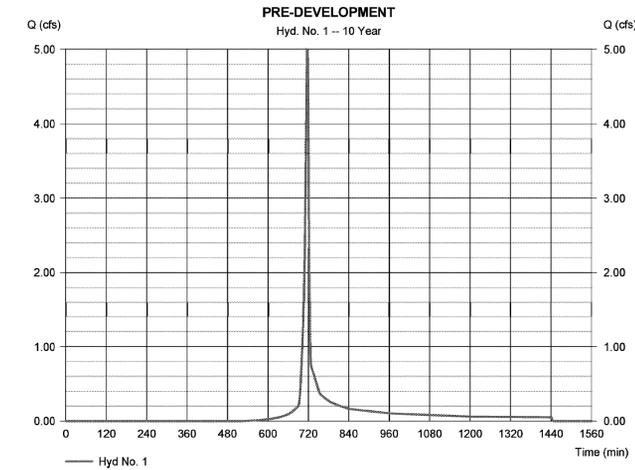
Hydroflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Wednesday, 04 / 19 / 2017

Hyd. No. 1

PRE-DEVELOPMENT

Hydrograph type	= SCS Runoff	Peak discharge	= 4.990 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 10,075 cuft
Drainage area	= 1.250 ac	Curve number	= 75
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 Report

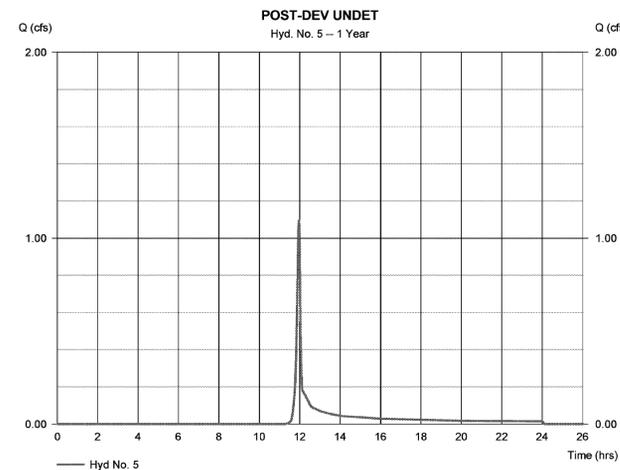
Hydroflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Wednesday, 04 / 19 / 2017

Hyd. No. 5

POST-DEV UNDET

Hydrograph type	= SCS Runoff	Peak discharge	= 1.098 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 2,223 cuft
Drainage area	= 0.890 ac	Curve number	= 75
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

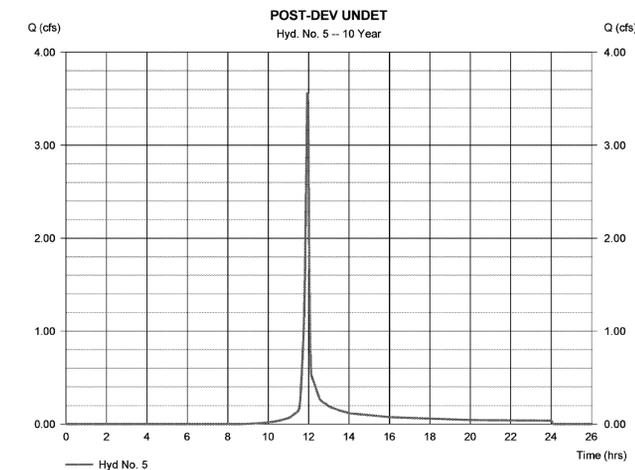
Hydroflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Wednesday, 04 / 19 / 2017

Hyd. No. 5

POST-DEV UNDET

Hydrograph type	= SCS Runoff	Peak discharge	= 3.553 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 7,173 cuft
Drainage area	= 0.890 ac	Curve number	= 75
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



HYDROGRAPHS & OUTFALL NARRATIVE

RAILROAD COTTAGES
CITY OF FALLS CHURCH, VIRGINIA

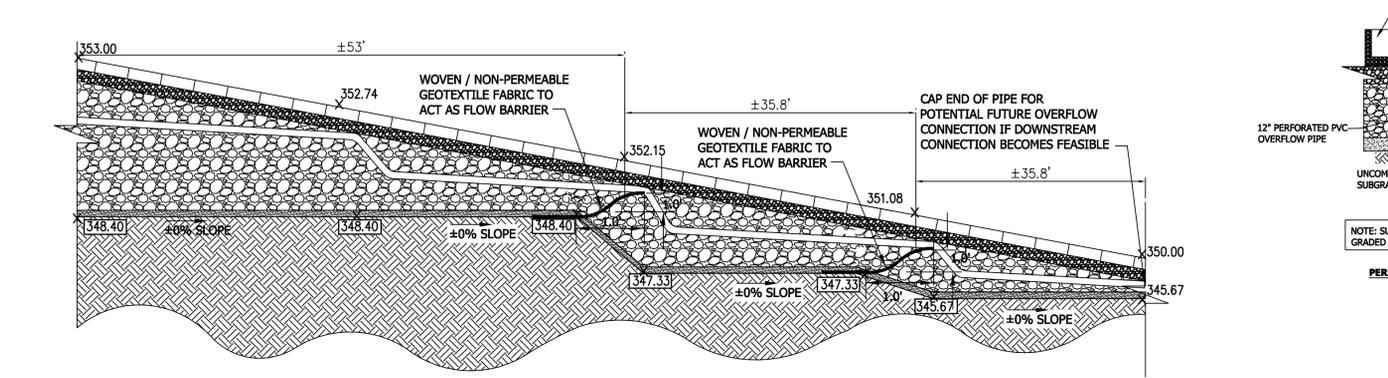
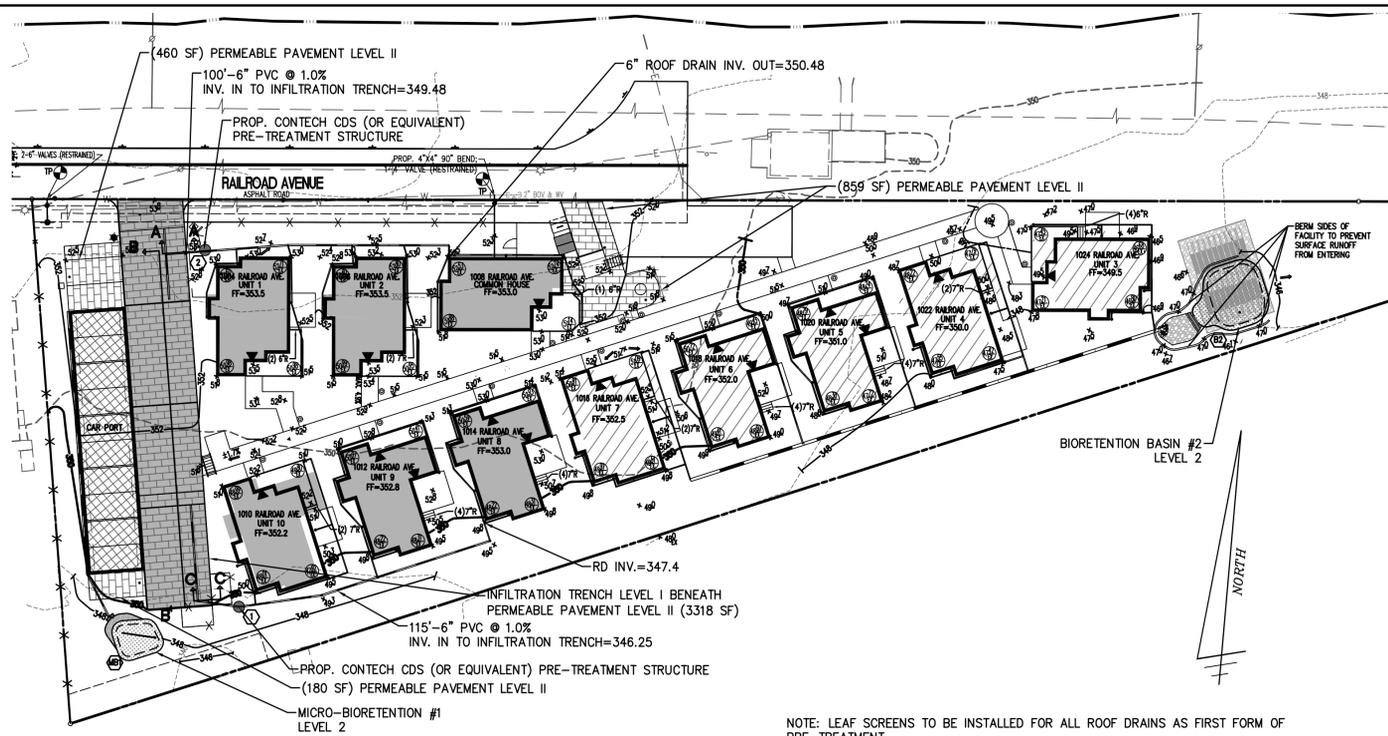
Engineers • Surveyors • Planners
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WALTER L. PHILLIPS
INCORPORATED
ESTABLISHED 1945
DATE: 04/19/2017, 11:02:07
SCALE: NONE

COMMONWEALTH OF VIRGINIA
Professional Seal
KAREN L. S. WHITE
Lic. No. 041850
11/8/11
PROFESSIONAL ENGINEER

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

CHECKED: KY
DRAWN: AI



NOTES:
 1. LAY WOVEN / NON-PERMEABLE GEOTEXTILE FABRIC TO 12" HEIGHT OF HIGH SIDE STONE SECTION.
 2. EXTEND 12" IN BOTH DIRECTIONS TO HOLD IN PLACE.

PERFORATED 12" OVERFLOW PIPE TO SIT BELOW #57 BEDDING STONE LAYER AND ON TOP OF RESERVOIR LAYER

INFILTRATION STORAGE VOLUME CALCULATION

BENEATH THE PERMEABLE PAVEMENT DRIVE AISLE

DRAINAGE AREA 'A' GRAVEL INFILTRATION VOLUME CALCULATION	
AREA TO INFILTRATION FROM ROOFS	6792 SF
AREA TO INFILTRATION FROM PP DRIVEWAY	3318 SF
10-YEAR RV FROM VRRM	3.02 IN
TOTAL 10-YR RUNOFF VOLUME	2418 CF
DRAWDOWN TIME CALCULATION:	
INFILTRATION RATE	0.5 IN/HR
DESIGN RATE	0.25 IN/HR
INFILTRATION SURFACE AREA	3318 SF
DRAWDOWN TIME	1.46 DAYS
1.46 DAYS < 2.0 DAYS MAX	
STORAGE VOLUME PROVIDED:	
SURFACE AREA	3318 SF
DEPTH OF GRAVEL	1.83 FT
GRAVEL VOID RATIO	0.4
TOTAL VOLUME	2432 CF
2432 CF > 2418 CF	

PROVIDE MIN. 1.83' (22") OF GRAVEL FOR STORAGE VOLUME.

INFILTRATION TREATMENT VOLUME CALCULATION

INFILTRATION TRENCH:
 DESIGN BASIS: LEVEL 1 DESIGN
 MEASURED RATE: 0.50 IN/HR
 DESIGN RATE: 0.25 IN/HR OR 0.50 FT/DAY

HSG B	
DRAINAGE AREA	SF
PERVIOUS AREA	0
IMPERVIOUS AREA	6789
Rv	0.20
Rv	0.95

MINIMUM REQUIRED $T_v = \frac{(1.0 \times R_v \times A)}{12}$
 $= \frac{1.0 [0.95(6789)]}{12}$
 $= 537 \text{ CF}$

SURFACE AREA PROVIDED = 3318 SF
 GRAVEL STORAGE DEPTH FOR $T_v = 5"$

WATER STORED/TREATED IN FILTER MEDIA AND GRAVEL STORAGE LAYERS
 EQUIVALENT STORAGE DEPTH = $(0.416)(0.4) = 0.1664'$

TOTAL VOLUME OF STORAGE PROVIDED
 VOLUME = $(3318 \text{ SF})(1.664')$
 $= 552 \text{ CF} > \text{TREATMENT VOLUME (537 CF)}$

PROVIDE MIN. 5" OF GRAVEL FOR TRENCH TREATMENT VOLUME.

PERMEABLE PAVEMENT LEVEL II RESERVOIR CALCULATION

FOR THE PERMEABLE PAVEMENT PARKING SPACES AND PATIOS/WALKS.

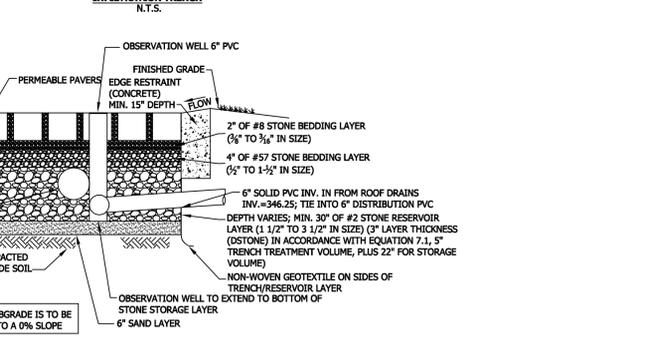
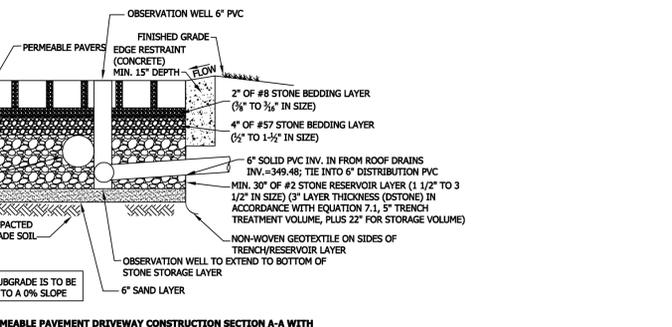
PER EQUATION 7.1 OF THE VA DEQ STORMWATER DESIGN SPECIFICATION

$$d(\text{stone}) = \frac{(P \times A_p)}{n(r) \times A_p}$$

WHERE:
 d(stone) = DEPTH OF THE STONE RESERVOIR LAYER (FT.)
 P = THE RAINFALL DEPTH (IN FEET) FOR THE TREATMENT VOLUME (LEVEL II = 1.1 INCH (0.09 FT))
 n(r) = POROSITY OF RESERVOIR LAYER (0.4)

$$d(\text{stone}) = \frac{(0.09 \times 1474 \text{ SF})}{0.40 \times 1474 \text{ SF}}$$

d(stone) = 0.20 ; MINIMUM 3" REQUIRED, 8" PROVIDED



PERMEABLE PAVEMENT TREATMENT VOLUME CALCULATION

FOR THE PERMEABLE PAVEMENT DRIVEWAY WITH INFILTRATION AND STORAGE BENEATH

PER EQUATION 7.1 OF THE VA DEQ STORMWATER DESIGN SPECIFICATION

$$d(\text{stone}) = \frac{(P \times A_p)}{n(r) \times A_p}$$

WHERE:
 d(stone) = DEPTH OF THE STONE RESERVOIR LAYER (FT.)
 P = THE RAINFALL DEPTH (IN FEET) FOR THE TREATMENT VOLUME (LEVEL II = 1.1 INCH (0.09 FT))
 n(r) = POROSITY OF RESERVOIR LAYER (0.4)

$$d(\text{stone}) = \frac{(0.09 \times 3318 \text{ SF})}{0.40 \times 3318 \text{ SF}}$$

d(stone) = 0.20 ; MINIMUM 3" REQUIRED, 3" PROVIDED

NOTE: NO CREDIT FOR ADDITIONAL CONTRIBUTING IMPERVIOUS DRAINAGE AREA IS TAKEN FOR UP-GRADIENT AREA THAT IS NOT INSTALLED AS PERMEABLE PAVEMENT.

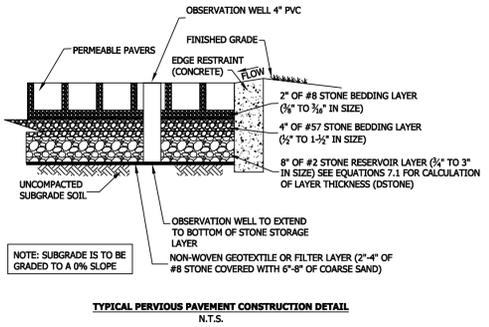


Table 7.6. Material Specifications for Underneath the Pavement Surface

Material	Specification	Notes
Bedding Layer	PC: None PA: 2 in. of No. 57 stone IP: 2 in. of No. 8 stone over 4 inches of No. 57 stone	ASTM D448 size No. 8 stone (e.g. 3/8 to 3/16 inch in size). Should be washed and clean and free of all fines.
Reservoir Layer	PC: No. 57 stone PA: No. 2 stone IP: No. 2, 3, or 4 stone	ASTM D448 size No. 57 stone (e.g. 1 1/2 to 1/2 inch in size). No. 2 Stone (e.g. 3 inch to 3/4 inch in size). Depth is based on the pavement structural and hydraulic requirements. Should be washed and clean and free of all fines.
Underdrain	Use 4 to 6 inch diameter perforated PVC (AASHTO M 252) pipe, with 3/8-inch perforations at 6 inches on center, each underdrain installed at a minimum 0.5% slope located 20 feet or less from the next pipe (or equivalent corrugated HDPE may be used for smaller load-bearing applications). Perforated pipe installed for the full length of the permeable pavement cell, and non-perforated pipe, as needed, is used to connect with the storm drain system. T's and Y's installed as needed, depending on the underdrain configuration. Extend cleanout pipes to the surface with vented caps at the T's and Y's.	The underlying native soils should be separated from the stone reservoir by a thin, 2 to 4 inch layer of choker stone (e.g. No. 8) covered by a 6 to 8 inch layer of coarse sand (e.g. ASTM C-33, gradation).
Filter Layer	Use an appropriate filter fabric for the particular application based on AASHTO M288-06 Filter Fabric should have a Flow Rate greater than 125 gpm/sq. (ASTM D4911), and an Apparent Opening Size (AOS) equivalent to a US #70 or #80 sieve (ASTM D4751). The geotextile AOS selection is based on the percent passing the No. 200 sieve in "A" Soil subgrade, using FHWA or AASHTO selection criteria.	The sand should be placed between the stone reservoir and the choker stone, which should be placed on top of the underlying native soils.
Filter Fabric (optional)	Use a 30 mil (minimum) PVC Geomembrane liner covered by 8 to 12 oz./sq. yd. 2 non-woven geotextile. NOTE: THIS IS USED ONLY FOR KARST REGIONS.	
Impermeable Liner	Use a 30 mil (minimum) PVC Geomembrane liner covered by 8 to 12 oz./sq. yd. 2 non-woven geotextile. NOTE: THIS IS USED ONLY FOR KARST REGIONS.	
Observation Well	Use a perforated 4 to 6 inch vertical PVC pipe (AASHTO M 252) with a lockable cap, installed flush with the surface.	

Table 7.7. Different Permeable Pavement Specifications

Material	Specification	Notes
Permeable Interlocking Concrete Pavers	Surface open area: 5% to 15% Thickness: 3.125 inches for vehicles. Compressive strength: 55 Mpa. Open void fill media: aggregate.	Must conform to ASTM C936 specifications. Reservoir layer required to support the structural load.
Concrete Grid Pavers	Open void content: 20% to 50%. Thickness: 3.5 inches. Compressive strength: 35 Mpa. Open void fill media: aggregate, topsoil and grass, coarse sand.	Must conform to ASTM C 1319 specifications. Reservoir layer required to support the structural load.
Plastic Reinforced Grid Pavers	Void content: depends on fill material. Compressive strength: varies, depending on fill material. Open void fill media: aggregate, topsoil and grass, coarse sand.	Reservoir layer required to support the structural load.
Pervious Concrete	Void content: 15% to 25%. Thickness: typically 4 to 8 inches. Compressive strength: 2.8 to 28 Mpa. Open void fill media: None.	May not require a reservoir layer to support the structural load, but a layer may be included to increase the storage or infiltration.
Porous Asphalt	Void content: 15% to 20%. Thickness: typically 3 to 7 in. (depending on traffic load). Open void fill media: None.	Reservoir layer required to support the structural load.

Table 7.8. Recommended Maintenance Tasks for Permeable Pavement Practices

Maintenance Task	Frequency
For the first 6 months following construction, the practice and contributing drainage area should be inspected at least twice after storm events that exceed 1/2 inch of rainfall. Conduct any needed repairs or stabilization.	After installation
Mow grass in grid paver applications	At least 1 time every 1-2 months during the growing season
Stabilize the CDA to prevent erosion	As needed
Remove any soil or sediment deposited on pavement.	As needed
Replace or repair any necessary pavement surface areas that are deteriorating or spalling	As needed
Vacuum pavement with a standard street sweeper to prevent clogging	2-4 times per year (depending on use)
Conduct a maintenance inspection	Annually
Spot weeding of grass applications	Once every 2 to 3 years
Remove any accumulated sediment in pre-treatment cells and inflow points	Once every 2 to 3 years
Conduct maintenance using a regenerative street sweeper	If clogged
Replace any necessary joint material	If clogged

Required frequency of maintenance will depend on pavement use, traffic loads, and surrounding land use.

N040 TECHNICAL DATA SHEET * OR EQUIVALENT

NONWOVEN GEOTEXTILE

N040 is a polypropylene, needle punched nonwoven geotextile for use in drainage and separation applications. It has been stabilized to resist degradation due to ultraviolet exposure and is resistant to commonly encountered mildew, insects and soil chemicals, and is non-biodegradable.

THE N040 POLYPROPYLENE NONWOVEN FABRIC WILL UTILIZE THE FOLLOWING CHARACTERISTICS:

PROPERTY	TEST METHOD	TYPICAL ROLL VALUE
Grab Tensile Strength	ASTM D4632	100 lbs
Grab Tensile Elongation	ASTM D4632	50%
CBR Puncture	ASTM D6241	280 lbs
Trapezoid Tear Strength	ASTM D4533	50 lbs
UV Resistance @ 500 hrs	ASTM D4355	70%
Apparent Opening Size (AOS)	ASTM D4751	70 US Sieve
Permeability (sec ⁻¹)	ASTM D4691	2.0 (sec ⁻¹)
Flow Rate	ASTM D4691	140 gpm/ft ²

Values quoted above are the result of multiple tests conducted at an independent testing facility. N040 meets or exceeds values listed.
 *Values apply to both machine and cross-machine directions

PACKAGING:
 Roll Width: 12.5 ft. / 15 ft.
 Roll Length: 360 ft. / 360 ft.
 Roll Area: 500 yd² / 600 yd²

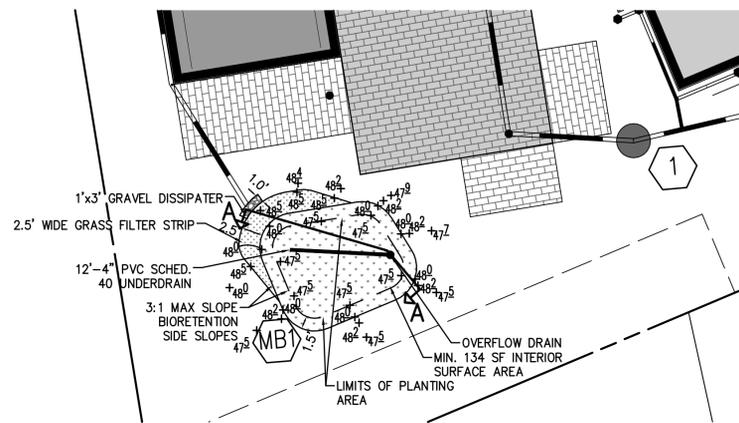
BEST MANAGEMENT PRACTICES DETAILS

WALTER L. PHILLIPS
 Landscape Architects • Arborists
 207 PARK AVENUE
 FALLS CHURCH, VIRGINIA 22046
 (703) 532-6163 Fax (703) 633-1301
 WWW.WLPINC.COM

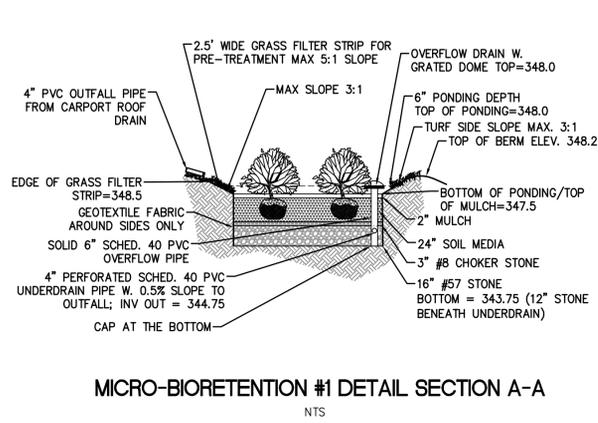
CITY OF FALLS CHURCH, VIRGINIA

SHEET: C-0705

DATE: 09/22/2017, 10:00:00 AM
 SCALE: AS NOTED
 CHECKED: KY
 DRAWN: AI



MICRO-BIORETENTION #1 LEVEL II ENLARGEMENT
SCALE: 1"=10'



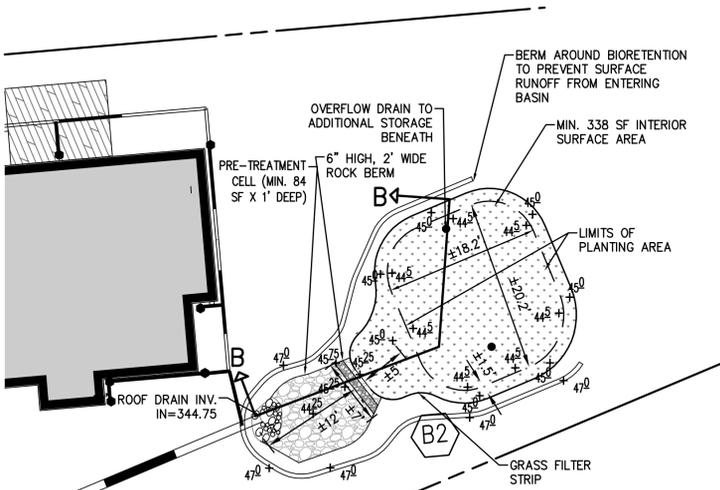
MICRO-BIORETENTION #1 DETAIL SECTION A-A
NTS

MICRO-BIORETENTION #1 LEVEL II
AREA TO BIORETENTION
TREAT 1.25' STORM RUNOFF PER DEQ SPEC. #9
TM_{BMP} = 0.95 x 1860 SF x 0.104' = 185 CF
SIZE OF THE BIORETENTION = 134 SF
V1 (PONDING DEPTH) = 134 SF X 0.5 = 67 CF
V2 (SOIL MEDIA) = 134 SF X 2 X 0.25 (VOIDS) = 67 CF
V3 (#57 & PEA GRAVEL) = 134 SF X 1 X 0.4 (VOIDS) = 53 CF
TOTAL VOLUME = 187 CF PROVIDED

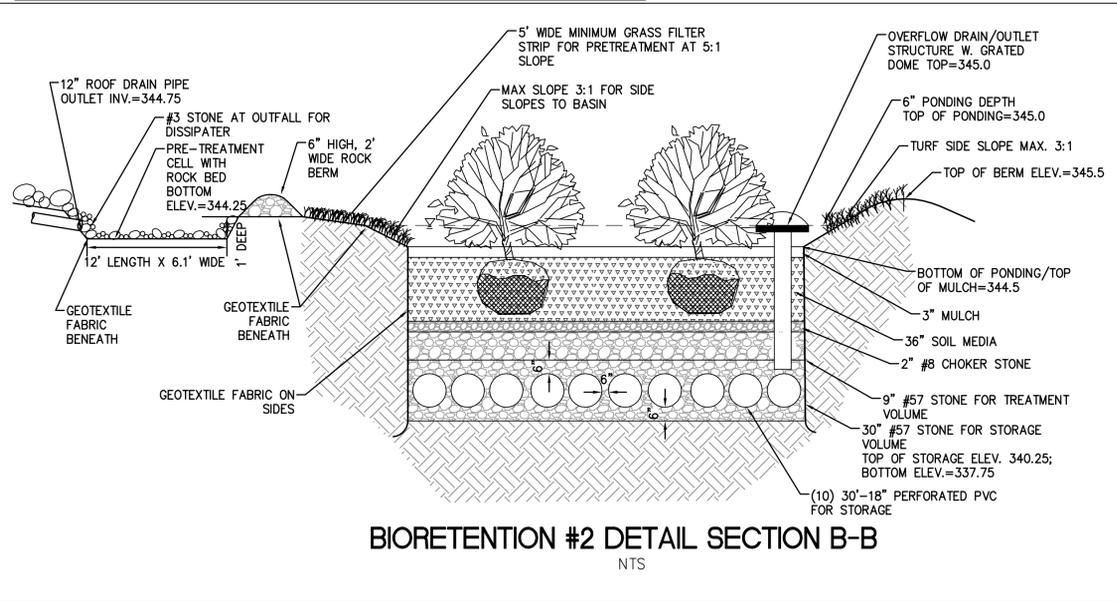
VA DCR STORMWATER DESIGN SPECIFICATION NO. 9 **BIORETENTION**

Table 9.7. Bioretention Material Specifications

Material	Specification	Notes
Filter Media Composition	Filter Media to contain: <ul style="list-style-type: none"> 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 no 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 configured, depending on the underdrain configuration. Extend cleanout pipes to the surface with vented caps at the T's and Y's.
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).



BIORETENTION #2 LEVEL II ENLARGEMENT
SCALE: 1"=10'

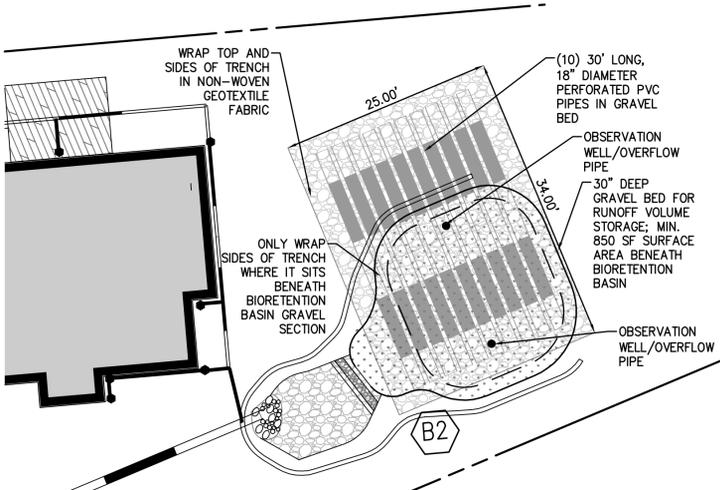


BIORETENTION #2 DETAIL SECTION B-B
NTS

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

Table 9.8. Suggested Annual Maintenance Activities for Bioretention

Maintenance Tasks	Frequency
Mowing of grass filter strips and bioretention turf cover	At least 4 times a year
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season
Add reinforcement planting to maintain desired vegetation density	As needed
Remove invasive plants using recommended control methods	As needed
Stabilize the contributing drainage area to prevent erosion	As needed
Spring inspection and cleanup	Annually
Supplement mulch to maintain a 3 inch layer	Annually
Prune trees and shrubs	Annually
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 years
Replace the mulch layer	Every 3 years

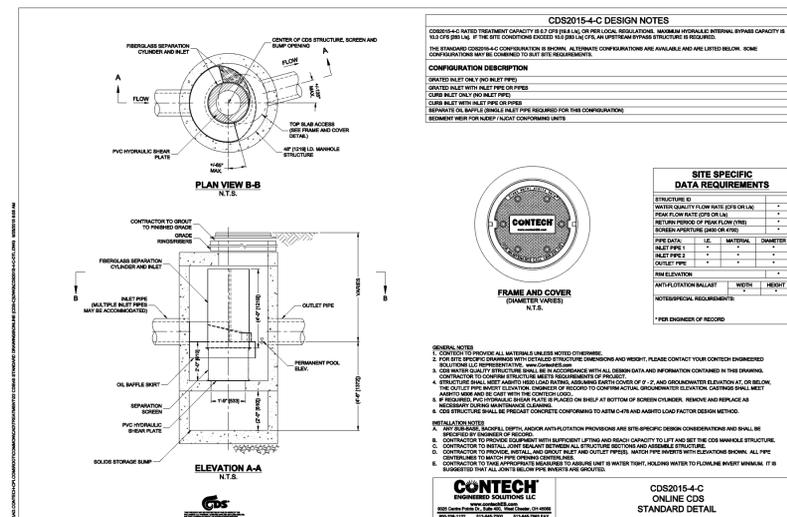


UNDERGROUND STORAGE BENEATH BIORETENTION ENLARGEMENT
SCALE: 1"=10'

DRAINAGE AREA 'B' GRAVEL INFILTRATION VOLUME CALCULATION

AREA TO BIORETENTION FROM ROOFS	5609 SF
10-YEAR V _R FROM VRRM	2.61 IN
TOTAL 10-YR RUNOFF VOLUME	1159 CF
DRAWDOWN TIME CALCULATION:	
INFILTRATION RATE	0.7 IN/HR
DESIGN RATE	0.35 IN/HR
INFILTRATION SURFACE AREA	850 SF
DRAWDOWN TIME	1.95 DAYS
STORAGE VOLUME PROVIDED:	
SURFACE AREA	850 SF
DEPTH OF GRAVEL	2.50 FT
GRAVEL VOID RATIO	0.4
GRAVEL STORAGE VOLUME	637 CF
18" PERFORATED PVC AREA	1.77
LENGTH OF PIPE	30'
# OF PIPES	10
PIPE STORAGE VOLUME	530 CF
TOTAL STORAGE VOLUME PROVIDED	1167 CF > 1159 CF

BIORETENTION #2 LEVEL II
AREA TO BIORETENTION
TREAT 1.25' STORM RUNOFF PER DEQ SPEC. #9
TM_{BMP} = 0.95 x 5609 SF x 0.104' = 556 CF
SIZE OF THE BIORETENTION = 338 SF
V1 (PONDING DEPTH) = 338 SF X 0.5 = 169 CF
V2 (SOIL MEDIA) = 338 SF X 3 X 0.25 (VOIDS) = 253 CF
V3 (#57 & PEA GRAVEL) = 338 SF X 1 X 0.4 (VOIDS) = 135 CF
TOTAL VOLUME = 557 CF PROVIDED
PRE-TREATMENT CELL MIN. VOLUME (15% OF TV) = 84 CF



CONTECH ENGINEERED SOLUTIONS		CDS Flow-Based Sizing per VADEQ Regulations	
Project Name:	Railroad Cottages	Date:	8/21/17
Site Designation:	1	County or Independent City:	Falls Church, VA
State:	VA	Design Engineer:	JLW
Annual Rainfall (inches)	43	Target Rainfall Event, P (inches)	1.00
Volume from Upstream Runoff Reduction Practice to BMP:			
Managed Turf	0	Runoff Coefficient (R _c)	0.00
Impervious Cover	0	Runoff Coefficient (R _c)	0.95
Volume from Additional Credit Area to BMP:			
Managed Turf	0	Runoff Coefficient (R _c)	0.00
Impervious Cover	276	Runoff Coefficient (R _c)	0.95
Total Volume to be Treated	276	Composite R _v	0.95
Time of Concentration (T _c)	5.00	Unit Peak Discharge (eq)	1000
Treatment Volume Peak Discharge	0.12	Model Name	2015-4

CONTECH ENGINEERED SOLUTIONS		CDS Flow-Based Sizing per VADEQ Regulations	
Project Name:	Railroad Cottages	Date:	8/21/17
Site Designation:	2	County or Independent City:	Falls Church, VA
State:	VA	Design Engineer:	JLW
Annual Rainfall (inches)	43	Target Rainfall Event, P (inches)	1.00
Volume from Upstream Runoff Reduction Practice to BMP:			
Managed Turf	0	Runoff Coefficient (R _c)	0.00
Impervious Cover	0	Runoff Coefficient (R _c)	0.95
Volume from Additional Credit Area to BMP:			
Managed Turf	0	Runoff Coefficient (R _c)	0.00
Impervious Cover	262	Runoff Coefficient (R _c)	0.95
Total Volume to be Treated	262	Composite R _v	0.95
Time of Concentration (T _c)	5.00	Unit Peak Discharge (eq)	1000
Treatment Volume Peak Discharge	0.11	Model Name	2015-4

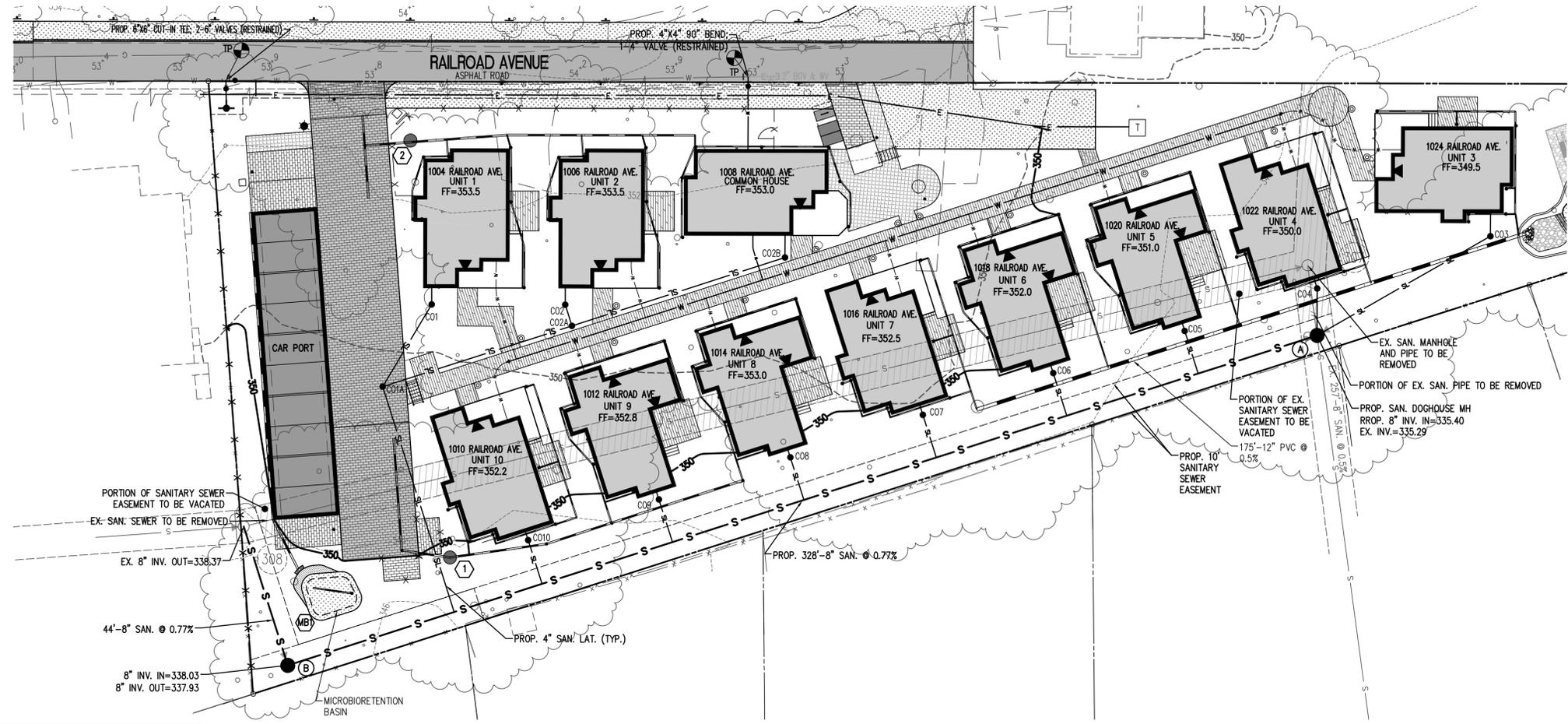
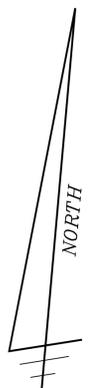
BIORETENTION & INFILTRATION PRE-TREATMENT DETAILS

RAILROAD COTTAGES
CITY OF FALLS CHURCH, VIRGINIA

Engineers • Surveyors • Planners
Landscape Architects • Arborists
WALTER L. PHILLIPS
INCORPORATED
207 PARK AVENUE
FALLS CHURCH, VIRGINIA 22046
(703) 532-6163 Fax (703) 633-1301
www.wlphillips.com

DATE: 09/22/2017, 10:00:00 AM
SCALE: 1"=10'

NO.	DESCRIPTION	DATE	APPROVED BY	REVISION



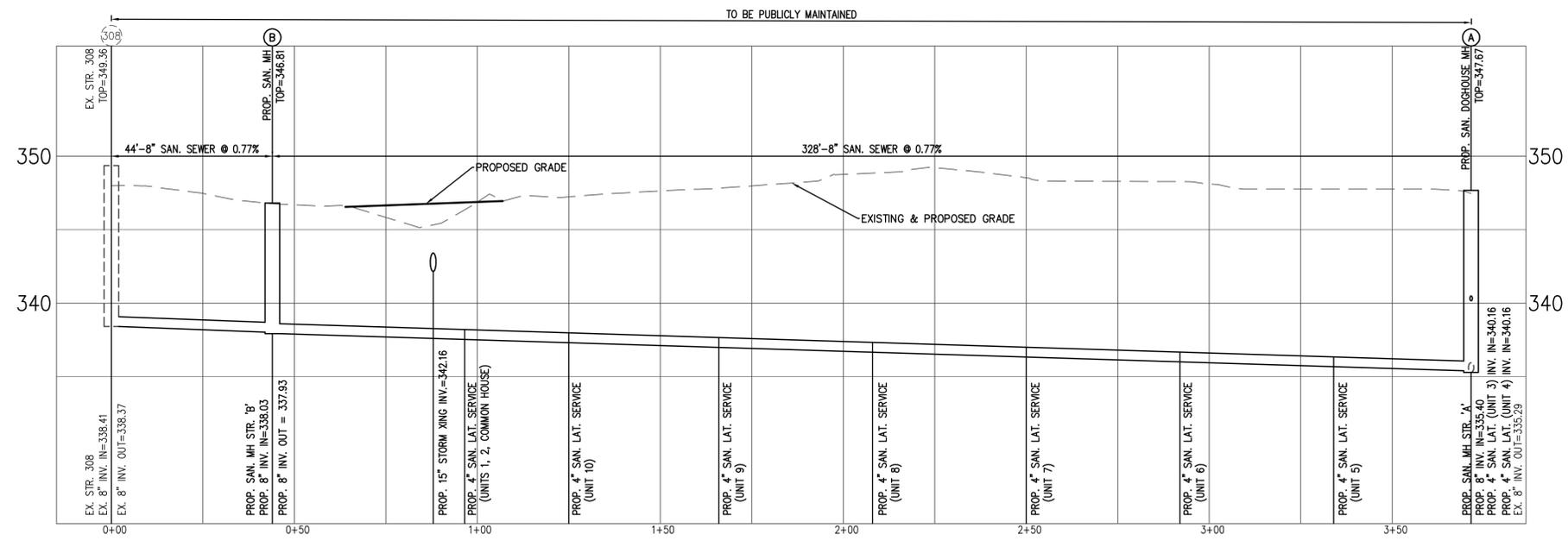
PLAN VIEW
SCALE: 1"=20'

NOTE: PUBLIC WORKS INSPECTOR MUST BE PRESENT WHEN NEW PUBLIC SANITARY SEWER IS INSTALLED. CONTRACTOR TO COORDINATE WITH PUBLIC WORKS.

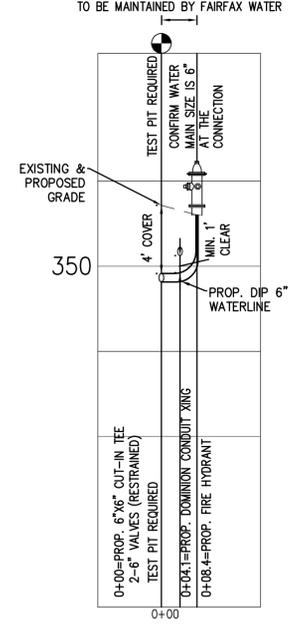
TEST PITS TO BE PERFORMED 60 DAYS PRIOR TO CONSTRUCTION. CONTRACTOR TO NOTIFY DESIGN ENGINEER WITH ANY INVERT ISSUES FROM TEST PIT RESULTS.

PROPOSED SANITARY LATERAL SCHEDULE

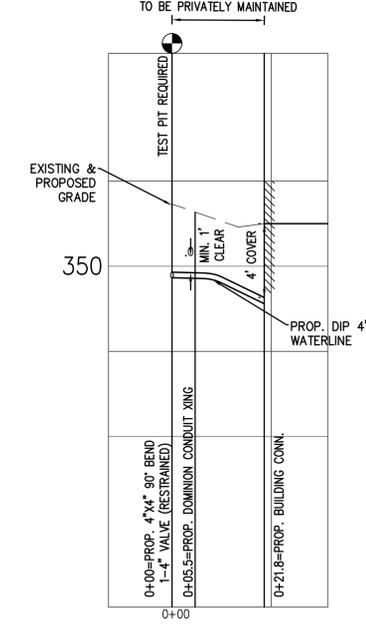
RAILROAD AVE.	FROM MH	TO MH	SANITARY STATION	8" MAIN INVERT	4" INVERT @ MAIN	LENTH TO C.O.	4" INV @ C.O.	SLOPE TO C.O.
	B	A						
CO 1A			0+53	337.52	338.19	70.88	339.67	2.08%
CO 1						29.18	342.58	10.00%
CO 2A						60.25	342.68	5.00%
CO 2						7.32	343.04	5.00%
CO 2B						67.92	346.07	5.00%
CO 10	0+81		337.31	337.98	13.85	339.36	10.00%	
CO 9	1+22		336.99	337.66	13.50	339.01	10.00%	
CO 8	1+64		336.66	337.33	13.50	338.68	10.00%	
CO 7	2+06		336.34	337.01	13.50	338.36	10.00%	
CO 6	2+48		336.02	336.69	13.50	338.04	10.00%	
CO 5	2+90		335.70	336.37	13.50	337.72	10.00%	
CO 4	3+28		335.40	340.16	14.18	341.58	10.00%	
CO 3	3+28		335.40	340.16	64.36	341.50	2.08%	



SANITARY PROFILE
SCALE: H: 1"=20'
V: 1"=5'



FIRE HYDRANT PROFILE
SCALE: H: 1"=20'
V: 1"=5'



DOMESTIC SERVICE PROFILE
SCALE: H: 1"=20'
V: 1"=5'

Engineers • Surveyors • Planners
Landscape Architects • Arborists

WALTER L. PHILLIPS
INCORPORATED ESTABLISHED 1945

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

DATE: 01/22/2017, 10/20/2017, 11/8/2017
SCALE: HOR. 1"=20' VERT. 1"=5'
DRAWN: AI
CHECKED: KY

COMMUNITY OF VIRGINIA PROFESSIONAL SEAL
KAREN L. S. WHITE
Lic. No. 041850
11/8/17

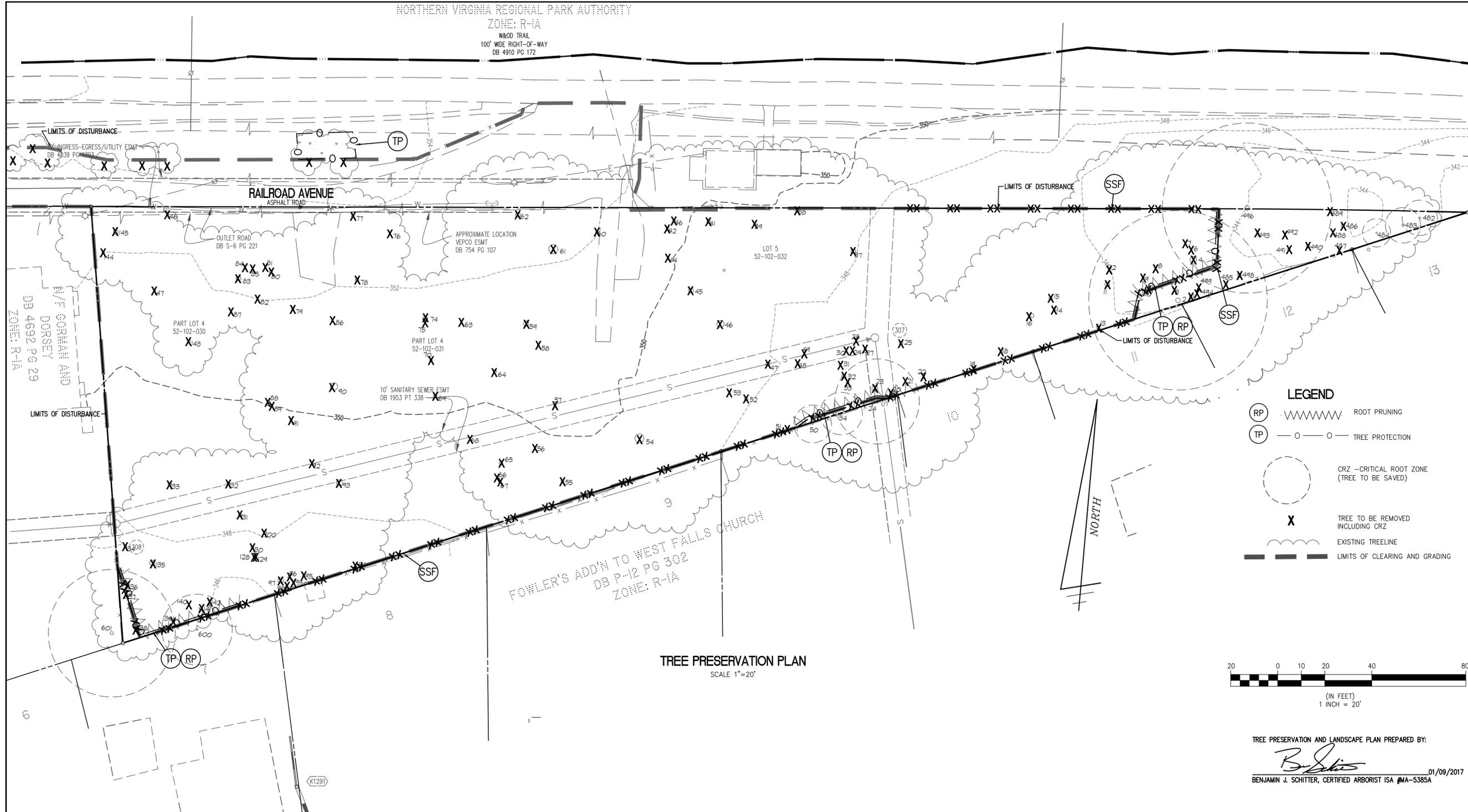
REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

UTILITY PROFILES

RAILROAD COTTAGES

CITY OF FALLS CHURCH, VIRGINIA



TREE PRESERVATION PLAN
 SCALE 1"=20'

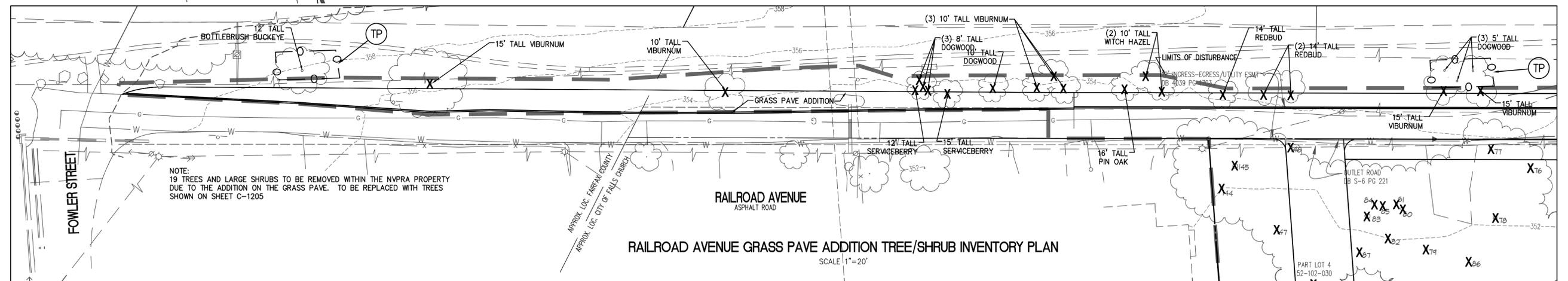
LEGEND

- RP [Symbol] ROOT PRUNING
- TP [Symbol] TREE PROTECTION
- [Symbol] CRZ - CRITICAL ROOT ZONE (TREE TO BE SAVED)
- X TREE TO BE REMOVED INCLUDING CRZ
- [Symbol] EXISTING TREELINE
- [Symbol] LIMITS OF CLEARING AND GRADING

(IN FEET)
 1 INCH = 20'

TREE PRESERVATION AND LANDSCAPE PLAN PREPARED BY:

 BENJAMIN J. SCHITTER, CERTIFIED ARBORIST ISA #MA-5385A 01/09/2017



RAILROAD AVENUE GRASS PAVE ADDITION TREE/SHRUB INVENTORY PLAN
 SCALE 1"=20'

Engineers • Surveyors • Planners
 Landscape Architects • Arborists
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 INCORPORATED ESTABLISHED 1945
 207 PARK AVENUE
 FALLS CHURCH, VIRGINIA 22046
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NO.	DESCRIPTION	DATE	APPROVED BY	DATE	REVISION

TREE INVENTORY & PRESERVATION PLAN

RAILROAD COTTAGES
 CITY OF FALLS CHURCH, VIRGINIA

TREE PRESERVATION PROCEDURES AND SPECIFICATIONS
 City of Falls Church, VA – Urban Forestry / Development Services

- Prior to allowing any vehicle or construction equipment to enter the site, the construction foreman and project arborist (also foreman of company doing actual tree work if different from project arborist) is to meet the City Arborist to mark the location of the limits of clearing, tree preservation fencing, erosion control fabric, and root pruning line (where required), access routes, storage areas, and parking areas. The location of the LIMITS OF CLEARING/TREE PRESERVATION FENCING is to be installed in accordance with the approved plan and field located from existing benchmarks, landmarks, and building stakeout survey markers. All work procedures and tree preservation measures are to be discussed at this time. An appointment must be made with the arborist for the City a minimum of three days prior to the establishment of the tree preservation measures is required by City Code (Sec. 35-15 (b), see enclosed. Contact the City Arborist for an appointment at 703-248-5183.
- Trees to be removed shall be clearly marked and approved by the City Arborist prior to demolition or entry of any equipment on site. A tree contractor licensed and bonded to work in the City shall perform all tree work, including all tree removals. Check with the City Arborist for a copy of the most recent list of Tree Contractors.
- Tree preservation fencing shall be either of the following:
 - Six (6) foot high chain link fence sections attached to one and five eighths (1 5/8) inch outside diameter pipe with eleven (11) -gauge mesh in a two (2) inch diamond pattern. The fencing noted above may be temporary panels set in concrete blocks at the base and secured at the top with saddle clamps or
 - Four (4) foot high fourteen (14) gauge welded wire fence supported by six (6) foot long metal stakes (2" width) to be spaced eight (8) feet on center and sunk into the ground.

Both of the fencing types noted above shall be flagged with brightly colored surveyor ribbon to improve their visibility. The contractor must maintain fencing in place throughout construction. **In the event fencing must be temporarily removed for any reason, contact must be made first with the arborist at 703-248-5183.** The City Arborist must grant approval before any tree preservation fencing is removed, even temporarily.

- Erosion and sediment control fencing shall be placed on the inside (toward construction) from the tree preservation fencing and any root-pruning trenches. Erosion control devices such as silt fencing, debris basins, and water diversion structures shall be installed to prevent siltation and or erosion within the tree protection zone. Property owners are advised to impose fines in contracts with construction companies if tree preservation measures are violated.
- Demolition and Site Clearing:
 - The City Arborist shall be notified a minimum of three (3) days in advance of commencing any form of tree work. Call 703-248-5183 for an appointment.
 - Trees to be removed shall be felled so as to fall away from tree protection zones and to avoid pulling breaking of roots of trees to remain. If roots are entwined, the consultant may require first severing the major woody root mass before extracting the trees. This may be accomplished by cutting through the roots by hand, with a vibrating knife, rock saw, and narrow trencher with sharp blades, or other approved root-pruning equipment.
 - Trees being cut within the tree preservation zone shall be cut near ground level and the stumps ground out with a walk-behind grinding machine.
 - All downed brush and trees shall be removed from the tree protection zone either by hand or with equipment sitting outside the tree protection zone. Extraction shall occur by lifting the material out, not by skidding it across the ground.
 - Brush shall be chipped and placed in the tree protection zone to a depth of 6 inches, with no chips against the trunks of trees.
 - Structures and underground features to be removed within the tree protection zone shall use the smallest equipment possible and operate from outside the tree protection zone. The City Arborist shall be present during all such operations within the tree protection zone to monitor demolition activity. Phone 703-248-5183 at least three (3) days in advance for an appointment.
 - Any damage to trees due to demolition activities shall be reported to the City Arborist within 6 hours so that prompt remedial action can be taken.
 - If temporary haul or access roads must pass over the root area of trees to be retained, a roadbed of at least 10 inches of mulch shall be created to protect the soil. The roadbed material shall be replenished as necessary to maintain a 10-inch depth. The City Arborist must approve the use of any such temporary road in the tree protection area.
- Pruning & Other Preservation Measures Specifications:
 - The City Arborist shall be notified a minimum of three (3) days in advance of commencing any form of tree work. Call 703-248-5183 for an appointment.
 - Root pruning, where required, shall be mechanically done with a narrow trencher with sharp blades. Once a trench is opened up, approximately 18-24" in depth and 4" wide all exposed roots will be hand pruned so that the clean-cut ends can regrow. The tree preservation fencing shall be placed 6-12" outside the root-pruning trench (construction side of the trench). The erosion and sediment fencing shall be placed outside the tree preservation fencing (construction side of the fence).
 - Where required, apply a slow-release complete fertilizer containing major and trace elements, but low in water-soluble nitrogen during the season before the commencement of construction. An application of a *mycorrhizae* product may also be required to assist in the preservation of highly stressed trees.
 - All trees to be saved will be pruned (in accordance with American National Standards Institute (ANSI) Standard Practices for Trees, Shrubs, and Other Woody Plant Maintenance ANSI A300 and adhere to the most recent edition of ANSI Z133.1.
 - Treat any disease or insect pest as required to reduce stress on trees.
 - Remove all invasive vines growing on trees and from the area around the trees
 - Specifications for work to be performed on individual trees shall be indicated under the "maintenance" column of the Tree Survey.
 - All trees within the project area shall be pruned to:
 - clear the crown of diseased, crossing, weak, and dead wood to a minimum size of 1 1/2 inches diameter;
 - provide 14 feet of vertical clearance over streets and 8 feet over sidewalks;
 - remove stubs, cutting outside the woundwood tissue that has formed around the branch;
 - reduce end weight on heavy, horizontal branches selectively removing small diameter branches, no greater than 2 to 3 inches near the ends of the scaffolds.

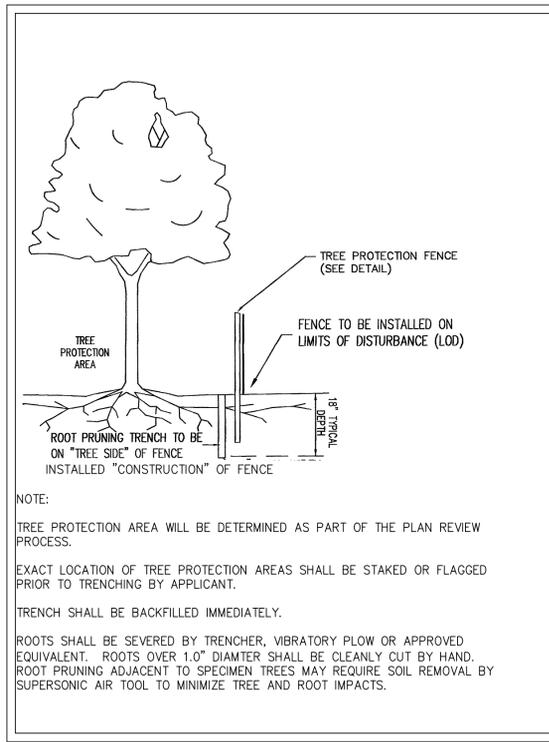
- Where temporary clearance is needed for access, branches shall be tied back to hold them out of the clearance zone. The City Arborist must approve such tying.
 - Pruning shall not be performed during periods of flight of adult boring insects because fresh wound attract pests. Pruning shall be performed only when the danger of infestation is past.
 - All work must be performed by a tree contractor licensed and bonded to work in the City and in accordance with the direction of the project certified arborist and the City Arborist.
 - Interior branches shall not be stripped out.
 - Pruning cuts larger than 4 inches in diameter, except for dead wood, shall be avoided.
 - Pruning cuts that expose heartwood shall be avoided whenever possible.
 - No more than 20 percent of live foliage shall be removed from a tree at one time.
 - While in the tree, the arborist shall perform an aerial inspection to identify defects that require treatment. Any addition work needed shall be reported to the City Arborist.
 - Brush shall be chipped and chips shall be spread underneath trees within the tree protection zone to a maximum depth of 6 inches, leaving the trunk and root flare clear of chips.
 - It may also be necessary to fertilize, aerate and otherwise treat the "trees to be saved" as required by the arborist for the City, following a meeting with the owner's/developer's arborist and approval of the "tree preservation plan". All tree work must be completed prior to construction.
 - "Selective clearing" in wooded areas will be allowed only under the direction of the City Arborist. Trees to be removed will be felled by hand so that minimal damage is done to "trees to be saved".
 - No vehicles or storage of materials of any kind will be allowed inside the limits of clearing. No storage of material or debris will be allowed within the "tree save area". No burning will be allowed on site.
- 7. Construction Specifications:**
- Supplemental water shall be supplied to trees being preserved when natural rainfall is less than 1" a week, from early spring until the ground freezes in the fall. Irrigation should be designed to wet the soil to a depth of 2-3 feet. Lacking a source of water early on the construction site, this may be accomplished by constructing a 6" berm around the tree protection zone and filling the basin with a water truck or by injecting the soil using a pressure system from a truck mounted water tank. Shallow frequent watering should be avoided.
 - Have a licensed and bonded tree contractor remove torn, hazardous, or prominent deadwood as it occurs, using ANSI standards noted under # 4 above.
 - Where construction traffic must occur in the area of tree roots it shall be necessary to apply the following procedure: cover undisturbed soil with 10-15 inches wood chips and topped with chain link fence pulled taught and anchored or topped with 5/8 to 3/4 inch plywood with non-skid surface.
 - Where compaction occurs during construction, vertical mulch with good quality compost.
 - Before grading, pad preparation, or excavation for foundations, footings, walls, or trenching, relevant trees shall be root pruned 1 foot outside the tree protection zone

- by cutting all roots cleanly to a depth of 24 inches to the maximum depth of root penetration, (usually 3 feet). Roots shall be cut by manually digging a trench and cutting exposed roots with a saw, vibrating knife, rock saw, narrow trencher with sharp blades, or other approved root-pruning equipment. Pruned roots shall be promptly covered with soil.
- Any roots damaged during grading or construction shall be exposed to sound tissue and cut cleanly with a saw and promptly covered with moist soil.
 - Soil from trenches, basements or other excavations shall not be placed within the tree protection zone, either temporarily or permanently. Soil stockpiles should be placed only in previously designated areas. No vehicles or construction equipment shall be parked in the tree protection zone.
 - No burn piles or debris pits shall be placed within the tree protection zone. No ashes, debris or garbage may be dumped or buried within the tree protection zone. No materials of any kind shall be stored in the tree protection zone.
 - Maintain fire-safe areas around fenced areas. Also, no heat sources, flames, ignition sources, or smoking is allowed near mulch of trees.
 - A copy of the "approved plan" and TREE PRESERVATION PROCEDURES AND SPECIFICATIONS must be maintained on site at all times.
 - All underground utilities and drain or irrigation lines shall be routed outside the tree protection zone. If lines must traverse the protection area, they shall be tunneled or bored under the tree(s) with the approval of the City Arborist.
 - A licensed and bonded tree contractor must perform additional tree pruning required for clearance during construction under the direction of the City Arborist. Construction workers shall not be allowed to prune trees.
 - Any herbicides placed under paving materials must be safe for use around trees and labeled for that use. Any pesticides used on site must be tree-safe and not easily transported by water.
 - If injury should occur to any tree during construction, it should be treated as soon as possible under the direction of the City Arborist.
 - The City Arborist must monitor any grading, construction, demolition, or other work that is expected to encounter tree roots.
 - At the completion of construction (and all equipment has been removed from site), notify the City Arborist for an inspection before removing the tree preservation fencing. At this time, all trees will be inspected and any repairs needed will be stipulated by the City and promptly made by the Contractor. (Refer to Sec. 35-15(b) of the City Code for guidance on finalizing the requirements of the bond agreement.
- The planting of the new tree(s) specified on the plan shall take place after the completion of construction. The City Arborist must inspect the trees prior to planting (see Arborist Notification) and also inspect the placement and installation of the tree(s). All products and workmanship related to the planting of the tree(s) must be in accordance with the **Tree Planting Specifications** attached. The Contractor/Owner must present the City with a copy of a one-year guarantee from the landscape contractor for the newly planted tree(s). The tree will need to be thriving and in good condition one year from the date of planting or will need to be replaced.

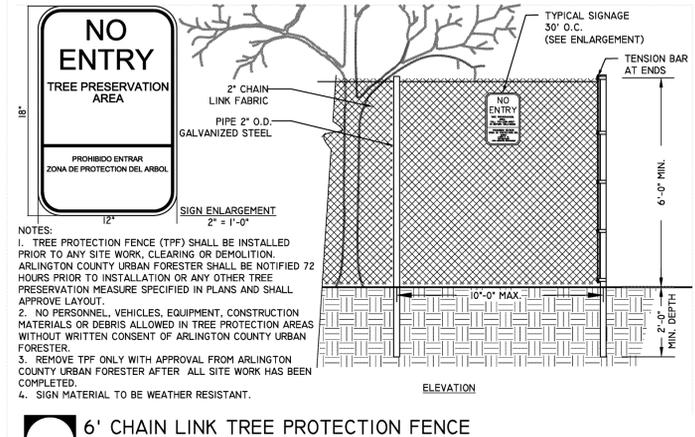
If you have questions on any of the "procedures" or "specifications" noted above or concerns that may arise during construction, please contact the City Arborist at (703) 248-5183 or the Senior Urban Forester at (703) 248-5016.

ARBORIST NOTIFICATION AND VERIFICATION:

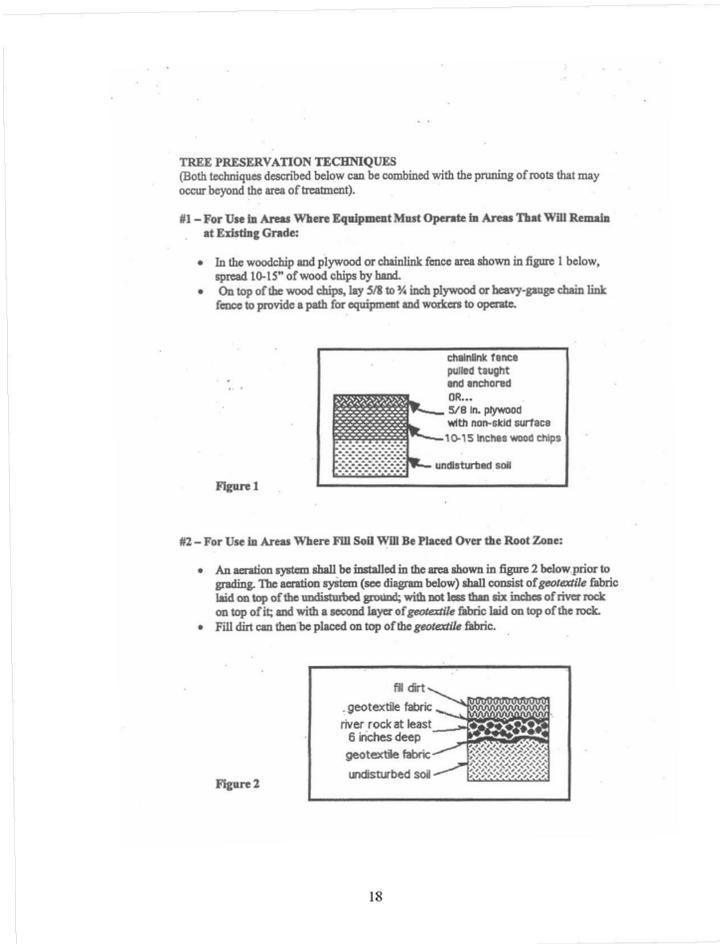
PRIOR TO THE SIGN OFF AND SUBSEQUENT RELEASE OF THE GRADING PLAN, ALL PRESERVATION MEASURES REQUIRED, AS PART OF THE LANDSCAPE CONSERVATION PLAN, MUST BE INSPECTED AND APPROVED BY THE CITY OF FALLS CHURCH ARBORIST. THIS MAY INCLUDE BUT IS NOT LIMITED TO TREE WORK, FENCING, MULCHING AND ROOT PRUNING. VIOLATIONS OF THE LANDSCAPE CONSERVATION PLAN SHALL RESULT IN FINES, STOP WORK ORDERS, AND/OR THE RESUBMISSION OF A "MITIGATION PLAN". THE REQUIRED REPLACEMENT VEGETATION SHALL BE INSPECTED PRIOR TO PLANTING BY THE CITY ARBORIST. VEGETATION THAT IS INSTALLED UNINSPECTED WILL BE REJECTED. TO ARRANGE AN APPOINTMENT CALL THE SENIOR URBAN FORESTER (703) 248-5016.



NOTE:
 TREE PROTECTION AREA WILL BE DETERMINED AS PART OF THE PLAN REVIEW PROCESS.
 EXACT LOCATION OF TREE PROTECTION AREAS SHALL BE STAKED OR FLAGGED PRIOR TO TRENCHING BY APPLICANT.
 TRENCH SHALL BE BACKFILLED IMMEDIATELY.
 ROOTS SHALL BE SEVERED BY TRENCHER, VIBRATORY PLOW OR APPROVED EQUIVALENT. ROOTS OVER 1.0" DIAMETER SHALL BE CLEANLY CUT BY HAND. ROOT PRUNING ADJACENT TO SPECIMEN TREES MAY REQUIRE SOIL REMOVAL BY SUPERSONIC AIR TOOL TO MINIMIZE TREE AND ROOT IMPACTS.



- NOTES:
 1. TREE PROTECTION FENCE (TPF) SHALL BE INSTALLED PRIOR TO ANY SITE WORK, CLEARING OR DEMOLITION. ARLINGTON COUNTY URBAN FORESTER SHALL BE NOTIFIED 72 HOURS PRIOR TO INSTALLATION OF ANY OTHER TREE PRESERVATION MEASURE SPECIFIED IN PLANS AND SHALL APPROVE LAYOUT.
 2. NO PERSONNEL, VEHICLES, EQUIPMENT, CONSTRUCTION MATERIALS OR DEBRIS ALLOWED IN TREE PROTECTION AREAS WITHOUT WRITTEN CONSENT OF ARLINGTON COUNTY URBAN FORESTER.
 3. REMOVE TPF ONLY WITH APPROVAL FROM ARLINGTON COUNTY URBAN FORESTER AFTER ALL SITE WORK HAS BEEN COMPLETED.
 4. SIGN MATERIAL TO BE WEATHER RESISTANT.



- TREE PRESERVATION TECHNIQUES**
 (Both techniques described below can be combined with the pruning of roots that may occur beyond the area of treatment.)
- #1 – For Use in Areas Where Equipment Must Operate in Areas That Will Remain at Existing Grade:**
- In the woodchip and plywood or chainlink fence area shown in figure 1 below, spread 10-15" of wood chips by hand.
 - On top of the wood chips, lay 5/8 to 3/4 inch plywood or heavy-gauge chain link fence to provide a path for equipment and workers to operate.
- #2 – For Use in Areas Where Fill Soil Will Be Placed Over the Root Zone:**
- An aeration system shall be installed in the area shown in figure 2 below prior to grading. The aeration system (see diagram below) shall consist of geotextile fabric laid on top of the undisturbed ground, with not less than six inches of river rock on top of it; and with a second layer of geotextile fabric laid on top of the rock.
 - Fill dirt can then be placed on top of the geotextile fabric.



ATTACHMENT TO TREES OR VEGETATION IS PROHIBITED
 SIGNS TO BE PROPERLY MAINTAINED THROUGHOUT CONSTRUCTION
 SIGN POSTS MAY BE WOOD OR METAL BUT MUST MAKE THE SIGN VISIBLE FROM A STANDING POSITION
 SIGNS MUST BE PLACED SUCH THAT A SIGN CAN BE SEEN BY ALL PARTICIPANTS IN THE LAND DISTURBING ACTIVITY AT ALL TIMES, A MINIMUM OF EVERY 50'.
 SIGNS MUST BE LAMINATED OR A DURABLE, WEATHERPROOF MATERIAL

TREE PRESERVATION NOTES & DETAILS

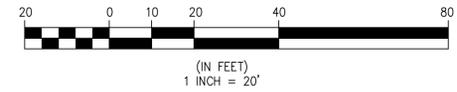
NO.	DESCRIPTION	DATE	APPROVED BY	REVISION

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

Professional Seal: **WALTER L. PHILLIPS**, License No. 041850, State of Virginia, expires 11/8/17.

Engineers • Surveyors • Planners
 Landscape Architects • Arborists
 DATE: 09/12/2017, 10:02:07, 11/8/2017
 SCALE: NONE
 CHECKED: AT
 DRAWN: AW

RAILROAD COTTAGES
 CITY OF FALLS CHURCH, VIRGINIA



- ±232 LF BUFFER TYPE "A"
20' WIDTH
REQUIRED PLANTINGS:
• 10 CANOPY TREES
• 58 SMALL SHRUBS
PROVIDED PLANTINGS:
• 7 CANOPY TREES
• 2 UNDERSTORY TREES
• 69 SMALL SHRUBS

NORTHERN VIRGINIA REGIONAL PARK AUTHORITY
ZONE: R-1A
W&OD TRAIL
100' WIDE RIGHT-OF-WAY
DB 4910 PG 172

- ±354 LF BUFFER TYPE "A"
10' WIDTH
REQUIRED PLANTINGS:
• 15 CANOPY TREES
• 89 SMALL SHRUBS
PROVIDED PLANTINGS:
• 13 CANOPY TREES
• 89 SMALL SHRUBS

NOTE:
1. PROPOSED PLANTINGS ON NVPR PROPERTY ARE EXCLUDED FROM BUFFER PLANTING COUNTS.
2. ANY VEGETATION AFFECTED BY GRASS PAVE INSTALLATION SHALL BE COORDINATED WITH NVPR IF REPLACEMENT IS NECESSARY.

- ±600 LF BUFFER TYPE "A"
10' WIDTH
REQUIRED PLANTINGS:
• 24 CANOPY TREES
• 150 SMALL SHRUBS
PROVIDED PLANTINGS:
• 1 EXISTING CANOPY TREE
• 63 EVERGREEN TREES
• 3 EXISTING EVERGREEN TREES
• 11 SMALL SHRUBS
-THE PROPOSED SANITARY EASEMENT RESTRICTS THE PLANTING OF CANOPY TREES AND THE CITY HAS STATED ALLOWANCE OF THE PLANTING OF EVERGREEN TREES WITHIN THE SANITARY EASEMENT.

TREE CANOPY REQUIRED
54,425 SF x 20% = 10,885 SF
EXISTING TREES (1250 SF x 1.25) = 1,563 SF
CANOPY REQ BY PLANTINGS = 9,322

- ±185 LF BUFFER TYPE "A"
10' WIDTH
REQUIRED PLANTINGS:
• 8 CANOPY TREES
• 47 SMALL SHRUBS
PROVIDED PLANTINGS:
• 1 CANOPY TREE
• 18 EVERGREEN TREES
• 25 SMALL SHRUBS
-THE PROPOSED SANITARY EASEMENT RESTRICTS THE PLANTING OF CANOPY TREES ALONG THE SOUTHERN PORTION OF THE BUFFER AND THE ADJACENT PROPERTY OWNER HAS REQUESTED EVERGREENS IN PLACE OF CANOPY TREES FOR THE REMAINING LENGTH OF BUFFER.

NOTES:
1. ARCHITECT/OWNER TO MAKE FINAL PAVEMENT SELECTIONS AT TIME OF CONSTRUCTION; PAVERS TO BE OF APPROVED PERMEABLE PAVEMENT MATERIAL.
2. TYPICAL FOUNDATION PLANTING DETAIL ON SHEET C-1205.

PLANT SCHEDULE: SHRUBS / GRASSES / PERENNIALS

KEY	BOTANICAL NAME / COMMON NAME	SIZE	QUANTITY
AAB	ARONIA ARBUTIFOLIA 'BRILLIANTISSIMA' CHOKEBERRY	24" SPREAD CONT.	7
CSC	CORNUS SERICEA 'CARDINAL' RED TWIG DOGWOOD	24"-30" SPREAD CONT.	27
HYQ	HYDRANGEA QUERCIFOLIA OAK LEAF HYDRANGEA	24" SPREAD CONT.	11
IGS	ILEX GLABRA 'SHAMROCK' INKBERRY	24" SPREAD CONT.	31
IVS	ILEX VERTICILLATA 'RED SPRITE' WINTERBERRY	24" SPREAD CONT.	26
IVH	ITEA VIRGINIANA 'HENRY'S GARNET' VIRGINIA SWEETSPIRE	24" SPREAD CONT.	40
PHY	PHYSCARPUS OPULIFOLIUS NINEBARK	24" SPREAD CONT.	7
PLO	PRUNUS LAUROCERASUS 'OTTO LUYKEN' OTTO LUYKEN LAUREL	24" SPREAD CONT.	9
PLS	PRUNUS LAUROCERASUS 'SCHIPKAENSIS' SKIP LAUREL	30" SPREAD CONT.	21
SOR	SORGHASTRUM NUTANS INDIAN GRASS	1 GAL CONT.	39
TMD	TAXUS MEDIA 'DENSIFORMIS' YEW	24" SPREAD CONT.	15
VIB	VIBURNUM DENTATUM ARROWWOOD VIBURNUM	24" SPREAD CONT.	25
VDB	VIBURNUM DENTATUM 'BLUE MUFFIN' ARROWWOOD VIBURNUM	24" SPREAD CONT.	25

PLANT SCHEDULE: TREES

KEY	BOTANICAL NAME / COMMON NAME	MIN. SIZE	QUANTITY	COVERAGE		COMMENTS
				UNIT	TOTAL	
AA	AMALANCHIER ARBOREA SERVICEBERRY	8' TALL B&B	3	100	300	3-4 STEMS NATIVE CREDIT
AR	ACER RUBRUM RED MAPLE	2.5' CAL B&B	3	175	525	ENERGY CONSERVATION CREDIT; NATIVE CREDIT
BN	BETULA NIGRA 'HERITAGE' RIVER BIRCH	8' TALL B&B	3	175	525	3-4 STEMS
CC	CERCIS CANADENSIS 'FOREST PANSY' 'FOREST PANSY' REDBUD	1.75' CAL B&B	4	100	400	SINGLE STEM
CJ	CRYPTOMERIA JAPONICA 'RADICANS' CRYPTOMERIA	8' TALL B&B	10	25	250	
IF	ILEX x ATTENUATA 'FOSTERI' FOSTER HOLLY	8' TALL B&B	21	25	525	
JV	JUNIPERUS VIRGINIANA EASTERN REDCEDAR	8' TALL B&B	11	25	275	NATIVE CREDIT
MG	MAGNOLIA GRANDIFOLIA 'LITTLE GEM' LITTLE GEM SOUTHERN MAGNOLIA	8' TALL B&B	17	25	425	
MV	MAGNOLIA VIRGINIANA SWEETBAY MAGNOLIA	8' TALL B&B	4	100	400	3-4 STEMS NATIVE CREDIT
NS	NYSSA SYLVATICA BLACK OAK	2.5' CAL B&B	4	125	500	ENERGY CONSERVATION CREDIT; NATIVE CREDIT
PO	PLATANUS OCCIDENTALIS AMERICAN SYCAMORE	2.5' CAL B&B	3	175	525	(2) ENERGY CONSERVATION CREDIT; NATIVE CREDIT
QB	QUERCUS BICOLOR SWAMP WHITE OAK	2.5' CAL B&B	7	175	1225	NATIVE CREDIT
QP	QUERCUS MONTANA CHESTNUT OAK	2.5' CAL B&B	10	175	1750	NATIVE CREDIT
TG	THUJA 'GREEN GIANT' GREEN GIANT ARBORVITAE	8' TALL B&B	20	25	500	
				TOTAL:	8125	

LEGEND

- PROPOSED DECIDUOUS TREES
- PROPOSED UNDERSTORY TREE
- PROPOSED EVERGREEN TREE
- PROPOSED SHRUBS
- LIMITS OF CLEARING AND GRADING

CREDITS
25% NATIVE PLANT SPECIES 1375 SF
25% ENERGY CONSERVATION 344 SF
10% DIVERSITY BONUS 813 SF
2531 SF

PROPOSED CANOPY
2531 SF + 8125 SF = 10656 SF

TOTAL CANOPY
10656 SF + 1563 SF = 12219 SF

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www.WLPHINC.com

DATE: 9/12/2017, 10/20/2017, 11/8/2017
SCALE: 1" = 20'
DRAWN: AI
CHECKED: KY



REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

LANDSCAPE PLAN
RAILROAD COTTAGES
CITY OF FALLS CHURCH, VIRGINIA

SPECIFICATIONS FOR PLANTING
City of Falls Church, VA – Urban Forestry / Development Services

- Contractor shall verify existing conditions and utility locations. The City Arborist prior to the planting must approve adjustments to locations of plant material due to field conditions. Any substitutions in plant material and sizes specified will not be accepted, unless approved by the City Arborist prior to installation.
- All plant material shall conform to the American Standard for Nursery, latest edition, published by the American Nursery and Landscape Association. All plants must be free from injury, insect infestations and disease. All plant material must be inspected by the City Arborist prior to planting. The Contractor shall phone at least three (3) days prior to installation for inspection of the material and for inspection of the planting operation.
- All plant material must bear original nursery tags indicating the genus, species and if applicable, cultivars and variety. All tags shall be removed after the City Arborist has inspected the plant material.
- Test soil drainage before planting. Dig a hole as deep as your planting hole and fill with water. If water drains at a rate less than one inch per hour, install drainage to carry water away from the planting hole base, or moving or raising the planting site (bern construction)
- Examine soil for compaction before planting. If soils are compacted in an area where a group of plants are to be installed, incorporate several inches of a combination of organic materials such as composted yard waste, finely shredded pine bark mulch (*superfines*) or shredded, composted leaf mulch (*leaf-gro*) and till to a depth of twelve (12) to eighteen (18) inches over the entire area. Do not till if planting is within a tree preservation area. Apply the organic matter at a rate of one-quarter organic matter to three-quarters existing soil. Do not incorporate small quantities of sand – compaction will increase and drainage decreases. For single tree plantings, backfill planting holes with unamended soil. Increase the width of the top of the planting hole in area where soil has been compacted. Do not incorporate organic matter such as peat moss into backfill for individual planting holes.
- Tree pits shall be a minimum of two (2) and a half (1/2) times the width of the root ball and no deeper than the height of the root ball. On balled and burlaped trees, remove pinning nails or rope lacing, then cut away the wrapping and then backfill. Remove the top 12" of the wire basket. Remove all rope, whether jute or nylon, from trunks. For container materials, remove the container completely. Select trees grown in containers with vertical ribs or a copper-treatment on the interior wall. These container modification and treatments minimize circling root formation. If roots are circling around the root ball exterior of container plants (trees, shrubs or perennials) cut through the roots and soil in a few places.

Container tree with multiple circling roots will be rejected. Place shrubs and perennials at the same depth they were in the containers. For bare root perennials plant with the soil even with the top of the crown. Dig the hole wide enough to allow the roots to spread out in the soil. Push the soil back into the hole over the roots and around the top of the plant.

- A soil test shall be made and the results submitted to the City Arborist prior to the installation of the plant material.

For trees: A slow-release granular fertilizer shall be incorporated into the top four (4) inches of backfill soil to provide nitrogen, or if a soil test indicated a need for phosphorus or potassium. Use no more than 1 lb. Actual nitrogen per 1,000 ft. of planting hole surface. (Example – if using 18-6-12 with a 5' diameter hole, incorporate 0.3 oz. per planting hole.)

For shrubs: A slow-release granular fertilizer shall be incorporated into the top four (4) inches of backfill soil to provide nitrogen, or if a soil test indicates a need for phosphorus or potassium. Use quantities in accordance with manufacturer's direction.

For perennials, bulbs and annuals: A slow-release high phosphate fertilizer such as 7-40-6 or approved equal shall be incorporated into the top four (4) inches of the backfill mix. Alternatively, use Plant-tone on approved equal for sun perennials, together with rock phosphate at a rate in accordance with manufacturers directions. Alternatively, for shade perennials use Hollytone or approved equal, together with super phosphate at a rate in accordance with manufacturers directions. Use gypsum, a soil conditioner, for clay soils. For bulbs commercial raw finely ground Bone Meal with an analysis of 4% nitrogen and %20 phosphorus acid shall be incorporated into the backfill mix.

- When half of the backfill has been returned to the planting hole, water shall be applied to provide settlement and eliminate air pockets. The tree shall be thoroughly watered again after the remaining soil has been placed in the planting pit. A three (3) to four (4) inch diam of soil shall be constructed around the planting pit.

- Two (2) to three (3) inches of mulch shall be placed over the tree-planting pit, but shall be kept three (3) to four (4) inches away from the trunk of the tree or crowns of shrubs. Do not allow mulch to touch the trunks of trees or crowns of shrubs. Use mulch that is compatible with the type of plant used. Avoid mulch that has not been nitrogen composted, as the pH of the soil could change as the mulch degrades. Pine bark mulch will not change the pH of the soil as it degrades. This is the best type of mulch for use with perennials. In mulching perennials, use no more than 1-2". For Mediterranean type of perennials, such as lavender, or for peonies or iris, use no mulch at all.

- Trees shall be planted at the height of the surrounding grade with root flares visible. Should soil have been piled over the root flare during the digging process, this soil shall be removed so that the flare is slightly above grade.

- Any pruning must be done with the approval of the City Arborist. Pruning at the time of planting shall be done only to remove broken branches or double (co dominant) leaders.

- Remove tags and labels from trees and shrubs to prevent girdling branches and trunks.

- Stakes shall be used only in area of high traffic or highly windy locations. A tree-staking diagram should be provided if staking is necessary. Stake for maximum of one year. Allow trees a slight amount of flex rather than holding them rigidly in place. Use guying or attaching that won't damage the bark. To prevent trunk girdling, remove all guying material after one year.

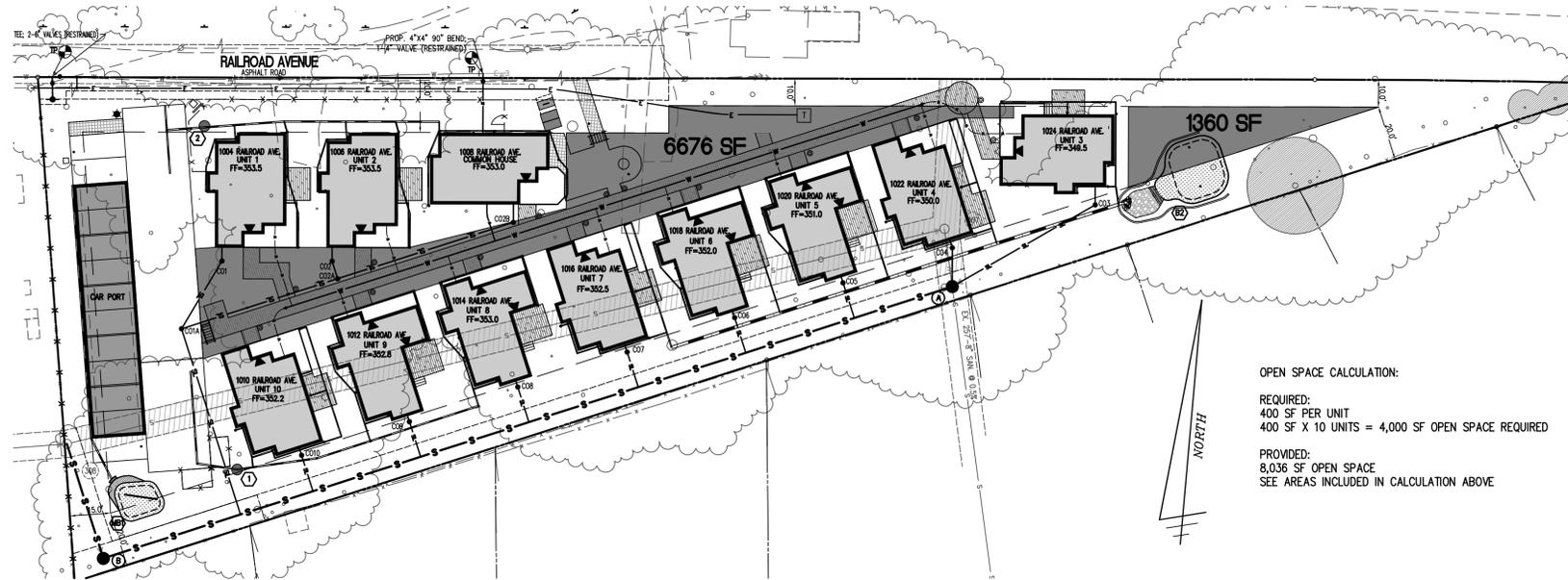
- Use tree wrap only on thin barked trees planted in spring or summer into hot or paved areas. In these instances use white wrap, attaching with out the use of wire, rope, ties or tape, and remove after one year.

- Planting Season – Planting shall be done only within the following dates:

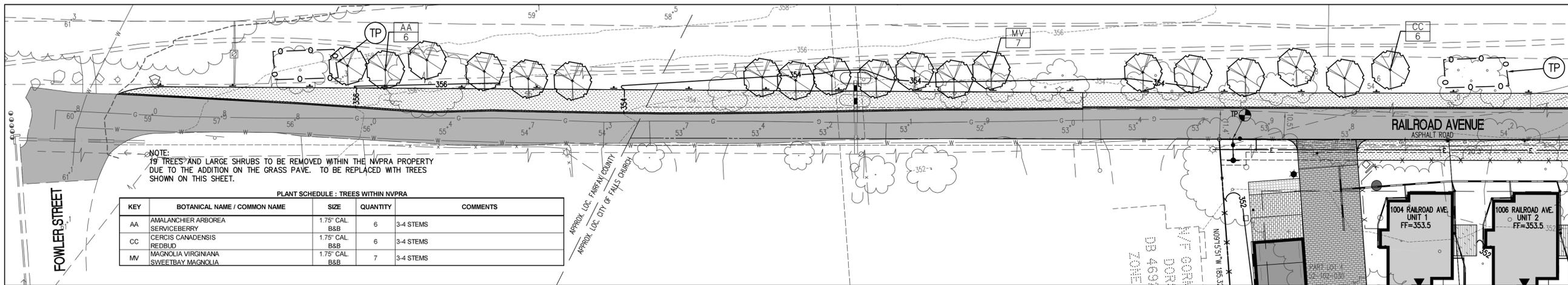
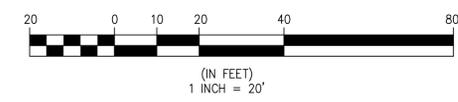
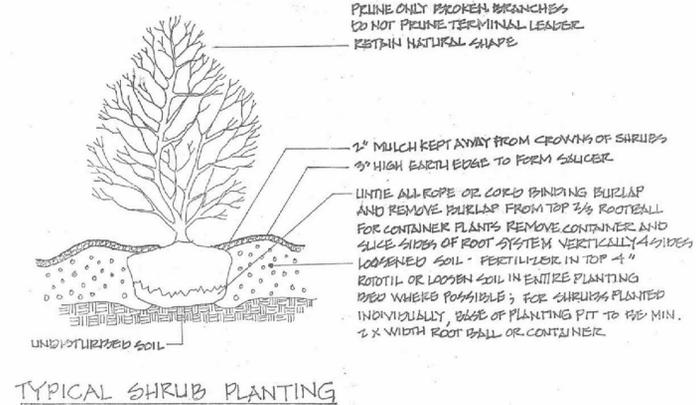
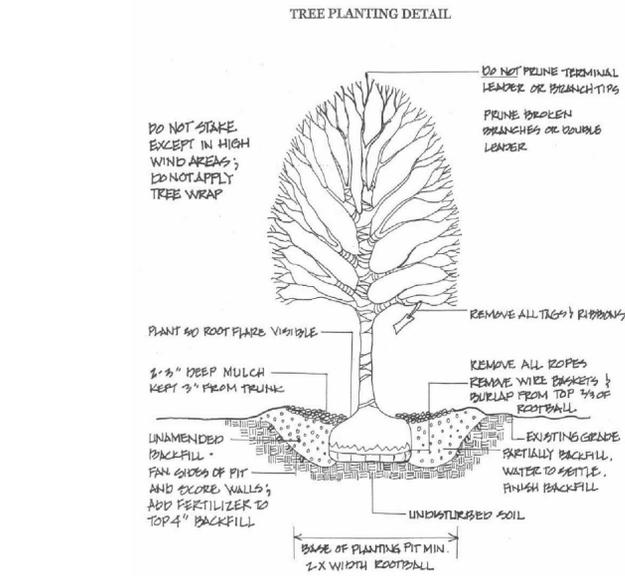
- Deciduous Trees – March 15 to May 30 or September 15 to December 15 (oaks and black gum to be spring dug and planted only).
- Evergreen Trees – March 1 to May 15 or September 15 to November 15.

- All plant material shall be guaranteed by the Contractor for one year from the date of acceptance to be in good, healthy and flourishing condition. In the event that a plant dies or in the judgment of the City Arborist, fails to flourish, the Contractor shall replace in accordance with the above noted specifications.

- The Contractor shall be responsible for the maintenance of the plants during this one-year warranty period. This maintenance shall include providing water on a weekly basis when natural rainfall is less than one inch a week. Drip irrigation systems and water reservoir devices can facilitate watering. Root balls of trees should be slowly and thoroughly soaked at time of watering. For planting beds (i.e., trees, shrubs and perennials), water slowly and deeply putting down 1"-2" of water in a 6-12 hour period. This should give a penetration of 12-18" depth.



OPEN SPACE DIAGRAM
SCALE: 1"=30'



RAILROAD AVENUE TREE REPLACEMENT
SCALE: 1"=20'

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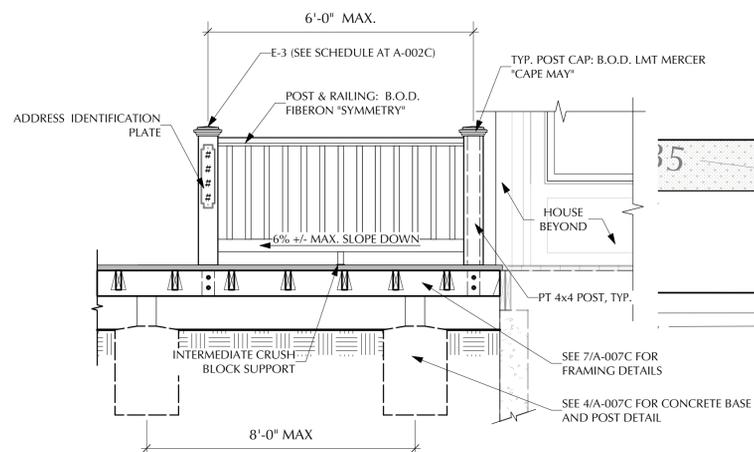
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CHECKED: KW

REVISION APPROVED BY

NO.	DESCRIPTION	DATE	REV. BY	APPROVED	DATE

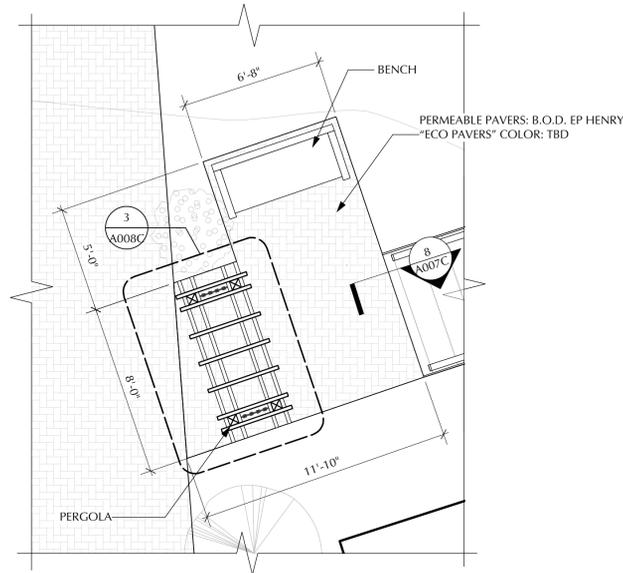
PLANTING NOTES & DETAILS & OPEN SPACE DIAGRAM

RAILROAD COTTAGES
CITY OF FALLS CHURCH, VIRGINIA



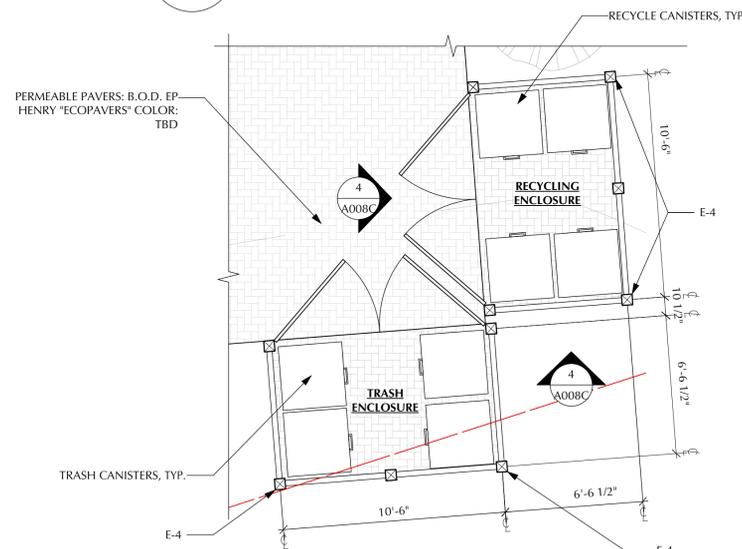
4 TYP. SITE RAILING

A003C Scale: 1/2" = 1'-0"



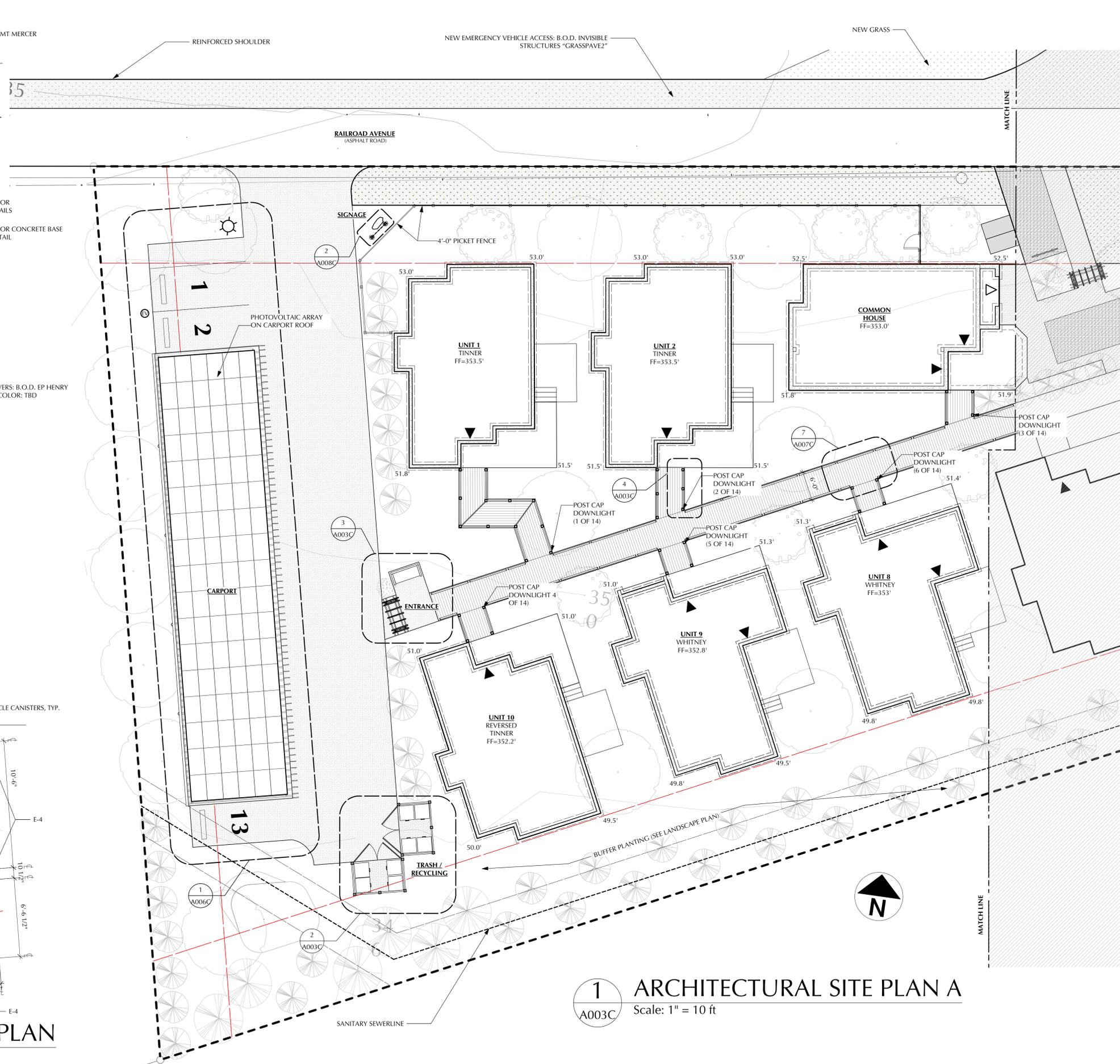
3 ENTRANCE PLAN

A003C Scale: 1/4" = 1'-0"



2 TRASH ENCLOSURE PLAN

A003C Scale: 1/4" = 1'-0"



1 ARCHITECTURAL SITE PLAN A

A003C Scale: 1" = 10 ft

RAILROAD COTTAGES

The Young Group
800 West Broad St. Suite 300
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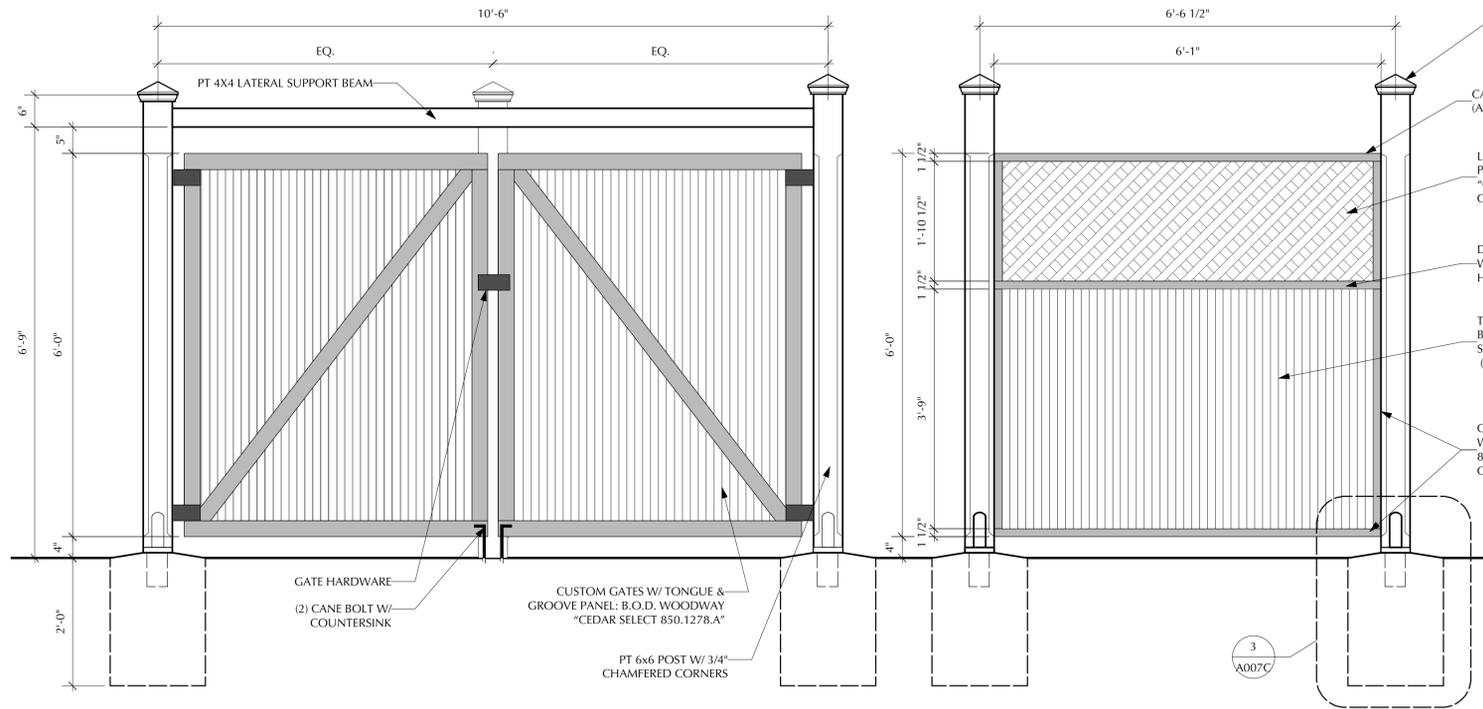
Butz-Wilberm Ltd
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Interiors | Property Visioning

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Falls Church, Virginia 22046
703-356-6771 fax: 356-7010

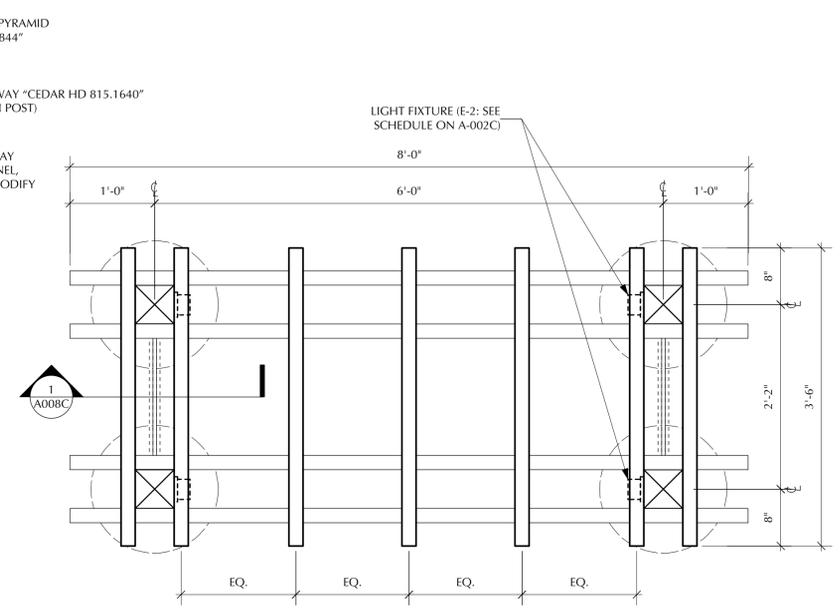
ARCH. SITE
PLAN A

A-003C

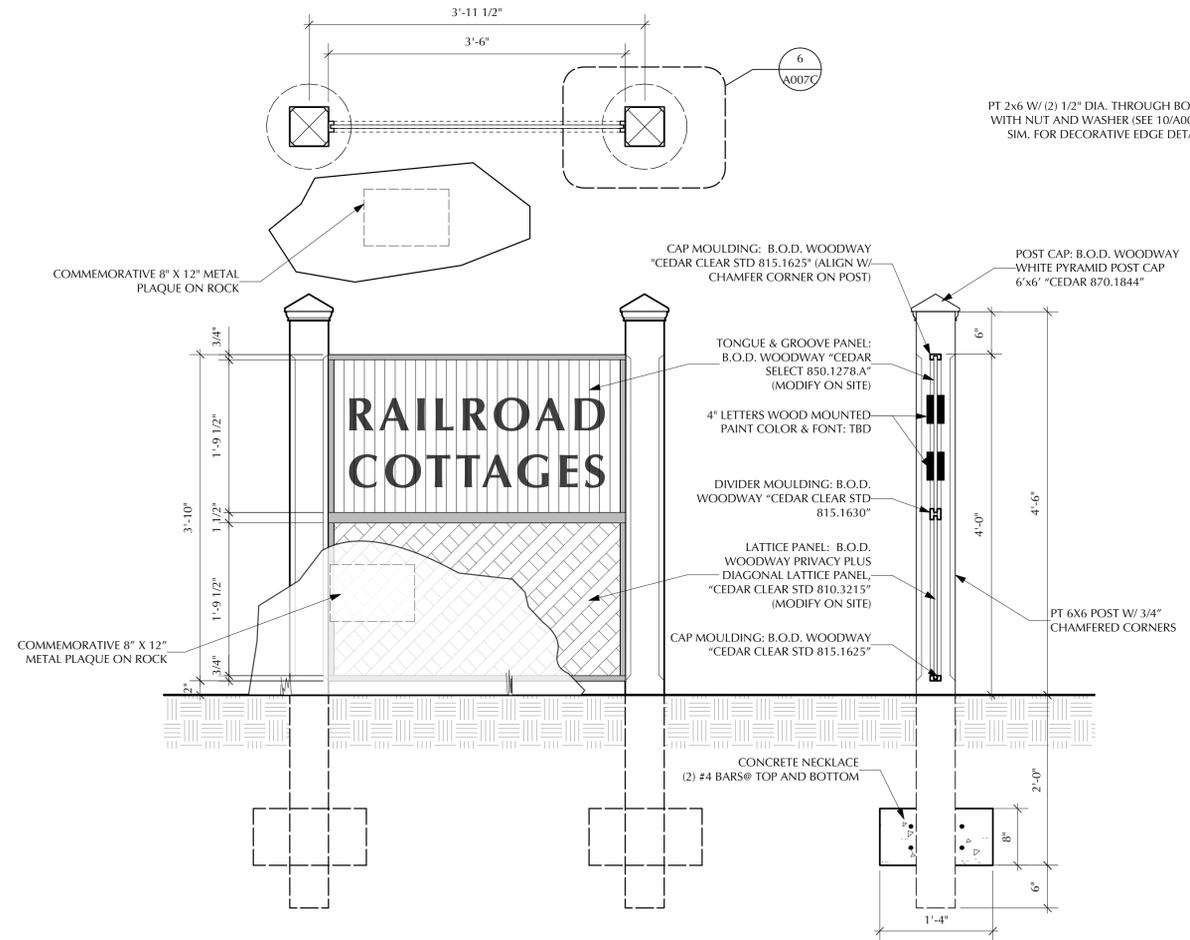
3 OF 37



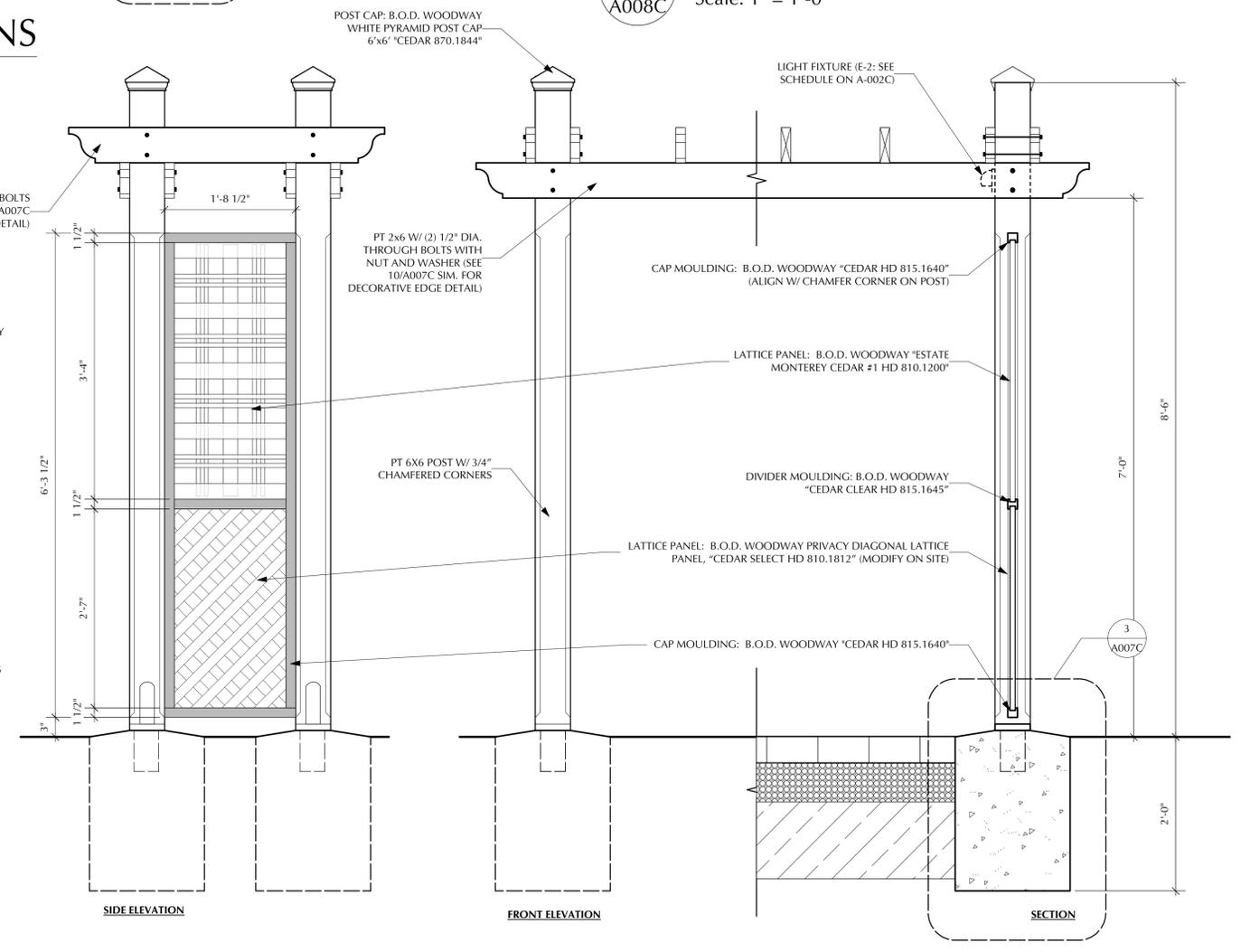
4 TRASH & RECYCLING ENCLOSURE ELEVATIONS
 A008C Scale: 3/4" = 1'-0"



3 PERGOLA PLAN
 A008C Scale: 1" = 1'-0"



2 ENTRANCE SIGN PLAN/ ELEVATION/ SECTION
 A008C Scale: 1" = 1'-0"



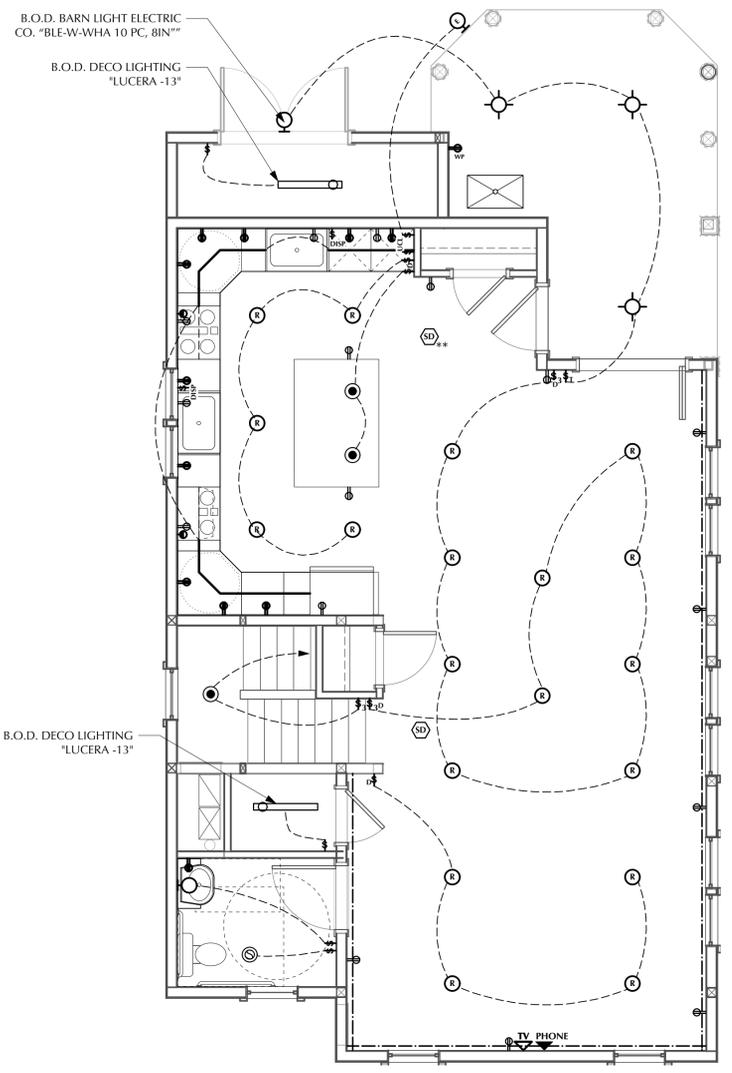
1 PERGOLA ELEVATION / SECTION
 A008C Scale: 1" = 1'-0"

ELECTRICAL SYMBOLS LIST:

	RECESSED DOWN LIGHT		DUPLEX OUTLET
	UNDERCABINET LED STRIP LIGHTING		WATERPROOF OUTLET
	LED TUBE LIGHTING		GFI OUTLET, 42" A.F.F.
	PENDANT LIGHTING		DESIGNATED APPLIANCE OUTLET
	CEILING MOUNTED SURFACE LIGHT		SINGLE POLE SWITCH
	WALL SCONCE		SINGLE POLE SWITCH ('D' SUBSCRIPT INDICATES DIMMER)
	EMERGENCY STROBE, SURFACE MOUNTED FACE OF HOUSE		SINGLE POLE SWITCH ('T' SUBSCRIPT INDICATES TIMER)
	CEILING MOUNTED FAN / LIGHT		3-WAY SWITCH
	SMOKE DETECTOR, HARDWIRED THROUGH HOUSE		TV WIRING
	** W/ CARBON MONOXIDE DETECTOR		PHONE WIRING

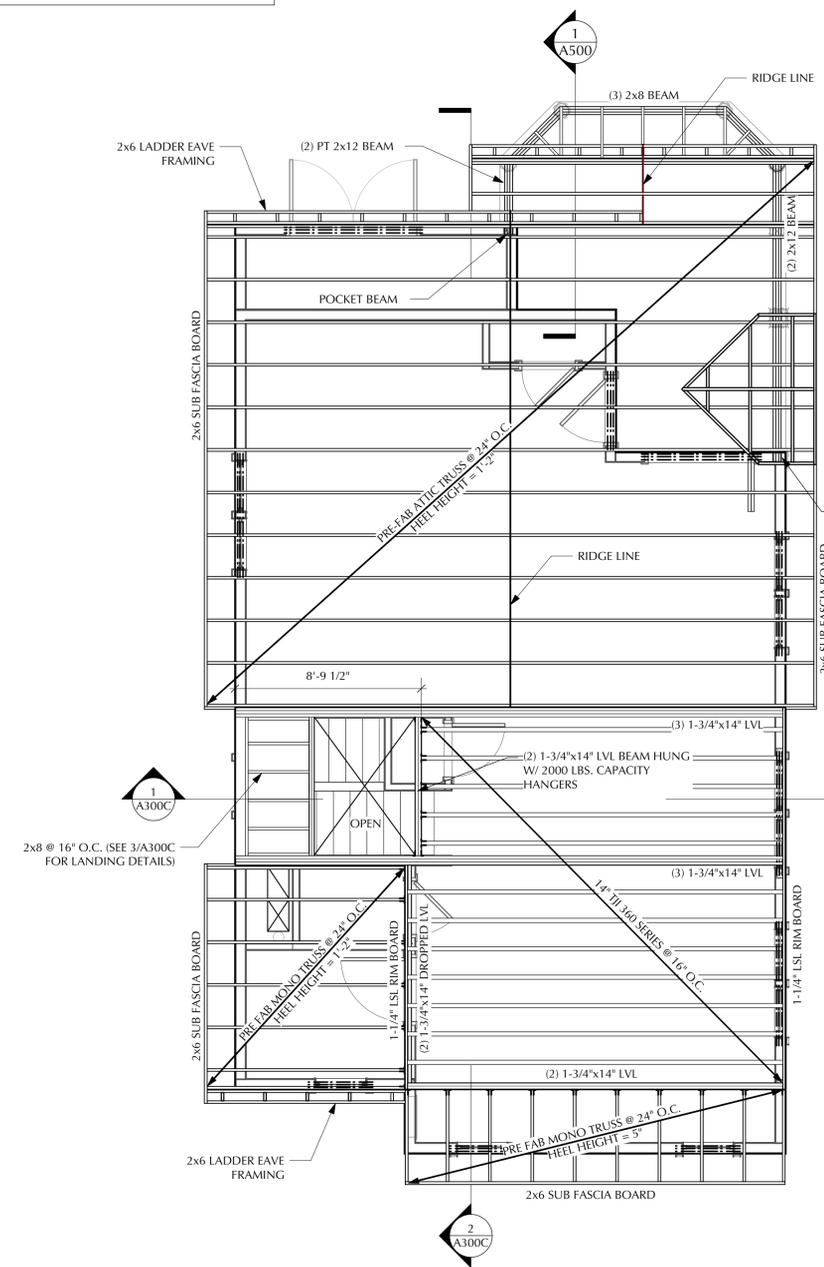
FRAMING NOTE:
 1. OUTSIDE OF WALL SHEATHING ALIGNS WITH OUTSIDE OF 10" CONCRETE FOUNDATION WALLS, THEREFORE WALL PLATES SHOULD BE OFFSET FROM OUTSIDE OF 10" FOUNDATION WALLS TO ACCOMMODATE WALL SHEATHING. (SEE 1/A501)
 2. (3) 2x8s OR (2) 2x12s HEADERS @ OPENINGS, TYP. UNLESS OTHERWISE NOTED.
 3. LVL BEAMS: 1/2" MACHINE BOLTS @ 24" O.C. MAX STAGGERED
 4. TWO STUD CORNERS AND LADDER T-WALLS AT ALL LOCATION.

WALL BRACING KEY:
 CS-WSP = CONTINUOUS WOOD STRUCTURAL PANEL SHEATHING, TYP. (SEE SHEET S-071)
 CS-PF = CONTINUOUS PORTAL FRAME, TYP. (SEE SHEET S-071)

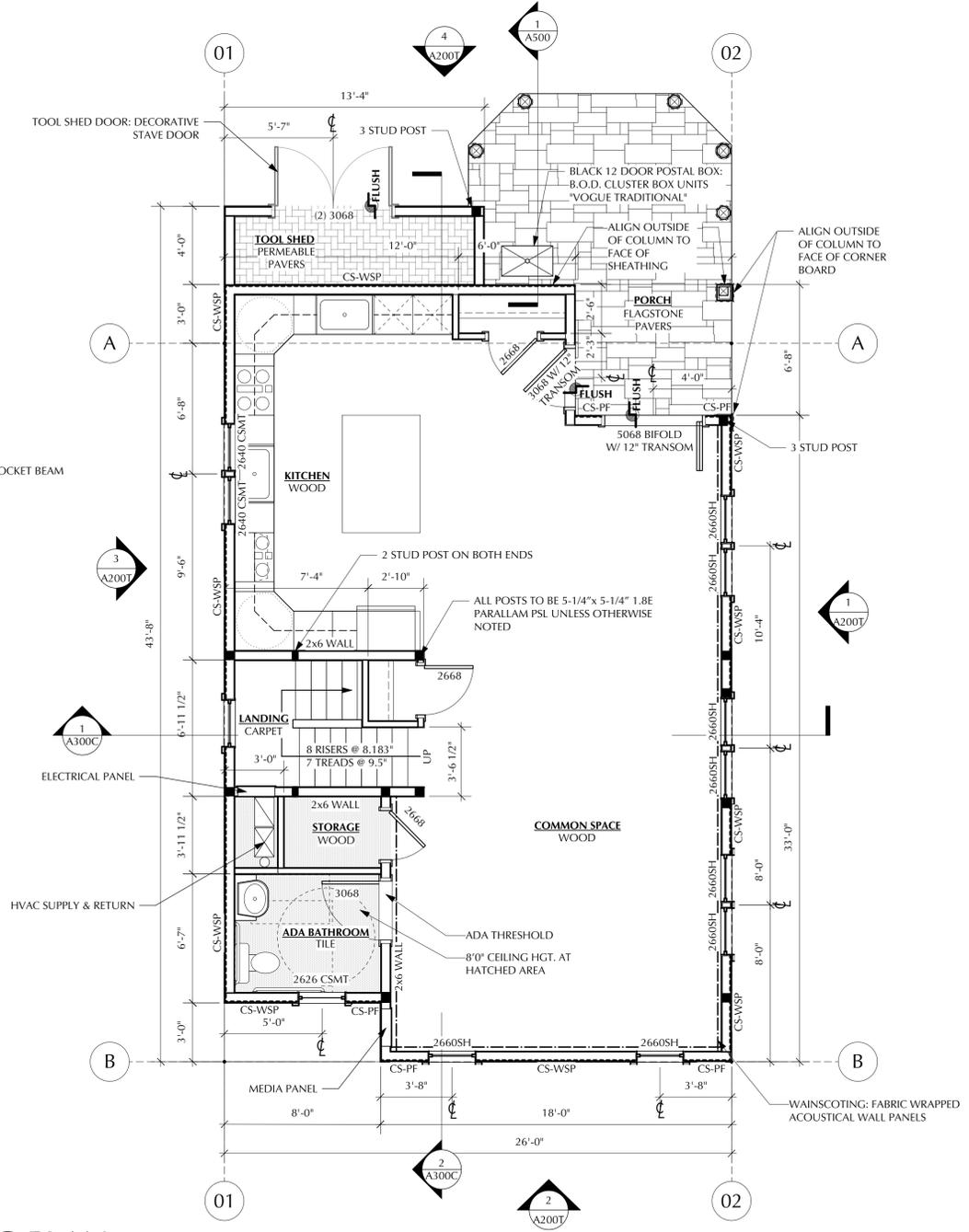


ELECTRICAL NOTE:
 1. ALL EXTERIOR LIGHT FIXTURES TO BE ENERGY STAR RATED

3 FIRST FLOOR ELECTRICAL PLAN
 A-101C Scale: 1/4" = 1'-0"



2 1ST FLOOR ROOF PLAN & 2ND FLOOR FRAMING PLAN
 A-101C Scale: 1/4" = 1'-0"



1 FIRST FLOOR PLAN / WALL BRACING
 A-101C Scale: 1/4" = 1'-0"

RAILROAD COTTAGES

The Young Group
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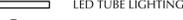
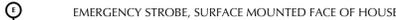
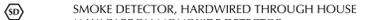
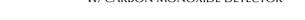
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FIRST FLOOR
 PLANS

A-101C

10 OF 37

ELECTRICAL SYMBOLS LIST:

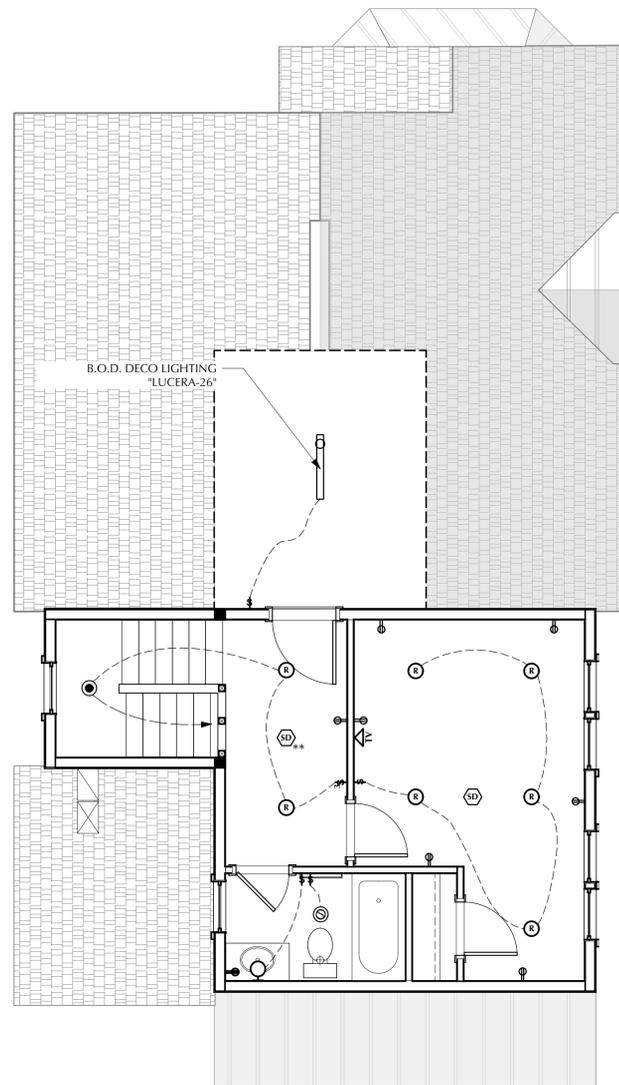
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	UNDERCABINET LED STRIP LIGHTING		WATERPROOF OUTLET
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FRAMING NOTE:

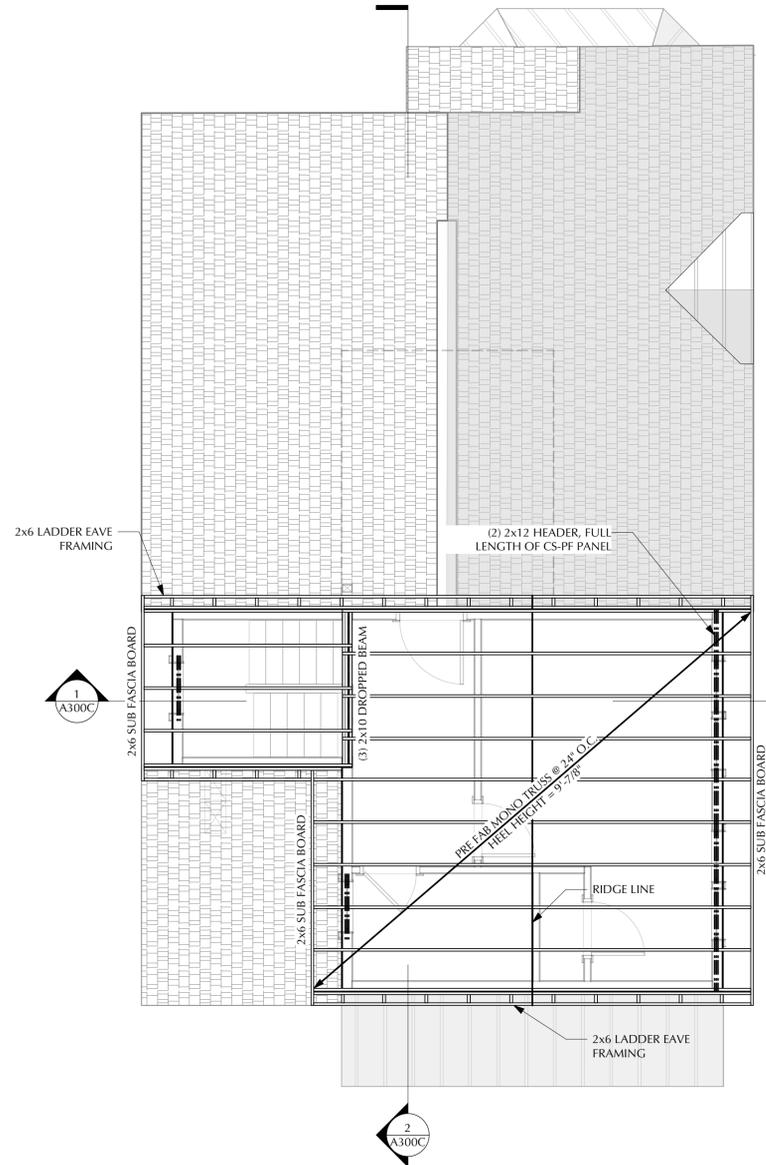
1. OUTSIDE OF WALL SHEATHING ALIGNS WITH OUTSIDE OF 10" CONCRETE FOUNDATION WALLS. THEREFORE WALL PLATES SHOULD BE OFFSET FROM OUTSIDE OF 10" FOUNDATION WALLS TO ACCOMMODATE WALL SHEATHING. (SEE 1/A501)
2. (3) 2x8s OR (2) 2X12s HEADERS @ OPENINGS, TYP. UNLESS OTHERWISE NOTED.
3. LVL BEAMS: 1/2" MACHINE BOLTS @ 24" O.C. MAX STAGGERED
4. TWO STUD CORNERS AND LADDER T-WALLS AT ALL LOCATION.

WALL BRACING KEY:

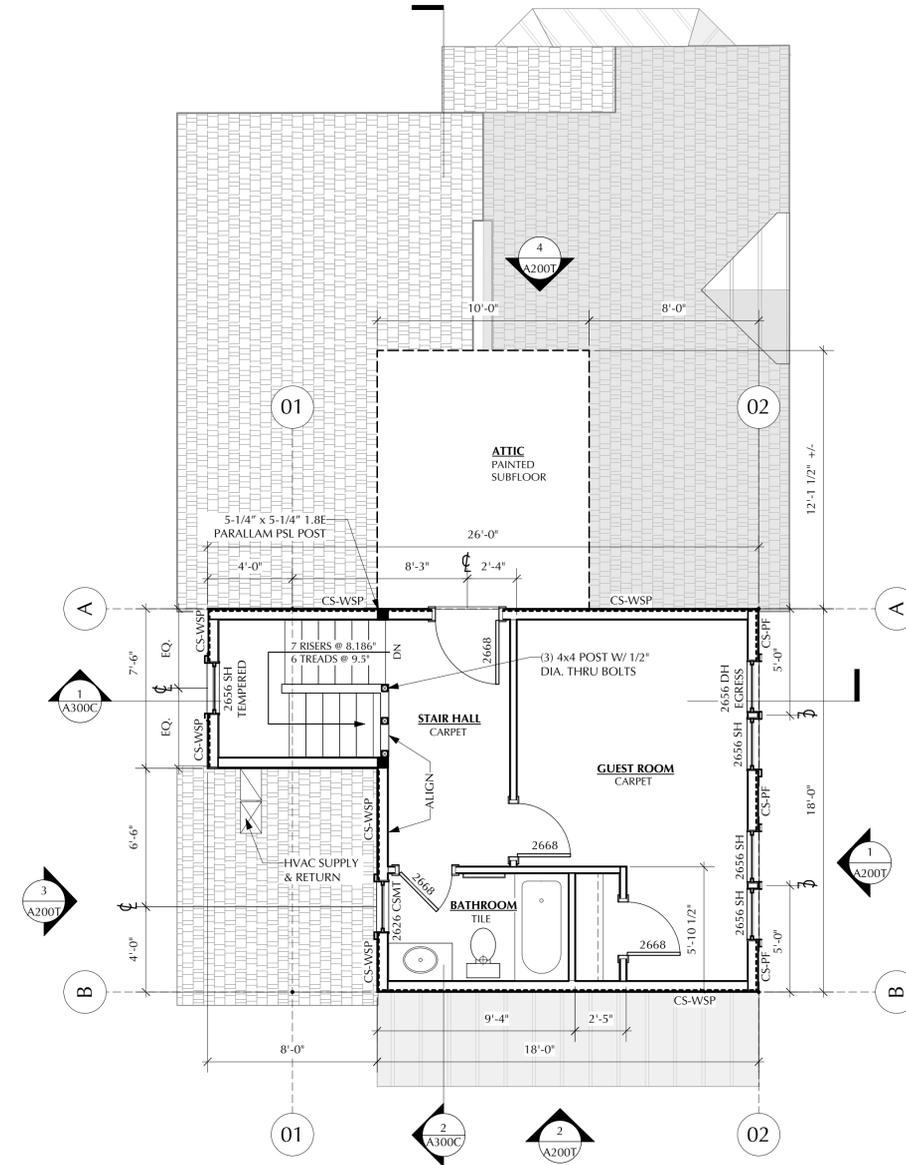
CS-WSP = CONTINUOUS WOOD STRUCTURAL PANEL SHEATHING, TYP. (SEE SHEET S-071)
 CS-PF = CONTINUOUS PORTAL FRAME, TYP. (SEE SHEET S-071)



3 SECOND FLOOR ELECTRICAL PLAN
 A-102C Scale: 1/4" = 1'-0"



2 ROOF FRAMING PLAN
 A-102C Scale: 1/4" = 1'-0"



1 SECOND FLOOR PLAN / WALL BRACING
 A-102C Scale: 1/4" = 1'-0"

RAILROAD COTTAGES

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 Falls Church, Virginia 22046

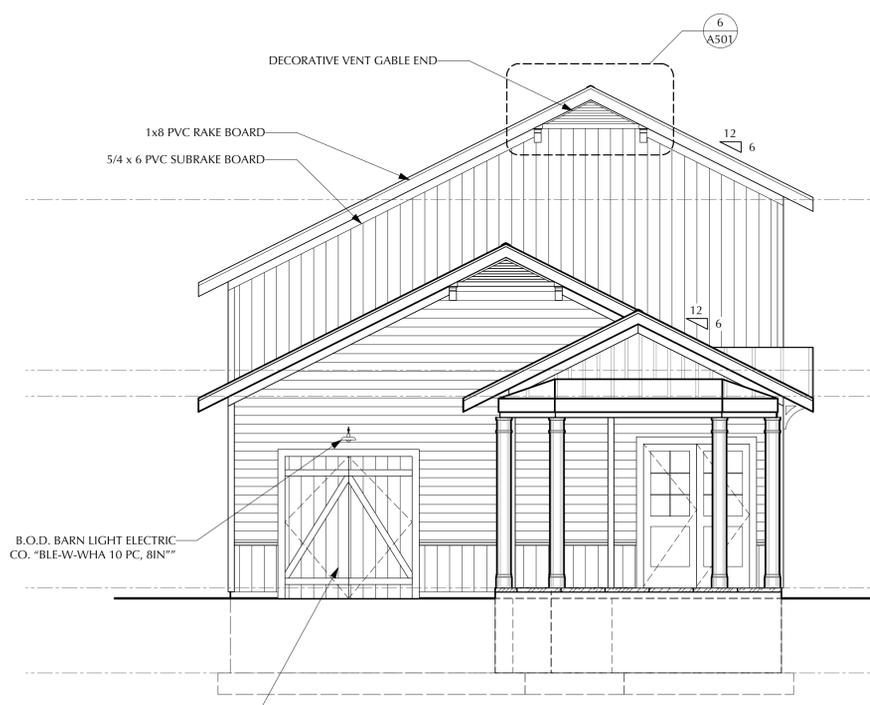


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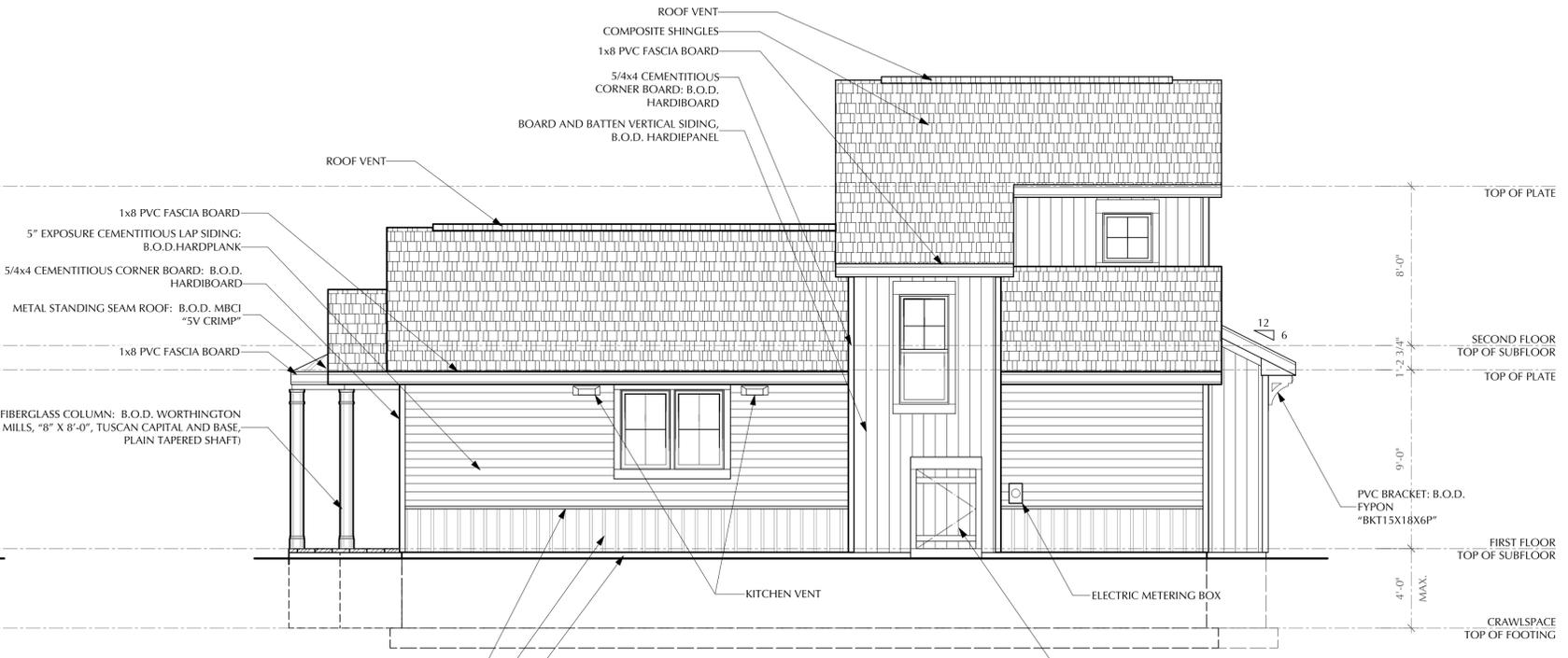
SECOND FLOOR
 PLANS

A-102C

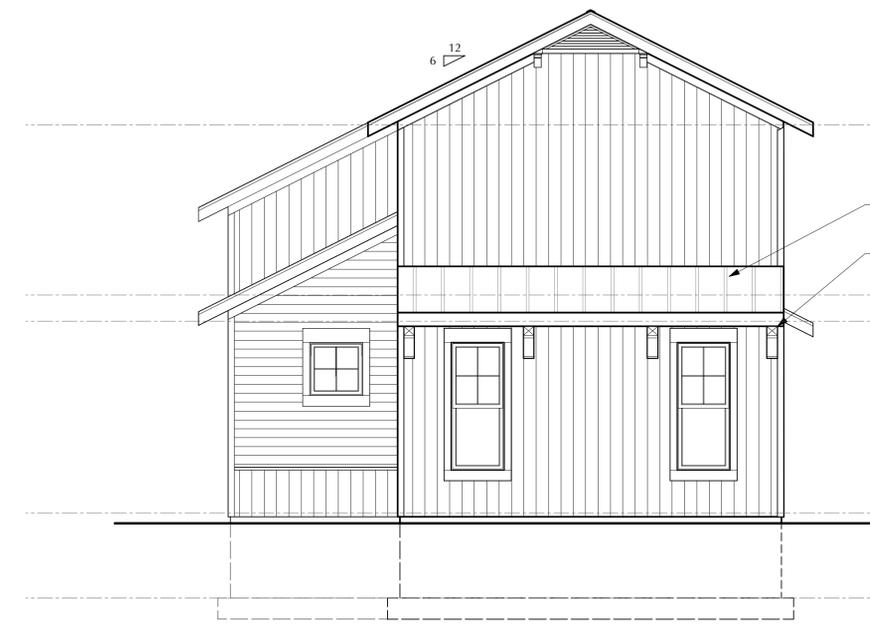
11 OF 37



4 EAST ELEVATION
A-200C Scale: 1/4" = 1'-0"



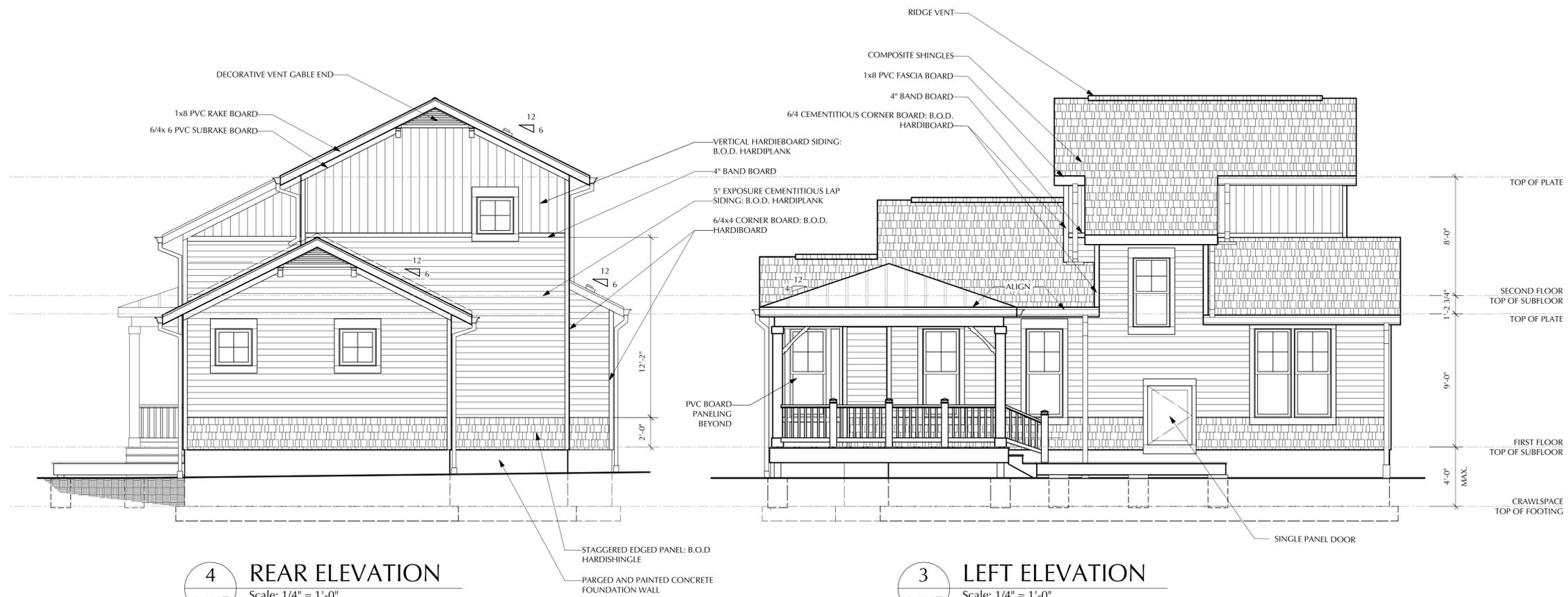
3 REAR ELEVATION
A-200C Scale: 1/4" = 1'-0"



2 WEST ELEVATION
A-200C Scale: 1/4" = 1'-0"

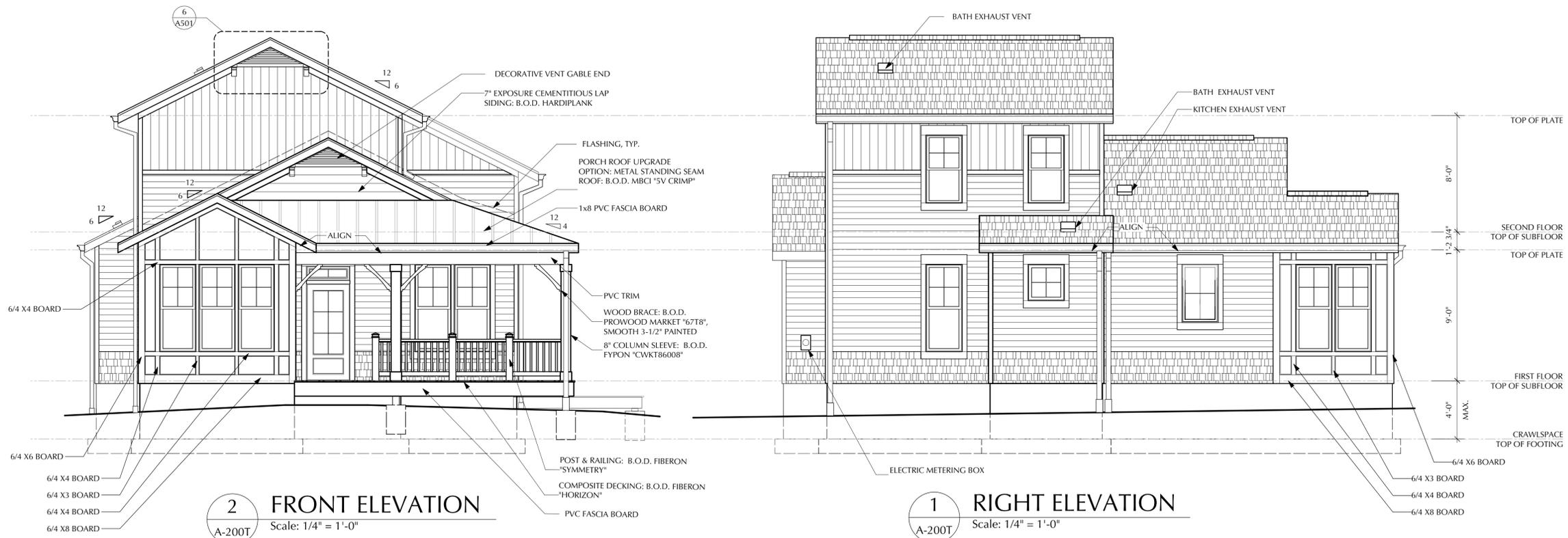


1 FRONT ELEVATION
A-200C Scale: 1/4" = 1'-0"



4 REAR ELEVATION
A-200T Scale: 1/4" = 1'-0"

3 LEFT ELEVATION
A-200T Scale: 1/4" = 1'-0"



2 FRONT ELEVATION
A-200T Scale: 1/4" = 1'-0"

1 RIGHT ELEVATION
A-200T Scale: 1/4" = 1'-0"

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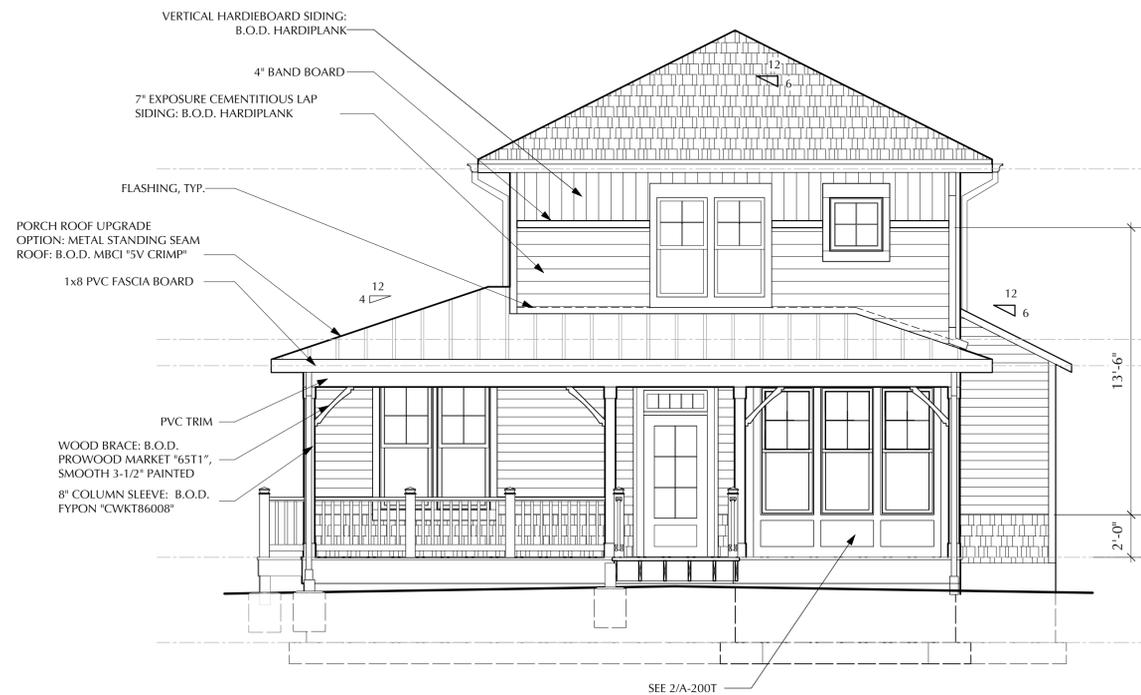
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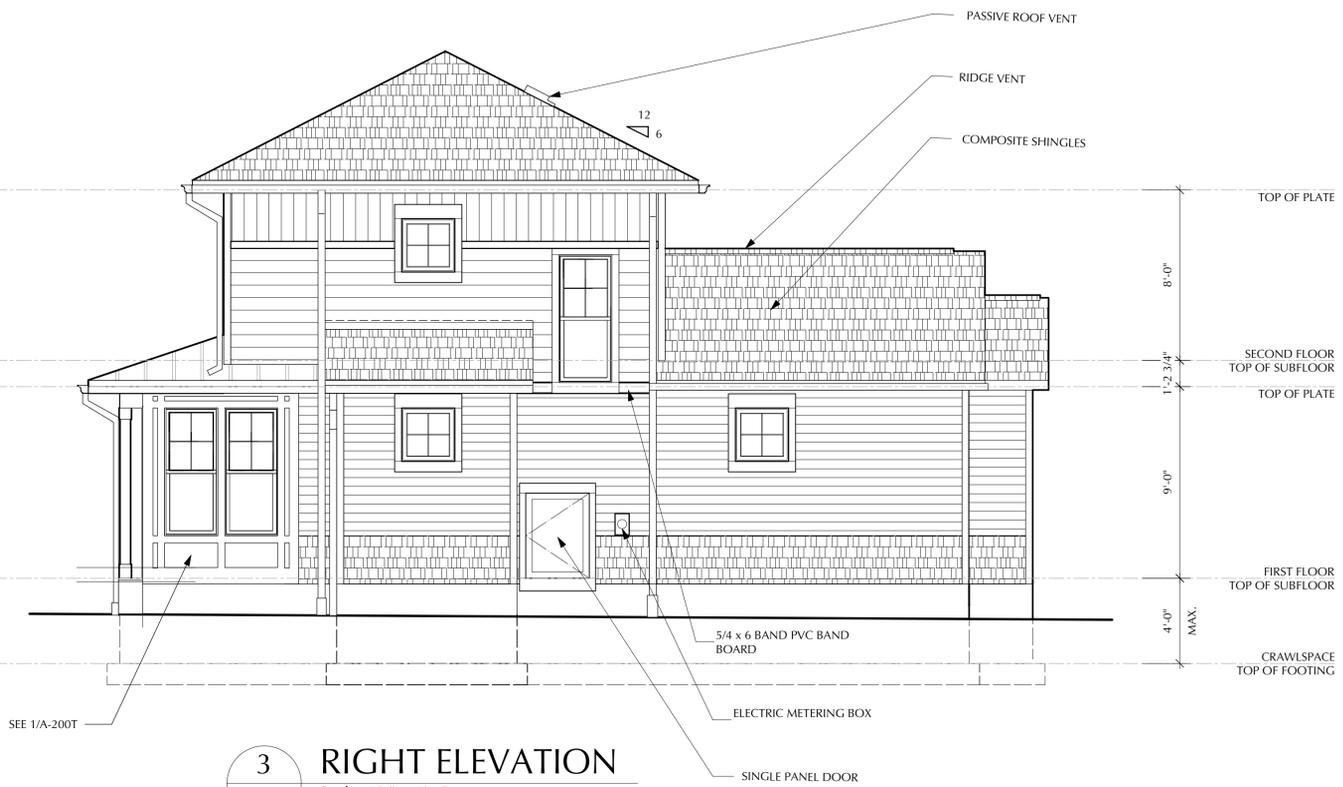
Elevations

A-200T

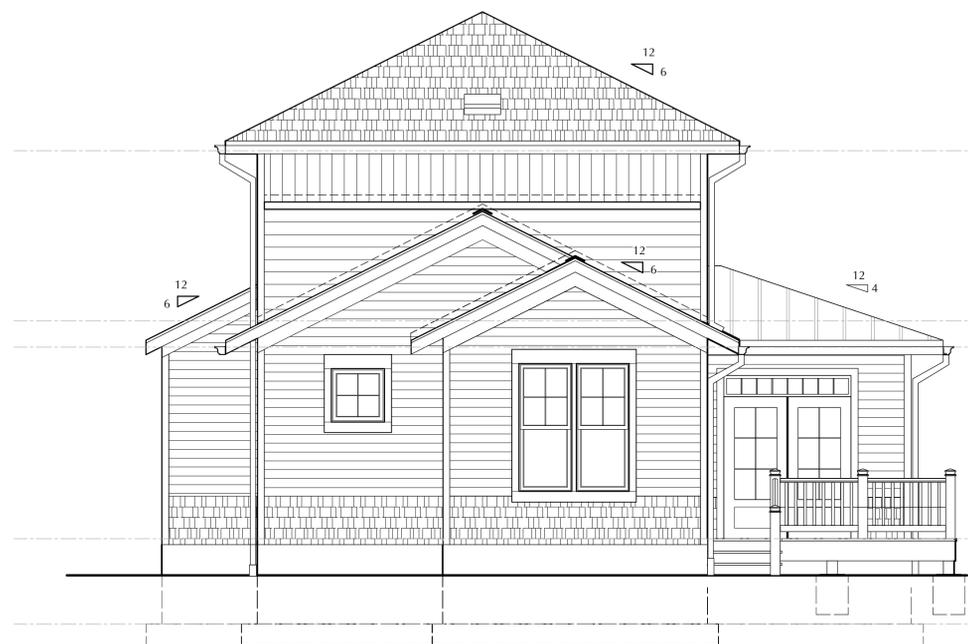
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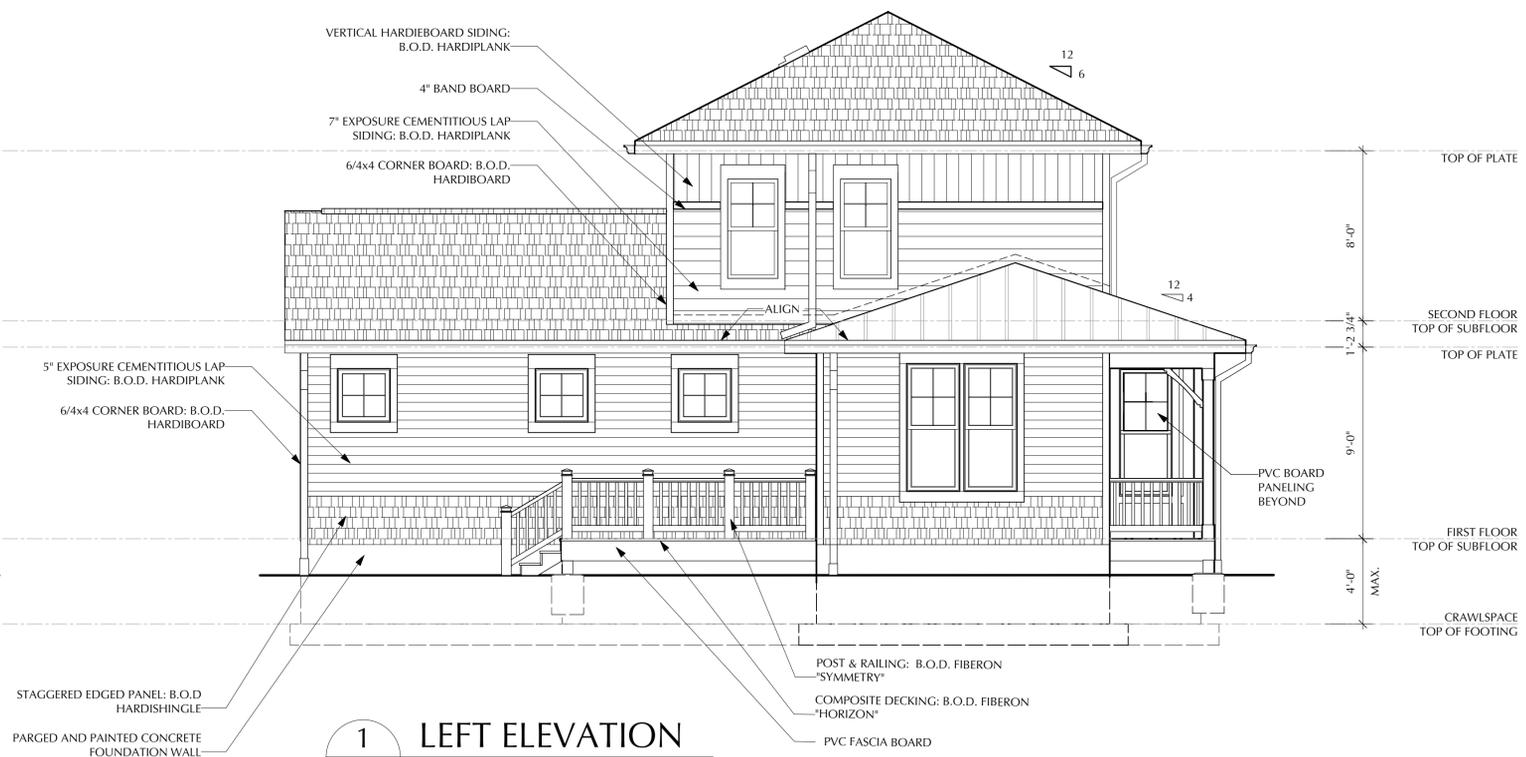
4 FRONT ELEVATION
A-200W Scale: 1/4" = 1'-0"



3 RIGHT ELEVATION
A-200W Scale: 1/4" = 1'-0"



2 REAR ELEVATION
A-200W Scale: 1/4" = 1'-0"



1 LEFT ELEVATION
A-200W Scale: 1/4" = 1'-0"