PEARSON BRANCH RESTORATION PLAN

STREAM RESTORATION DESIGN PLANS

CITY OF FALLS CHURCH, VIRGINIA

UTILITIES NOTES

1. ALL EXISTING UNDERGROUND UTILITIES SHALL BE MARKED IN THE FIELD BY MISS UTILITY PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING THE FIELD MARKING OF UTILITIES WITH MISS UTILITY.
2. ALL EXISTING UNDERGROUND UTILITIES SHALL BE PHYSICALLY LOCATED BY THE CONTRACTOR PRIOR TO THE BEGINNING OF ANY CONSTRUCTION IN THE VICINITY OF THESE UTILITIES.
3. THE CONTRACTOR SHALL CONFORM TO THE PROVISIONS AS SPECIFIED IN THE CURRENT VIRGINIA ADMINISTRATIVE CODE (VAC) SECTION 20 VAC 5 - 309-140, EXCAVATORS RESPONSIBILITIES TO AVOID DAMAGE, DISLOCATING OR DISTURBANCE OF UTILITY LINES, AS FOLLOWS:

   "ANY PERSON EXCAVATING AROUND UNDERGROUND UTILITY LINES SHALL TAKE ALL REASONABLE STEPS TO PROTECT SUCH UTILITY LINES. THESE STEPS SHALL INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
   1. THE EXCAVATOR SHALL PLAN THE EXCAVATION IN SUCH A MANNER TO AVOID DAMAGE TO, AND MINIMIZE INTERFERENCE WITH, UNDERGROUND UTILITY LINES IN AND NEAR THE CONSTRUCTION AREA.
   2. THE EXCAVATOR SHALL EXPOSE THE UNDERGROUND UTILITY LINE TO ITS EXTREMITIES BY HAND DIGGING WITHIN THE EXCAVATION AREA WHEN EXCAVATION IS EXPECTED TO COME WITHIN TWO FEET OF THE MARKED LOCATION OF THE UNDERGROUND UTILITY LINE.
   3. THE EXCAVATOR SHALL NOT UTILIZE MECHANIZED EQUIPMENT WITHIN TWO FEET OF THE EXTREMITIES OF ALL EXPOSED UTILITY LINES.
   4. THE EXCAVATOR SHALL MAINTAIN A REASONABLE CLEARANCE, TO INCLUDE THE WIDTH OF THE UTILITY LINE, IF KNOWN, PLUS 24 INCHES, BETWEEN THE MARKED OR STAKED LOCATION OF AN UNDERGROUND UTILITY LINE AND THE CUTTING EDGE OR POINT OF ANY MECHANIZED EQUIPMENT, CONSIDERING THE KNOWN LIMIT OF CONTROL OF THE CUTTING EDGE OR POINT TO AVOID DAMAGE TO THE UTILITY LINE.
   5. THE EXCAVATOR SHALL PROVIDE PROPER SUPPORT FOR UNDERGROUND UTILITY LINES DURING EXCAVATION ACTIVITIES. DURING BACKFILL OPERATIONS, THE EXCAVATOR SHALL USE THE SAME OR SIMILAR BACKFILL MATERIAL THAT WAS ORIGINALLY AROUND THE UTILITY LINE, ENSURE THERE IS PROPER COMPACTION AROUND THE UTILITY LINE, PROTECT ALL TRACER WIRES, AND PROTECT OR REPLACE WARNING TAPES."
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT EXISTING UTILITIES ARE DISCONNECTED, PRIOR TO CLEARING THE SITE OF TREES, BUILDINGS, FOUNDATIONS, ETC. WITHIN THE LIMITS OF CONSTRUCTION IN ACCORDANCE WITH THE REQUIREMENTS INDICATED ON THE CONSTRUCTION PLANS.
5. CONTRACTORS SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF PROPOSED CONSTRUCTION, EXCAVATION OR BLASTING AT LEAST 2 WORKING DAYS, BUT NOT MORE THAN 10 WORKING DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION IN ACCORDANCE WITH THE CITY OF FALLS CHURCH CODE. NAMES AND TELEPHONE NUMBERS OF THE OPERATORS OF UNDERGROUND UTILITY LINES IN CITY OF FALLS CHURCH APPEAR ON THIS SHEET. THESE NUMBERS WILL ALSO BE USED TO SERVE EMERGENCY CONDITION NOTICE AS REQUIRED BY OF THE CITY OF FALLS CHURCH CODE.

PRIMARY UTILITY COMPANIES

PRIMARY UTILITY COMPANIES	EMERGENCY
AMERICAN TELEPHONE & TELEGRAPH CO.	1-800-241-3624
COLUMBIA GAS OF VIRGINIA	1-800-543-8911 - 703-631-5363 (METRO)
COLUMBIA GAS TRANSMISSION CORP.	1-800-835-7191 (24 HRS)
COLONIAL PIPELINE CO.	1-800-926-2728
COX COMMUNICATIONS	703-378-2728
DOMINION VIRGINIA POWER	1-866-366-4357
FAIRFAX CITY WATER SERVICE	703-385-7984 OR 385-7924
FAIRFAX CO. WASTEWATER COLLECTION DIVISION	703-323-1211
CITY OF FALLS CHURCH PUBLIC SAFETY	703-691-2131 OR 911
FAIRFAX WATER	703-289-6395 OR 703-289-6323
MCI, INTERNATIONAL	
MCI, WORLD	1-800-624-9675
NORTHERN VIRGINIA ELEC. CO-OP	703-335-0500
TOWN OF HERNDON PUBLIC WORKS	703-435-6860 STATION 185 703-435-6846
TOWN OF VIENNA WATER SERVICE	703-255-6381 AFTER 5:00 PM., 703-255-6385
TRANSCO GAS PIPELINE CO.	1-800-440-8475 (24 HRS)
SMART TRAFFIC SIGNAL SYSTEM	703-383-2790
SPRINT (GLOBAL ONE)	1-800-521-0579 (24 HRS)
VERIZON (BELL ATLANTIC)	1-800-837-4966
VERIZON SOUTH	
WASHINGTON GAS	703-750-1000 (GAS LEAK 703-750-4831)
WORLD (METROPOLITAN FIBER SYSTEMS)	703-852-6700

FIBER OPTIC COMPANIES	EMERGENCY
Abovenet Communications	1-888-636-2778
AT&T	1-888-634-1840 (PAGER)
Comcast Communications in Reston	(AFTER HOURS 703-841-7700)
Elantic Telecom/Cavalier Telephone Company	1-888-662-5700
Fibergate	703-822-9743
Fiberlight, LCC	1-800-672-0181
Quest Government Services	1-800-388-6460
Qwest Communications	610-613-0979
Sprint	1-800-521-0579
Verizon Business (Formerly MCI)	703-391-5782; (CELL-703-598-1721)
XO Communications	1-866-295-9696
Xspedius Communications	1-800-937-7473
YIPES Communication, Inc.	1-877-740-6600

MISS UTILITY 1-800-552-7001 OR 811

TRAFFIC MAINTENANCE

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY TRAFFIC CONTROL SUCH AS LANE CLOSURES, FLAGGERS DRIVEWAY ENTRANCES, ETC., TO PROPERLY MAINTAIN TRAFFIC THROUGHOUT THE PROJECT.
2. EXISTING SURFACE, BASE, AND SUBBASE MATERIAL WHICH WILL BE DEMOLISHED OR OBLITERATED DURING CONSTRUCTION AND WHICH IS DETERMINED SUITABLE BY THE ENGINEER, SHALL BE SALVAGED AND UTILIZED FOR TRAFFIC MAINTENANCE.
3. ALL REQUIRED CONSTRUCTION SIGNING, TEMPORARY PAVEMENT WIDENING, TEMPORARY LAND STABILIZATION, TRAFFIC BARRIERS, TEMPORARY PAVEMENT MARKINGS, ERADICATION, ETC., SHALL BE INCLUDED IN THE CONTRACTOR'S BID PRICE FOR TRAFFIC MAINTENANCE.
4. GROUP 2 CHANNELING DEVICES SHALL BE USED AT ALL DROP-OFFS GREATER THAN OR EQUAL TO SIX INCHES, BUT LESS THAN TWO FEET. DROP-OFFS SHALL BE BACKFILLED UNTIL A 6:1 TAPER IS OBTAINED.
5. CONCRETE BARRIERS SHALL BE USED AT ALL DROP-OFFS GREATER THAN OR EQUAL TO TWO FEET.
6. CONES WITH A MINIMUM HEIGHT OF 36" SHALL BE USED AT ALL TRANSITIONS. CONES USED DURING NIGHTTIME HOURS SHOULD HAVE THE APPROVED, REFLECTIVE SLEEVES ON THEM.
7. ALL TRAFFIC MAINTENANCE SHALL CONFORM TO THE VIRGINIA WORK AREA PROTECTION MANUAL, CURRENT EDITION.
8. ALL EXISTING SIGNS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
9. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAY ENTRANCES DURING CONSTRUCTION.
10. TEMPORARY CLOSURE AFFECTING ACCESS TO ADJACENT PROPERTIES SHALL BE COORDINATED WITH AFFECTED PARTIES.
11. PEDESTRIAN DETOUR SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION ACCORDING TO VIRGINIA WORK AREA PROTECTION MANUAL AND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES GUIDELINES.
12. CLEAR ZONE SHALL BE MAINTAINED FREE OF PARKED EQUIPMENT AND STORED MATERIAL AT ALL TIMES.

CONSTRUCTION NOTES

1. ALL CONSTRUCTION, INCLUDING ANY PROPOSED LANDSCAPING, SHALL CONFORM TO THE CURRENT EDITION OF THE CITY OF FALLS CHURCH PFM AND THE VIRGINIA DEPARTMENT OF TRANSPORTATION (V.D.O.T.) STANDARDS AND SPECIFICATIONS AND SHALL CONFORM TO THE CURRENT EDITION OF THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE.
2. ALL CONSTRUCTION WITHIN THE V.D.O.T. RIGHT-OF-WAY SHALL CONFORM TO THE PROVISIONS CONTAINED IN THE V.D.O.T. LAND USE PERMIT ISSUED FOR THIS LOCATION. THE CONTRACTOR SHALL BE THOROUGHLY FAMILIARIZED WITH THE REQUIREMENTS OF THIS LAND USE PERMIT PRIOR TO THE START OF ANY CONSTRUCTION IN V.D.O.T. RIGHT-OF-WAY. THE SPECIAL PROVISIONS IN FORM MP-63 ARE A PART OF THE VDOT LAND USE PERMIT.
3. UNLESS MORE STRINGENT COMPACTION REQUIREMENTS ARE INDICATED ON THE PLANS OR IN THE SPECIFICATIONS, THE BACKFILL OF EMBANKMENT MATERIAL, THE INSTALLATION OF TRENCH BACKFILL AND THE RESTORATION OF DISTURBED AREAS SHALL BE COMPACTED IN ACCORDANCE WITH THE CURRENT EDITION OF THE V.D.O.T. ROAD AND BRIDGE SPECIFICATIONS. ALL COMPACTION SHALL BE AT ±2% OF THE OPTIMUM MOISTURE CONTENT.
4. ALL SUBGRADE, SUBBASE, BASE AND SHOULDER MATERIAL SHALL BE PLACED AND COMPACTED TO THE DENSITY SPECIFIED IN THE CURRENT EDITION OF THE V.D.O.T. ROAD AND BRIDGE SPECIFICATIONS. ALL COMPACTION SHALL BE AT ±2% OF THE OPTIMUM MOISTURE
5. THE CONTRACTOR SHALL PROVIDE ADEQUATE MEANS OF CLEANING TRUCKS AND/OR OTHER EQUIPMENT OF MUD PRIOR TO ENTERING CONTENT. THE V.D.O.T. RIGHT-OF-WAY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CLEAN ALL STREETS, ALLAY DUST AND TO TAKE WHATEVER MEASURES NECESSARY TO ENSURE THE ROAD(S) ARE MAINTAINED IN A CLEAN, MUD AND DUST FREE CONDITION AT ALL TIMES.
6. TEMPORARY OR PERMANENT PAVEMENT PATCHES ARE TO BE PLACED IN ALL ROADWAY CUTS WITH HOT MIX THE SAME DAY THE CUT IS MADE IN ACCORDANCE WITH V.D.O.T. REQUIREMENTS. SEE DPWES STANDARD DETAIL SHEET- SANITARY SEWER FOR REQUIREMENTS ON CUT REPLACEMENT IN ROADS WITH ASPHALT CONCRETE BASE AND SURFACE.
7. THE TOP ELEVATION OF EXISTING MANHOLES SHALL BE ADJUSTED TO MEET THE FINAL PAVEMENT ELEVATION AT THE TIME OF FINAL PAVING OPERATIONS. ALL MANHOLES ARE TO BE PROTECTED FROM THE TRAVELING PUBLIC.
8. CONTRACTOR TO ADJUST MANHOLE, VALVE, AND METER BOX COVERS BEFORE PLACING ASPHALT SEAL CAP.
9. THE CONTRACTOR SHALL VISIT THE SITE AND SHALL VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING A BID FOR THE CONSTRUCTION OF THE PROJECT.
10. WHERE EXISTING NATURAL DRAINAGE DITCHES OR STREAM BANKS ARE DISTURBED DURING CONSTRUCTION THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL ALIGNMENT, GRADE AND INVERT.
11. PROPOSED TOP OF CURB GRADES SHALL BE FIELD ADJUSTED AS REQUIRED TO CONFORM TO THE INTENT OF THE TYPICAL SECTION. A SMOOTH GRADE SHALL BE MAINTAINED FROM THE CENTERLINE TO THE PROPOSED EDGE OF PAVEMENT OR 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. ALL CURB FORMS SHALL BE INSPECTED FOR HORIZONTAL AND VERTICAL ALIGNMENT BY CITY OF FALLS CHURCH OR THEIR AUTHORIZED REPRESENTATIVES PRIOR TO PLACING OF CONCRETE.
12. THE FOLLOWING PROVISIONS SHALL APPLY TO THE USE OF SHEETING AND SHORING:
    a) SHEETING AND SHORING OR OTHER APPROVED METHODS FOR TRENCH BRACING WILL BE REQUIRED ON THIS CONTRACT AS NEEDED TO MEET ALL SAFETY REQUIREMENTS.
    b) UNLESS OTHERWISE DIRECTED BY THE ENGINEER, SHEETING AND SHORING WILL BE REMOVED FROM ALL TRENCHES PRIOR TO BACKFILLING OPERATIONS.
    c) UNLESS SPECIFICALLY IDENTIFIED IN THE CONTRACT DOCUMENTS, NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR SHEETING AND SHORING.
13. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS WITH SEED AND MULCH OR SOD IN ACCORDANCE WITH THE RESTORATION SCHEDULE NOTED ON THE APPROPRIATE PLAN SHEET.
14. THE CONTRACTOR SHALL RESTORE ALL DRIVEWAYS DISTURBED DURING CONSTRUCTION. RESTORATION SHALL CONSIST OF THE FOLLOWING:
    - GRAVEL DRIVEWAY - PROVIDE MINIMUM 6" COMPACTED 21A
    - ASPHALT DRIVEWAY – PROVIDE 6" COMPACTED 21A WITH MINIMUM 2" SM-9.5A OVERLAY
    - CONCRETE DRIVEWAY - PROVIDE A NEAT SAWCUT CONNECTION, MINIMUM 4" COMPACTED 21A AND 5" CLASS A3 CONCRETE WITH WWF 6X6 - W2.9XW2.9
15. WHERE A PROPOSED PIPE CROSSES OR PARALLELS A STREET, THE ASPHALT SHALL BE NEATLY SAWCUT TO FULL DEPTH. AFTER INSTALLATION OF THE PIPE, THE ROADWAY SHALL BE PATCHED IN ACCORDANCE WITH THE V.D.O.T. LAND USE PERMIT ISSUED FOR THE PROJECT.
16. HORIZONTAL LOCATION OF THE SERVICE CONNECTIONS AT SANITARY SEWER MAINS, IF INDICATED ON THE CONSTRUCTION PLANS, WERE TAKEN FROM TELEVISION INSPECTION REPORTS. ALL SERVICE CONNECTIONS WERE SHOWN TO BE IN THE UPPER TWO QUADRANTS OF THE MAINS. EXCEPT FOR INTERPOLATION OF THE INVERT AT THE SANITARY MAINS, THE ELEVATIONS AND VERTICAL LOCATIONS OF THE SERVICE CONNECTIONS ARE NOT KNOWN. IN SEWER MAINS AS NOTED, TELEVISION INSPECTIONS DID NOT DETECT ANY SERVICE CONNECTIONS AND THE LOCATIONS SHOWN ON THE DRAWING ARE THE MOST PROBABLE POSITIONS FOR SERVICE CONNECTIONS.
17. THE PAVEMENT DESIGN IN THE CONSTRUCTION PLANS WAS PREPARED BASED ON AVAILABLE SUBSURFACE INFORMATION INCLUDING LABORATORY CALIFORNIA BEARING RATIO (CBR) TESTS THAT WERE PERFORMED DURING THE DESIGN SUBSURFACE INVESTIGATION. WHEN THE CONTRACTOR REACHES THE SUBGRADE ELEVATION, ADDITIONAL CBR TEST LOCATIONS MAY BE DIRECTED BY THE ENGINEER FOR SELECTED LOCATIONS BASED ON ACTUAL FIELD CONDITIONS OBSERVED. THE CBR SAMPLES AND TESTS SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEERING FIRM UNDER CONTRACT WITH CITY OF FALLS CHURCH. THE RESULTS OF THE ENGINEER'S EVALUATION OF THE CBR LABORATORY TESTS SHALL BE OBTAINED IN WRITING PRIOR TO THE PLACEMENT OF ANY SUBBASE OR BASE MATERIAL IN THE AREA(S) UNDER CONSIDERATION. THE PROPOSED PAVEMENT DESIGN FOR THE AREA(S) UNDER CONSIDERATION WILL EITHER BE CONFIRMED OR ADJUSTED BY THE ENGINEER BASED ON THE RESULT OF THE CBR TEST RESULTS. THE CONTRACTOR SHALL COOPERATE WITH ENGINEER BY MODIFYING CONSTRUCTION ACTIVITIES AND/OR SCHEDULING IN ORDER TO PERMIT THE ADDITIONAL CBR TESTING. THE CONTRACTOR SHALL NOT BE ENTITLED TO ANY MONETARY DAMAGES WHATSOEVER FOR ANY DELAYS RESULTING FROM THIS TESTING. THE CONTRACTOR'S SOLE RELIEF IS A TIME EXTENSION GRANTED IN ACCORDANCE WITH ARTICLE 8.3.
18. THE CONTRACTOR SHALL RESTORE ALL PROPERTY MONUMENTS HARMED DURING CONSTRUCTION. ALL PROPERTY MONUMENTS LOCATED IN CONSTRUCTION LIMITS SHALL BE LOCATED AND DOCUMENTED BY A LICENSED LAND SURVEYOR PRIOR TO CONSTRUCTION. SHOULD PROPERTY MONUMENTS BE DESTROYED DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL HAVE THEM REPLACED TO THEIR ORIGINAL LOCATION BY A LICENSED LAND SURVEYOR AFTER PROJECT CONSTRUCTION IS COMPLETE.

STORM SEWER

1. A WATERTIGHT CONNECTION SHALL BE MADE AT ALL PIPES ENTERING DRAINAGE STRUCTURES. IN ADDITION, WATERTIGHT CONNECTIONS SHALL BE MADE BETWEEN SECTIONS OF PIPE.
2. LENGTHS OF PIPE SHOWN ON THE DRAWINGS ARE MEASURED FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
3. INVERT ELEVATIONS SHOWN ON THE DRAWINGS ARE TAKEN AT THE FACE OF THE STRUCTURE.
4. SHAPE THE INVERTS OF ALL STRUCTURES ACCORDING TO V.D.O.T. STANDARD IS-1.
5. STORM SEWER AND CULVERT PIPE SHALL BE REINFORCED CONCRETE PIPE TO CONFORM TO THE CURRENT A.A.S.H.T.O. DESIGNATION M170, UNLESS OTHERWISE DESIGNATED ON THE PLANS. CLASS III PIPE WILL BE REQUIRED WITHIN THE LIMITS OF V.D.O.T. RIGHT-OF-WAY.
6. MINOR FIELD ADJUSTMENTS IN THE ELEVATION AND ALIGNMENT OF THE STORM SEWER AND STRUCTURE MIGHT BE NECESSARY TO MEET EXISTING CONDITIONS AND PROPOSED FINAL GRADING. THE CONTRACTOR SHALL NOTIFY CITY OF FALLS CHURCH DEPARTMENT OF PUBLIC WORKS AND ENVIRONMENTAL SERVICES PRIOR TO MAKING ANY NECESSARY ADJUSTMENTS.
7. TOP OF STRUCTURES SHALL BE SET TO MATCH CURB AND GUTTER, SIDEWALK AND/OR DITCH CONSTRUCTION.

OWNER/DEVELOPER

CITY OF FALLS CHURCH
DEPARTMENT OF PUBLIC WORKS
300 PARK AVENUE, SUITE 100 WEST
FALLS CHURCH, VA 22046
PHONE: (703) 248-5350
ATTN: JASON WIDSTROM

BASE INFORMATION

PHR&A, A PENNONI COMPANY
208 CHURCH STREET, SE
LEESBURG, VIRGINIA 20175
PHONE: (703) 777-3616
ATTN: PATRICK FURSTENAU

ENGINEER & DESIGNER

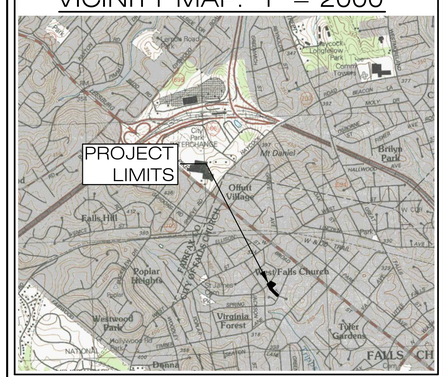
WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
150 RIVERSIDE PARKWAY, SUITE 301
FREDERICKSBURG, VA 22406
PHONE: (540) 785-5544
ATTN: SCOTT BLOSSOM AND GEORGE RHODES

STATISTICAL DATA

DIRECTIONS TO THE SITE:
FROM FALLS CHURCH DEPARTMENT OF PUBLIC WORKS, HEAD NORTHWEST ON PARK AVENUE TOWARD NORTH VIRGINIA AVENUE. TAKE A LEFT ONTO NORTH VIRGINIA AVENUE, THEN FIRST RIGHT ONTO WEST BROAD STREET (ROUTE 7). TURN LEFT ONTO SOUTH SPRING STREET, TAKE THE SECOND RIGHT ONTO PARKER AVENUE, THEN THE FIRST RIGHT ONTO IRVING STREET. PROJECT WILL BE ON THE RIGHT AT THE BERMAN PARK SITE.

DATUMS: NAD83 AND NGVD88.

VICINITY MAP: 1" = 2000'



SOURCE: USGS 7.5 MINUTE SERIES TOPOGRAPHIC MAP, FALLS CHURCH, VA QUADRANGLE, 1994.
LATITUDE: 38° 53' 14.88" N
LONGITUDE: 77° 11' 6.15" W

SHEET INDEX:

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3	PROPOSED PLAN AND PROFILE
4	PROPOSED CROSS-SECTIONS
5-6	STREAM RESTORATION DETAILS
7	TREE PRESERVATION DETAILS
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12	EROSION AND SEDIMENT CONTROL PHASE I
13	EROSION AND SEDIMENT CONTROL PHASE II
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15	EROSION AND SEDIMENT CONTROL DETAILS
16	PLANTING PLAN: SEEDING
17	PLANTING PLAN: TREES AND SHRUBS
18	TRAIL PLAN
19-20	HYDROLOGY AND HYDRAULICS
21	WATER QUALITY IMPACT ASSESSMENT
S1	RETAINING WALL: GENERAL PLAN BY SABRA WANG
S2	RETAINING WALL ELEVATION AND DETAILS BY SABRA WANG

DATE: 11/07/2013
FIRST SUBMITTAL

REVISIONS:

DATE	
12/16/13	REVISED PER CITY REQUEST
01/20/14	REVISED PER CITY AND/OR FCSBA COMMENTS

COMMONWEALTH OF VIRGINIA
SCOTT C. BLOSSOM
Lic. No. 40287
1/20/14
PROFESSIONAL ENGINEER

COMMONWEALTH OF VIRGINIA
GEORGE C. RHODES III
Lic. No. 000894
1/20/2014
LANDSCAPE ARCHITECT

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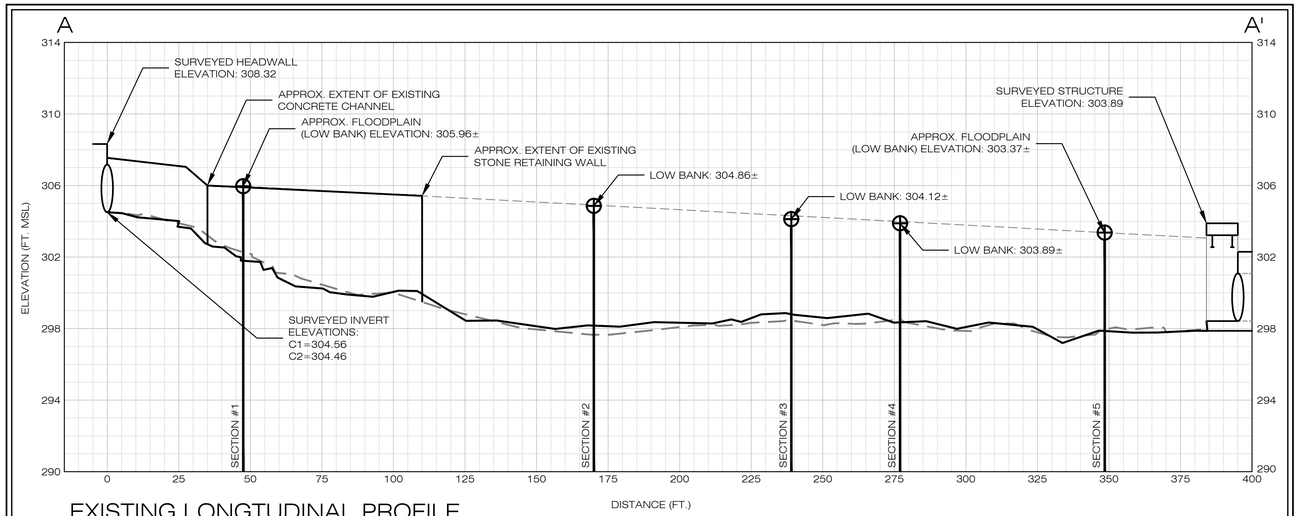
LEGEND

- SURVEYED STREAM CHANNEL LIMITS
- STREAM FLAG (WET #560)
- EXISTING RESOURCE PROTECTION AREA (RPA) LIMITS
- EXISTING CONTOURS
- EXISTING PROPERTY LINES
- EXISTING FENCE
- EXISTING TREE LOCATED BY PACIULLI SIMMONS & ASSOCIATES
- EXISTING TREE LOCATED BY PATTON, HARRIS, RUST, & ASSOCIATES (2013) (DT 407)
- PROJECT BENCHMARK
- EXISTING TRAIL



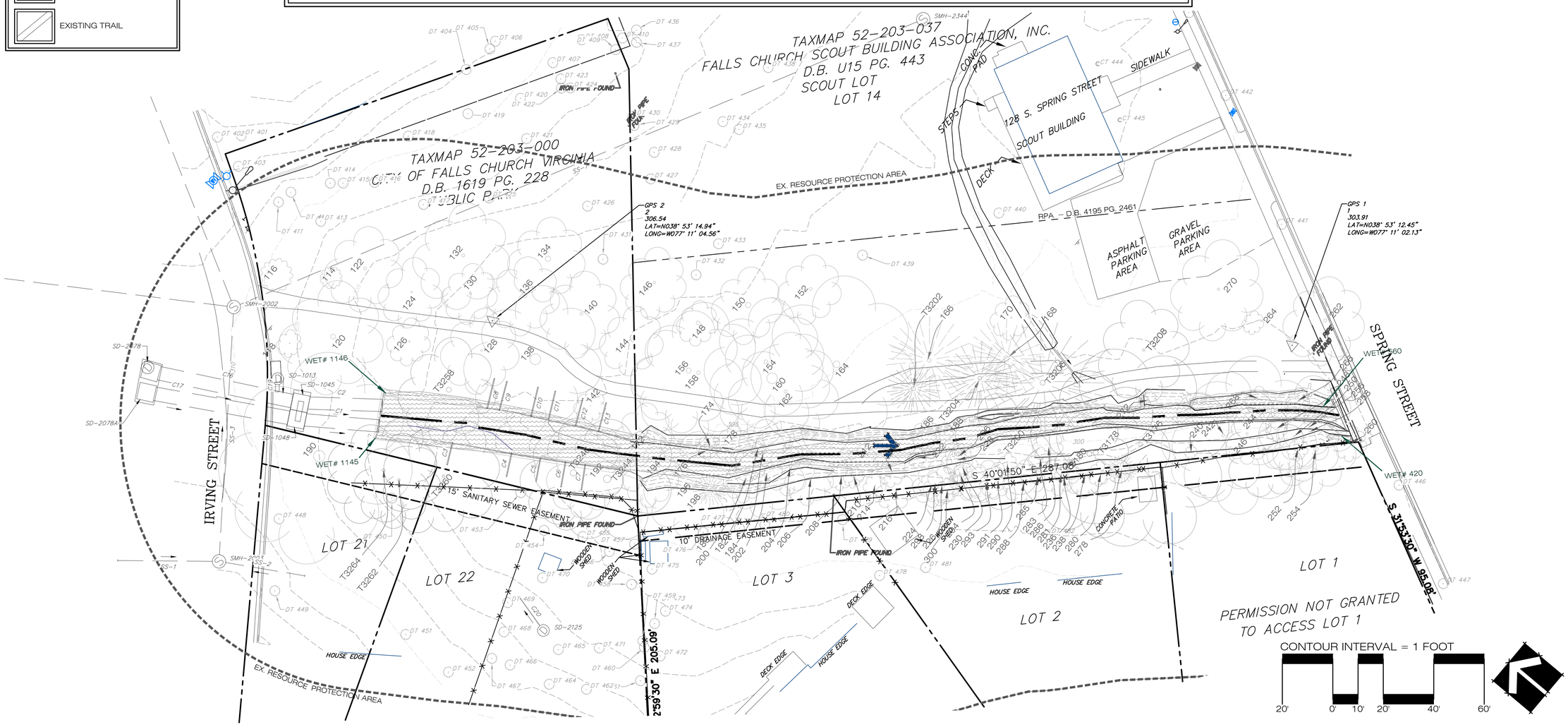
EXISTING LONGTUDINAL PROFILE

VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 25'

GENERAL NOTES:

1. *DIRECTIONS, LENGTHS AND SLOPES OF 4" CPP PIPES, WHICH OUTFALL TO THE CHANNEL, ARE APPROXIMATE AND SHOWN FOR REFERENCE PURPOSES.*
2. *TITLE REPORT PROVIDED KENNETH SCHRANTZ, TITLE EXAMINER PER ABSTRACT DATED AUGUST 20, 2012.*
3. *EXISTING PROPERTY INFORMATION AND EASEMENTS SHOWN HEREON WERE PREPARED "BY OTHERS" AND HAVE NOT BEEN VERIFIED AS A PART OF THIS SURVEY.*
4. *INFORMATION SHOWN HEREON DOES NOT CONSTITUTE A LAND BOUNDARY SURVEY.*
5. *UNLESS OTHERWISE NOTED, THE INFORMATION DEPICTED IS DERIVED FROM A FIELD RUN SURVEY PERFORMED BY PHR+A, A PENNONI COMPANY ON JULY 16, 2012. (M. WILLS / C. MULHOLLAND / J. SMERALDO)*
6. *THE SCOUT PROPERTY (LOT 14 TAX MAP # 52 203 037) IS SUBJECT TO A CONSERVATION EASEMENT RECORDED IN DEED BOOK 4195 AT PAGE 2461. AN RPA LINE FROM THAT AGREEMENT IS SHOWN ON THE SURVEY; ALL OTHER RESTRICTIONS CANNOT BE PLOTTED.*
7. *THE PROPERTY OF THE CITY OF FALLS CHURCH HAS NO ENCUMBRANCES PER TITLE REPORT PROVIDED.*
8. *OTHER PHYSICAL IMPROVEMENTS MAY EXIST BUT ARE NOT SHOWN.*

The horizontal datum is NAD83 and the vertical (according to PSA) is USC&G which usually refers to NGVD29.



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Environmental Consultants

EXISTING CONDITIONS
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
SCOTT C. BLOSSOM
Lic. No. 40287
1/30/14
PROFESSIONAL ENGINEER

REVISIONS:

DATE	
01/20/14	REVISED PER CITY AND/OR FCSBA COMMENTS

DRAWN BY: CDP
DESIGNED BY: CDP, GCR, SCB
DATE: 11/07/2013
CHECKED BY: SCB
SCALE: 1 INCH = 20 FEET
SHEET: 2 OF 21
JOB#: 4773

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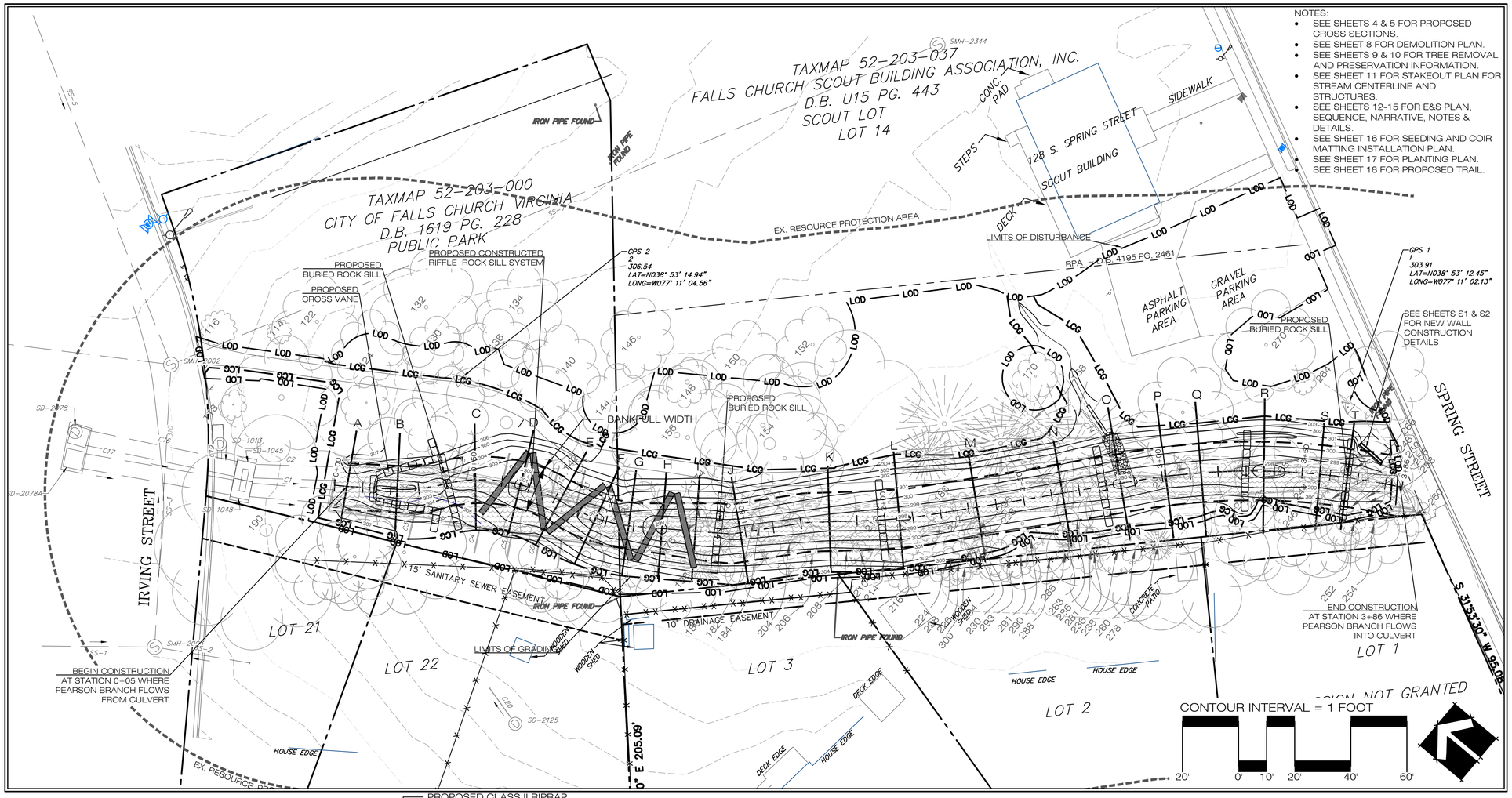
LEGEND

- SURVEYED STREAM CHANNEL LIMITS
- RESOURCE PROTECTION AREA (RPA) LIMITS
- EXISTING CONTOURS
- EXISTING PROPERTY LINES
- EXISTING FENCE
- EXISTING TREE LOCATED BY PACIULLI SIMMONS & ASSOCIATES
- EXISTING TREE LOCATED BY PATTON, HARRIS, RUST, & ASSOCIATES (2013)
- PROJECT BENCHMARK
- EXISTING TRAIL
- PROPOSED GRADING
- BANKFULL LIMITS
- LIMITS OF GRADING
- LIMITS OF DISTURBANCE
- PROPOSED BURIED ROCK SILL
- PROPOSED CROSS VANE
- PROPOSED RIFFLE ROCK SILL
- PROPOSED ROCK APRON



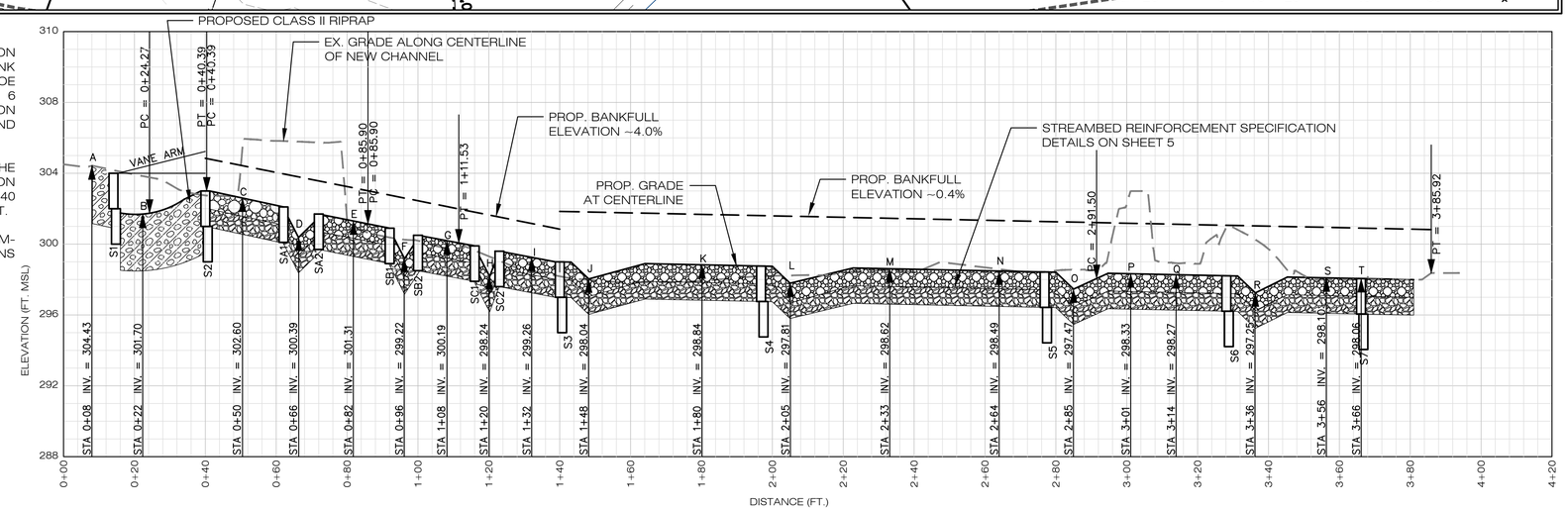
NOTES:
- SEE SHEETS 4 & 5 FOR PROPOSED CROSS SECTIONS.
- SEE SHEET 8 FOR DEMOLITION PLAN.
- SEE SHEETS 9 & 10 FOR TREE REMOVAL AND PRESERVATION INFORMATION.
- SEE SHEET 11 FOR STAKEOUT PLAN FOR STREAM CENTERLINE AND STRUCTURES.
- SEE SHEETS 12-15 FOR E&S PLAN, SEQUENCE, NARRATIVE, NOTES & DETAILS.
- SEE SHEET 16 FOR SEEDING AND COIR MATTING INSTALLATION PLAN.
- SEE SHEET 17 FOR PLANTING PLAN.
- SEE SHEET 18 FOR PROPOSED TRAIL.

STRUCTURE INFORMATION

NUMBER	TYPE	STATION	CREST ELEVATION
S1*	CROSS VANE	0+13.88	304.00
S2	BURIED SILL	0+40.42	303.00
SA1	RIFFLE SILL	0+62.03	302.10
SA2	RIFFLE SILL	0+71.82	301.70
SB1	RIFFLE SILL	0+91.81	300.90
SB2	RIFFLE SILL	0+99.83	300.50
SC1	RIFFLE SILL	1+16.20	299.90
SC2	RIFFLE SILL	1+23.20	299.60
S3	BURIED SILL	1+40.11	299.00
S4	CROSS VANE	1+98.82	298.76
S5	BURIED SILL	2+78.44	298.44
S6	BURIED SILL	3+29.84	298.22
S7	BURIED SILL	3+66.17	298.06

* REFER TO STRUCTURE SHEET FOR ARM SLOPE AND ELEVATIONS.

NOTES:
- REFER TO SHEET 6 FOR INSTALLATION REQUIREMENTS OF BOULDER BANK PROTECTION AND BURIED ROCK TOE PROTECTION. DETAILS ON SHEET 6 SPECIFY LOCATIONS FOR INSTALLATION OF BOULDER BANK PROTECTION AND BURIED ROCK TOE PROTECTION.
- CLASS II RIPRAP SHALL LINE THE PROPOSED CHANNEL CROSS-SECTION BETWEEN STATIONS 0+05 AND 0+40 (TO STRUCTURE S2), MIN. DEPTH 3.2 FT.
- SEE DETAIL ON SHEET 5 FOR STREAM-BED REINFORCEMENT SPECIFICATIONS BETWEEN STATION 0+40 AND 3+82.



LONGITUDINAL PROFILE - (STA 0+00 TO 3+85)

VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 20'

CLASS II RIPRAP | STREAMBED REINFORCEMENT | SUB BASE LAYER

NOTES:
FINAL STRUCTURE ANGLES, ELEVATIONS, LOCATIONS, AND SLOPES MAY BE ADJUSTED IN THE FIELD BY WILLIAMSBURG ENVIRONMENTAL GROUP, INC. REFER TO STRUCTURE SHEET FOR DETAILS ON STRUCTURE TYPES.

5209 Center Street
Williamsburg, Virginia 23188
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1011 Boulder Springs Drive, Suite 225
Richmond, Virginia 23225
(804) 267-3474
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(540) 735-5244
WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
Environmental Consultants

PROPOSED PLAN & PROFILE
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

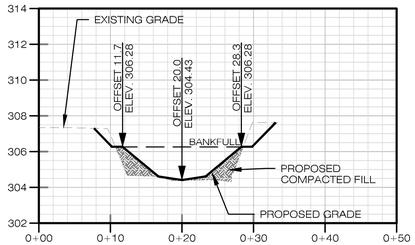
COMMONWEALTH OF VIRGINIA
SCOTT C. BLOSSOM
Lic. No. 40287
1/30/14
PROFESSIONAL ENGINEER

REVISIONS:

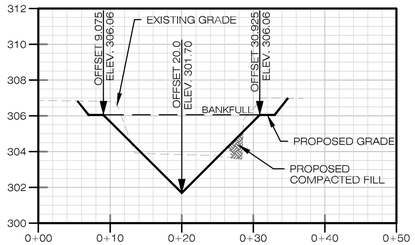
DATE:	
12/16/13	REVISED PER CITY REQUEST
01/2014	REVISED PER CITY AND/OR FCSBA COMMENTS

DRAWN BY: CDP
DESIGNED BY: CDP, GCR, SCB
DATE: 11/07/2013
CHECKED BY: SCB
SCALE: 1 INCH = 20 FEET

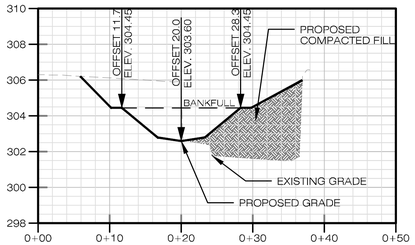
SHEET: 3 OF 21
JOB#: 4773



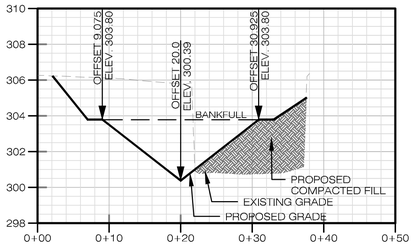
SECTION A - 0+08
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



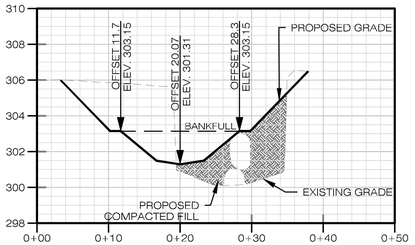
SECTION B - 0+22
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



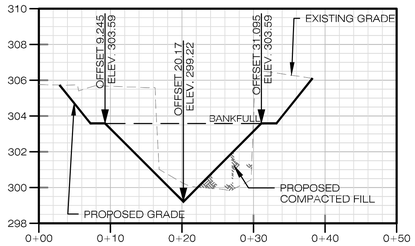
SECTION C - 0+50
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



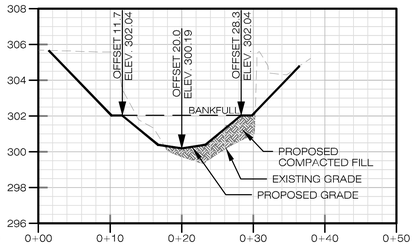
SECTION D - 0+66
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



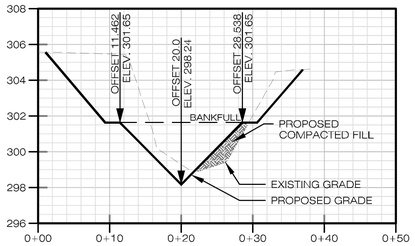
SECTION E - 0+82
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



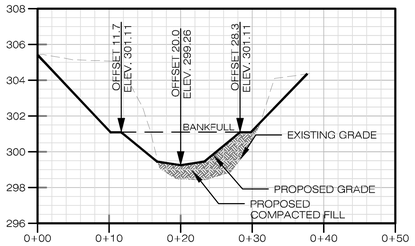
SECTION F - 0+96
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



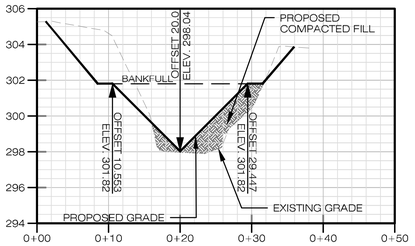
SECTION G - 1+08
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



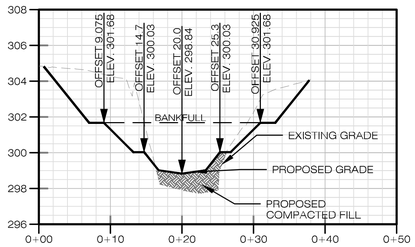
SECTION H - 1+20
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



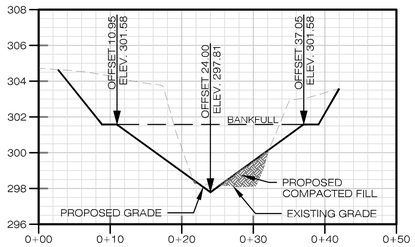
SECTION I - 1+32
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



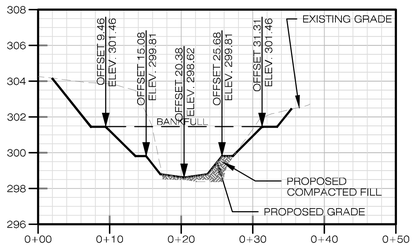
SECTION J - 1+48
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



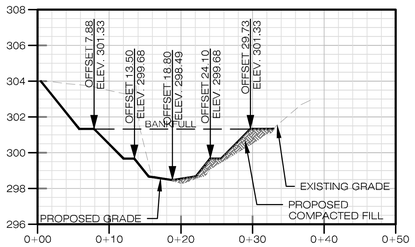
SECTION K - 1+80
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



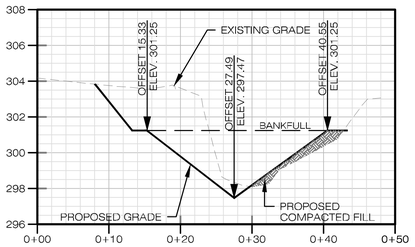
SECTION L - 2+05
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



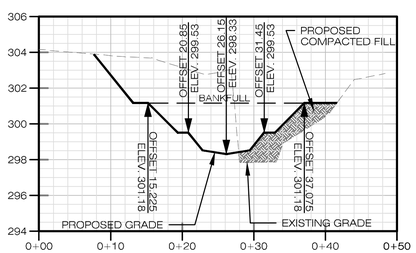
SECTION M - 2+33
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



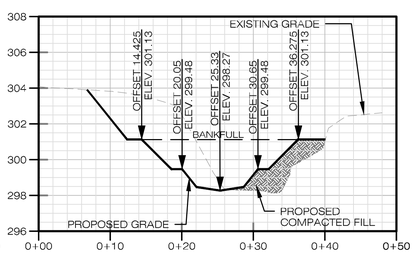
SECTION N - 2+64
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



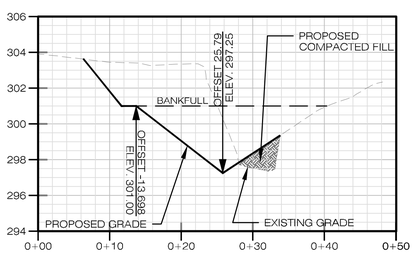
SECTION O - 2+85
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



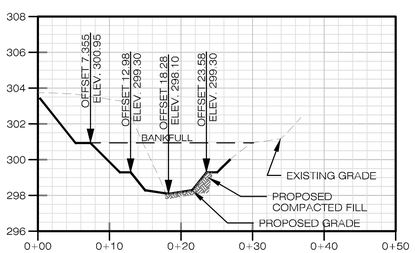
SECTION P - 3+01
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



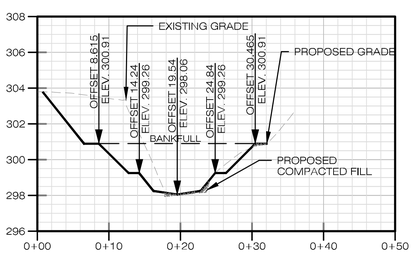
SECTION Q - 3+14
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



SECTION R - 3+36
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



SECTION S - 3+56
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'



SECTION T - 3+66
VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 10'

NOTES:

- INSTREAM STRUCTURES ARE INTENTIONALLY NOT SHOWN IN THESE CROSS-SECTIONS. THE CROSS- SECTIONS ARE MEANT TO HIGHLIGHT THE EXISTING AND PROPOSED GRADE CONDITIONS, SLOPES AND ELEVATIONS.
- REFER TO OTHER SHEETS FOR INFORMATION RELATED TO INSTREAM STRUCTURES, STREAMBED REINFORCEMENT, BOULDER TOE PROTECTION, BURIED ROCK TOE PROTECTION, COIR MATTING, SEEDING AND PLANTING.
- ALL CROSS-SECTIONS ARE SHOWN LOOKING DOWNSTREAM.

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(540) 763-5344
WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
Environmental Consultants

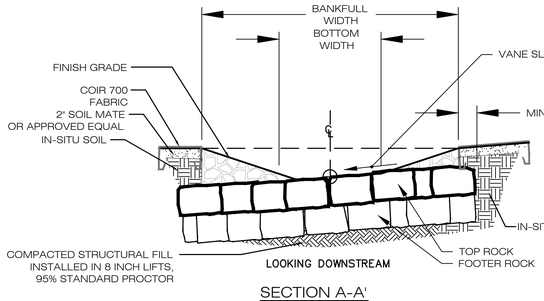
PROPOSED CROSS-SECTIONS
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
SCOTT C. BLOSSOM
Lic. No. 40287
11/7/13
PROFESSIONAL ENGINEER

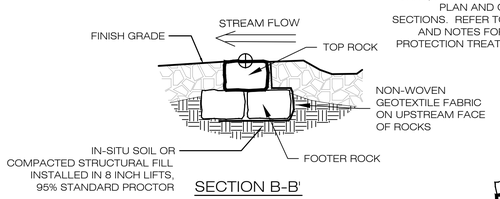
REVISIONS:
DATE:

DRAWN BY: CDP
DESIGNED BY: CDP, GCR, SCB
DATE: 11/07/2013
CHECKED BY: SCB
SCALE: AS SHOWN
SHEET: 4 OF 21
JOB#: 4773

W:\FREDcad\4700s\4773 - Pearson Branch Stream Restoration\Stream Mitigation\Design Plans\95% working plan set\Pearson Cross Sections.dwg

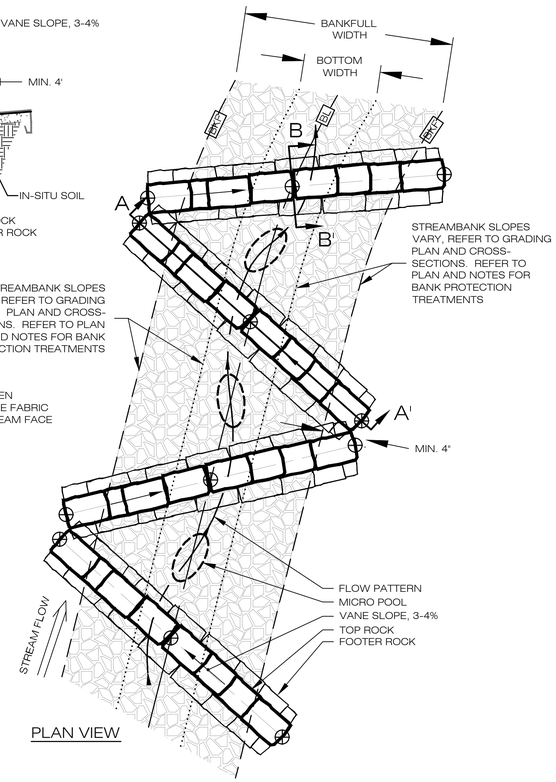


SECTION A-A'



SECTION B-B'

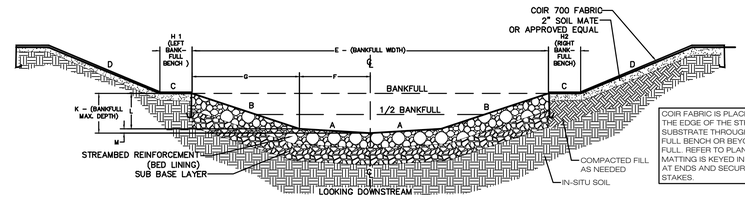
STREAMBED REINFORCEMENT (REFER TO SPECIFICATION ON SHEET 5 AND NOTES ON SHEET 3 REGARDING SUBSTRATE AND BANK PROTECTION TREAMENTS)



PLAN VIEW

1/5 DETAIL: CONSTRUCTED RIFFLE BETWEEN STATIONS 0+40 & 1+40

NTS



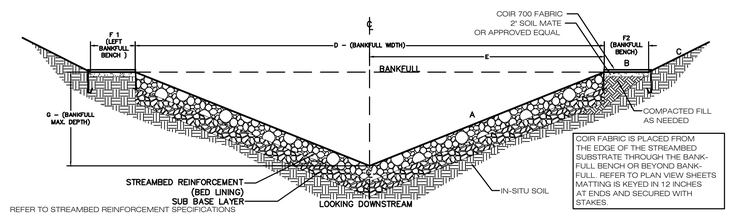
COIR FABRIC IS PLACED FROM THE EDGE OF THE STREAMBED SUBSTRATE THROUGH THE BANK-FULL BENCH OR BEYOND BANK-FULL. REFER TO PLAN VIEW SHEETS MATTING IS KEYED IN 12 INCHES AT ENDS AND SECURED WITH STAKES.

BANKFULL DIMENSIONS	
19.8 SQ.FT.	AREA
16.6 FT.	WIDTH
1.2 FT.	MEAN DEPTH
1.85 FT.	MAX. DEPTH
13.9	WIDTH/DEPTH RATIO

SECTION LOCATION			RIFFLE CROSS-SECTION PARAMETERS												
REACH	STATION														NOTES
	FROM	TO	A	B	C	D	E	F	G	H 1	H 2	K	L	M	
	0+05.0	0+14.0	16.6:1	3:1	LEVEL	2.5:1	16.6'	3.3'	5.0'	1.5'	1.5'	1.85'	1.65'	0.2'	
	0+40.0	0+44.0	16.6:1	3:1	3:1	2.5:1	16.6'	3.3'	5.0'	1.5'	1.5'	1.85'	1.65'	0.2'	TRANSITION OUT OF POOL
	0+44.0	0+58.0	16.6:1	3:1	LEVEL	2.5:1	16.6'	3.3'	5.0'	1.5'	1.5'	1.85'	1.65'	0.2'	
	0+58.0	0+76.0	16.6:1	3:1	3:1	2.5:1	16.6'	3.3'	5.0'	1.5'	1.5'	1.85'	1.65'	0.2'	MICRO POOL
	0+76.0	0+88.0	16.6:1	3:1	LEVEL	2.5:1	16.6'	3.3'	5.0'	1.5'	1.5'	1.85'	1.65'	0.2'	
	0+88.0	1+04.0	16.6:1	3:1	3:1	2.5:1	16.6'	3.3'	5.0'	1.5'	1.5'	1.85'	1.65'	0.2'	MICRO POOL
	1+04.0	1+12.0	16.6:1	3:1	LEVEL	2.5:1	16.6'	3.3'	5.0'	1.5'	1.5'	1.85'	1.65'	0.2'	
	1+12.0	1+27.0	16.6:1	3:1	3:1	2.5:1	16.6'	3.3'	5.0'	1.5'	1.5'	1.85'	1.65'	0.2'	MICRO POOL
	1+27.0	1+40.0	16.6:1	3:1	LEVEL	2.5:1	16.6'	3.3'	5.0'	1.5'	1.5'	1.85'	1.65'	0.2'	

UPPER CHANNEL RIFFLE SECTION

NOT TO SCALE



REFER TO STREAMBED REINFORCEMENT SPECIFICATIONS

COIR FABRIC IS PLACED FROM THE EDGE OF THE STREAMBED SUBSTRATE THROUGH THE BANK-FULL BENCH OR BEYOND BANK-FULL. REFER TO PLAN VIEW SHEETS MATTING IS KEYED IN 12 INCHES AT ENDS AND SECURED WITH STAKES.

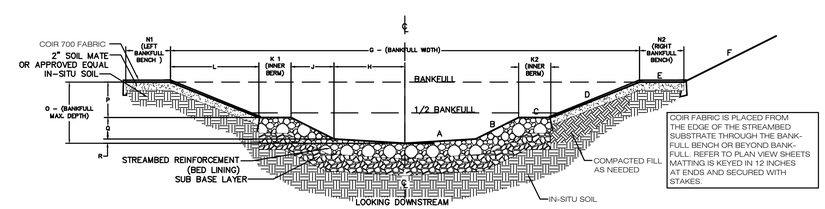
BANKFULL DIMENSIONS	
47 SQ.FT.	AREA
21.9 FT.	WIDTH
2.2 FT.	MEAN DEPTH
4.3 FT.	MAX. DEPTH
10.2	WIDTH/DEPTH RATIO

SECTION LOCATION			POOL CROSS-SECTION PARAMETERS								
REACH	STATION										NOTES
	FROM	TO	A	B	C	D	E	F 1	F2	G *	
	1+43.0	1+60.0	2.5 : 1	LEVEL	2 : 1	21.9'	10.925'	2.1'	2.1'	4.3'	
	2+00.0	2+20.0	2.5 : 1	LEVEL	2 : 1	21.9'	10.925'	2.1'	2.1'	4.3'	
	2+80.0	2+92.0	2.5 : 1	LEVEL	2 : 1	21.9'	10.925'	2.1'	2.1'	4.3'	
	3+31.0	3+42.0	2.5 : 1	LEVEL	2 : 1	21.9'	10.925'	2.1'	2.1' +/- 2'	4.3'	

* Refer to longitudinal profile for transitions in G depths.

LOWER CHANNEL POOL SECTION

NOT TO SCALE



COIR FABRIC IS PLACED FROM THE EDGE OF THE STREAMBED SUBSTRATE THROUGH THE BANK-FULL BENCH OR BEYOND BANK-FULL. REFER TO PLAN VIEW SHEETS MATTING IS KEYED IN 12 INCHES AT ENDS AND SECURED WITH STAKES.

BANKFULL DIMENSIONS	
38.5 SQ.FT.	AREA
21.85 FT.	WIDTH
1.8 FT.	MEAN DEPTH
2.85 FT.	MAX. DEPTH
12.4	WIDTH/DEPTH RATIO

SECTION LOCATION			RIFFLE CROSS-SECTION PARAMETERS																		
REACH	STATION																				NOTES
	FROM	TO	A	B	C	D	E	F	G	H	J	K1	K2	L	N1	N2	O	P	Q	R	
	1+40.0	1+43.0	16.5:1	2:1	3:1	2.5:1	LEVEL	2:1	21.85'	3.3	2.0	1.5'	1.5'	4.125	2.1'	2.1'	2.85'	1.65'	1.0'	0.2'	TRANSITION INTO POOL
	1+60.0	1+64.0	16.5:1	2:1	3:1	2.5:1	LEVEL	2:1	21.85'	3.3	2.0	1.5'	1.5'	4.125	2.1'	2.1'	2.85'	1.65'	1.0'	0.2'	TRANSITION OUT OF POOL
	1+64.0	1+97.0	16.5:1	2:1	LEVEL	2.5:1	LEVEL	2:1	21.85'	3.3	2.0	1.5'	1.5'	4.125	2.1'	2.1'	2.85'	1.65'	1.0'	0.2'	
	1+97	2+00	16.5:1	2:1	3:1	2.5:1	LEVEL	2:1	21.85'	3.3	2.0	1.5'	1.5'	4.125	2.1'	2.1'	2.85'	1.65'	1.0'	0.2'	TRANSITION INTO POOL
	2+20.0	2+23.0	16.5:1	2:1	3:1	2.5:1	LEVEL	2:1	21.85'	3.3	2.0	1.5'	1.5'	4.125	2.1'	2.1'	2.85'	1.65'	1.0'	0.2'	TRANSITION OUT OF POOL
	2+23.0	2+77.0	16.5:1	2:1	LEVEL	2.5:1	LEVEL	2:1	21.85'	3.3	2.0	1.5'	1.5'	4.125	2.1'	2.1'	2.85'	1.65'	1.0'	0.2'	
	2+77.0	2+80.0	16.5:1	2:1	3:1	2.5:1	LEVEL	2:1	21.85'	3.3	2.0	1.5'	1.5'	4.125	2.1'	2.1'	2.85'	1.65'	1.0'	0.2'	TRANSITION INTO POOL
	2+92.0	2+95.0	16.5:1	2:1	3:1	2.5:1	LEVEL	2:1	21.85'	3.3	2.0	1.5'	1.5'	4.125	2.1'	2.1'	2.85'	1.65'	1.0'	0.2'	TRANSITION OUT OF POOL
	2+95.0	3+28.0	16.5:1	2:1	LEVEL	2.5:1	LEVEL	2:1	21.85'	3.3	2.0	1.5'	1.5'	4.125	2.1'	3.5' +/- 1'	2.85'	1.65'	1.0'	0.2'	
	3+28.0	3+31.0	16.5:1	2:1	3:1	2.5:1	LEVEL	2:1	21.85'	3.3	2.0	1.5'	1.5'	4.125	2.1'	3.5' +/- 1'	2.85'	1.65'	1.0'	0.2'	TRANSITION INTO POOL
	3+42.0	3+45.0	16.5:1	2:1	3:1	2.5:1	LEVEL	2:1	21.85'	3.3	2.0	1.5'	1.5'	4.125	2.1'	1.5' +/- 1.5'	2.85'	1.65'	1.0'	0.2'	TRANSITION OUT OF POOL
	3+45.0	3+81.0	16.5:1	2:1	LEVEL	2.5:1	LEVEL	2:1	21.85'	3.3	2.0	1.5'	1.5'	4.125	2.1'	1.5' +/- 1.5'	2.85'	1.65'	1.0'	0.2'	

LOWER CHANNEL RIFFLE SECTION

NOT TO SCALE

STREAMBED REINFORCEMENT SPECIFICATION

PROPOSED BED LINING	PROPOSED BED LINING DEPTH	PROPOSED BED UNDERLINING (SUB BASE LAYER)
75% GRADED COBBLE/GRAVEL MIX (6-12 INCH DIAMETER), 25% GRAVEL MIX (3-6 INCH DIAMETER). LESS THAN 15% FINES AND COARSE SAND (0.04 TO 0.08 INCH)	MIN. 1.1 FEET	CLASS 1 RIPRAP (MIN. 1.1 FEET DEPTH)

- TOTAL DEPTH OF STREAMBED REINFORCEMENT IS MIN. 2.2 FEET.
- THIS SPECIFICATON APPLIES TO THE STREAM CHANNEL BEGINING AT STATION 0+40 (STRUCTURE S2) AND ENDS AT STATION 3+82.

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(540) 763-5344
WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
Environmental Consultants

STREAM RESTORATION DETAILS
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
SCOTT C. BLOSSOM
Lic. No. 40287
11/7/13
PROFESSIONAL ENGINEER

REVISIONS:
DATE:

DRAWN BY: CDP
DESIGNED BY: CDP, GCR, SCB
DATE: 11/07/2013
CHECKED BY: SCB
SCALE: AS SHOWN
SHEET: 5 OF 21
JOB#: 4773

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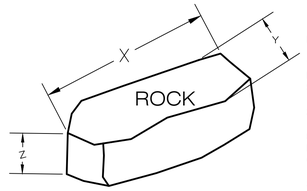


ROCK AXIS DEFINITION
X = LONGEST DIMENSION
Y = INTERMEDIATE DIMENSION
Z = SHORTEST DIMENSION

NOTES:

1.) BOULDERS/ROCKS SHALL BE RELATIVELY FLAT, RECTANGULAR SHAPED, AND UNIFORM IN SIZE.

2.) BOULDERS/ROCKS SHALL BE INSTALLED IN AN OVERLAPPING (IMBRICATED) MANNER WHEN POSSIBLE, WITH STEP BOULDERS OFFSET UPSTREAM.

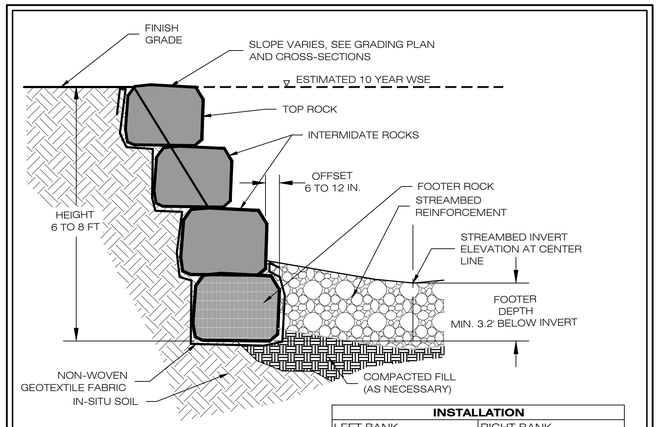
3.) SEE ROCK SIZING TABLE FOR MODIFIED CROSS VANE, CROSS VANE, AND ROCK SILLS IN THE TECHNICAL SPECIFICATIONS DOCUMENT FOR SPECIFIC ROCK SIZES FOR EACH STRUCTURE.

STRUCTURE ROCK SIZE SPECIFICATION TABLE

STRUCTURE	X-AXIS DIMENSION	Y-AXIS DIMENSION	Z-AXIS DIMENSION
CROSS VANE	2.5-3 FT HEADER & FOOTER 1-2 FT SILL 2.5-3 FT SPLASH	1.5-2 FT HEADER & FOOTER 1-2 FT SILL 1.5-2 FT SPLASH	2 FT HEADER & FOOTER 1-2 FT SILL 1-2 FT SPLASH
BURIED SILL & RIFFLE SILL	2-2.5 FT	1-1.5 FT	1.50 Ft
BOULDER BANK PROTECTION	1.75-2.25 FT TOP, INTERMEDIATE & FOOTER	1.75-2.25 FT TOP, INTERMEDIATE & FOOTER	2.25-2.75 FT TOP, INTERMEDIATE & FOOTER

1/6 DETAIL : BOULDER/ROCK DEFINITION

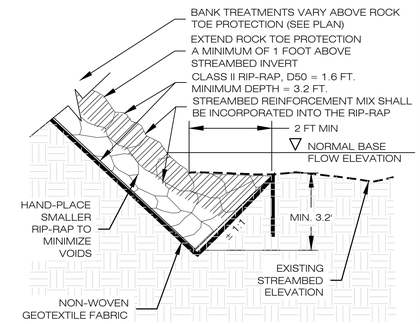
NTS



INSTALLATION	
LEFT BANK	RIGHT BANK
STATION 0+00 TO 0+90	STATION 0+00 TO 0+40

2/6 DETAIL : BOULDER BANK PROTECTION

NTS

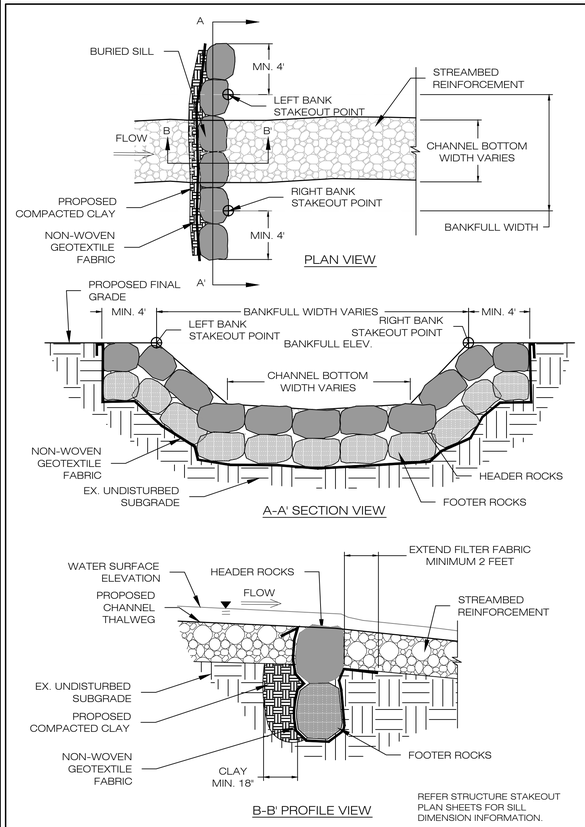


INSTALLATION	
LEFT BANK	RIGHT BANK
STATION 1+40 TO 3+80	STATION 0+90 TO 3+75

3/6 DETAIL : ROCK TOE PROTECTION DETAIL (TYP)

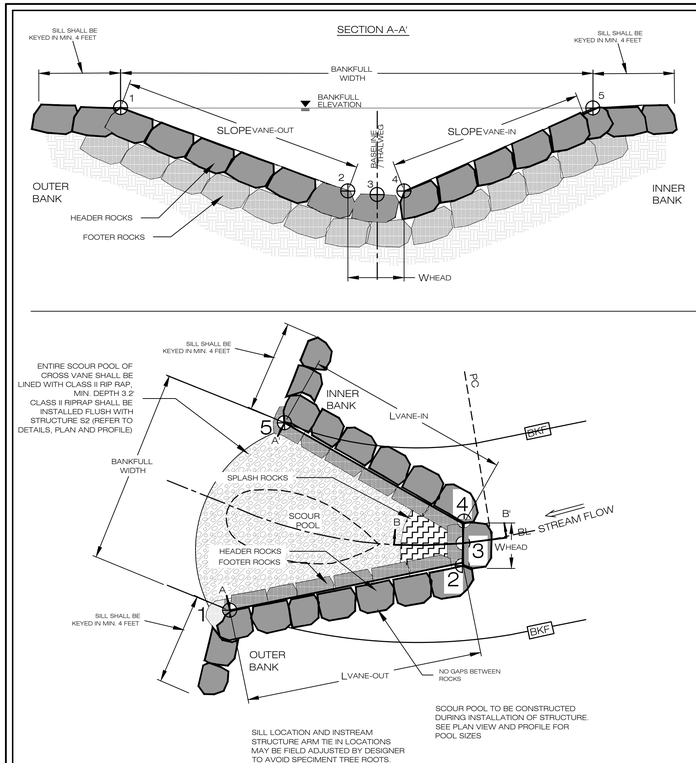
(ADAPTED FROM VIRGINIA E & S MANUAL STD & SPEC 3.19)

NTS



4/6 DETAIL: BURIED SILL (TYP.)

NTS



5/6 DETAIL: PROPOSED CROSS VANE (TYP.)

NTS

CONSTRUCTION SPECIFICATIONS

1. EXCAVATE TRENCH ALONG THE BOTTOM OF THE STREAM BED AND TO THE BANKFULL ELEVATION IN THE STREAMBANK FOR THE PLACEMENT OF THE VANE ARM. PLACE THE ROCKS AT THE END OF THE VANE ARM IN ORDER TO ENCOURAGE LATERAL FLOW INTO THE EXCAVATED SCOUR POOL. NOTE: VANE ARMS MUST BE PROPERLY TIED INTO THE BANK AT BANKFULL ELEVATION.
2. PLACE ONE OR TWO COURSE OF FOOTER BOULDERS TO THE MINIMUM SPECIFIED FOOTER DEPTH, AND INSTALL SPLASH ROCKS.
3. PLACE VANE ARM ROCKS ON TOP OF FOOTER ROCKS SO THAT THE VANE ARM ROCK RESTS ON ONE HALF TO TWO-THIRDS OF A FOOTER ROCK BELOW. OFFSET THE VANE ARM ROCK IN THE UPSTREAM DIRECTION AND PLACE SO THEY SLOPE SLIGHTLY AGAINST THE FLOW DIRECTION.
4. EXTEND THE STRUCTURE INTO THE BANK (I.E. SILL ROCKS) AND ARMOUR UPSTREAM AND DOWNSTREAM FOR STABILITY WITH ROCK AND/OR STREAMBED REINFORCEMENT, AND COMPACTED FILL MATERIALS.
5. AT THE BANKFULL ELEVATION, CREATE A SILL OF PLACED ROCK PERPINDICULAR TO THE STREAMBANK EXTENDING AWAY FROM THE VANE WING ARM. CONSTRUCT THE SILL PER VSRDM 4.5: CUT OFF SILLS AND LINEAR DEFLECTORS.
6. SEAL THE STRUCTURE ON THE UPSTREAM SIDE AS DESCRIBED BELOW.
7. EXCAVATE THE SCOUR POOL TO THE DESIGN DEPTH.

CONSTRUCTION GUIDELINES

1. USE AT LEAST TWO ROCKS FOR THE WIDTH OF THE HEADER (WHEAD) OF THE STRUCTURE.
2. PLACEMENT OF LARGE ROCK MAY REQUIRE A SMALL TRACK HOE.
3. THE ROCK MATERIAL SHALL BE INSPECTED BY THE CITY OR THE ENGINEER BEFORE IT IS PLACED.
4. STRUCTURES MUST BE SEALED WITH NON-WOVEN GEOTEXTILE FABRIC AND PROPOSED STREAMBED REINFORCEMENT.
5. CONTRACTOR SHALL ENSURE NO LEAKAGE/FLOW UNDER OR AROUND THE STRUCTURE BY PROPERLY GRADING, SEALING, AND COMPACTING UNDER AND AROUND THE STRUCTURE.
6. AFTER INSTALLATION, CHECK PROPER FUNCTION/FLOW PATH BY OBSERVING FLOW OVER THE STRUCTURE.

LEGEND

5 — STAKEOUT POINT

REINFORCED STREAMBED SUBSTRATE

IN-SITU MATERIAL OR COMPACTED STRUCTURAL FILL

NOTES:

1. SEE STAKEOUT SHEETS FOR STAKEOUT POINT INFORMATION.
2. REFER TO CONSTRUCTION SPECIFICATIONS FOR EARTH FILL REQUIREMENTS.
3. REFER TO BOULER BANK PROTECTION DETAIL FOR STABILIZATION MEASURES REQUIRED UPSTREAM/DOWNSTREAM AND UPSLOPE OF THE CROSS VANE.

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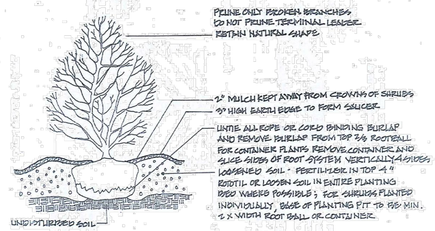

TYPICAL SHRUB PLANTING

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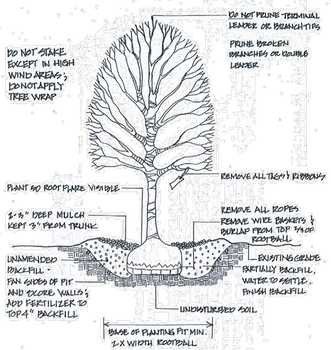
TREE PLANTING DETAIL



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SPECIFICATIONS FOR PLANTING

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

1. 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.

2. 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.

3. *Tree preservation fencing* shall be either of the following:

   a. Six (6) foot high chain link fence sections attached to one and five eights (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
   b. 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.

4. 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.

5. Demolition and Site Clearing**:**

   a. 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.

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   b. 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.
   e. 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.
   d. 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.
   e. 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.
   f. 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.
   g. 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.
   h. 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 a10-inch depth. The City Arborist must approve the use of any such temporary road in the tree protection area.

6. Pruning & Other Preservation Measures Specifications:
   a. 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.
   b. 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 *mychorrizae* product may also be required to assist in the preservation of highly stressed trees.
   c. All trees to be saved will be pruned (in accordance with American National Standards Institute (ANSI) Standard Practices for Trees, Shrubs, and Other Woody Plan Maintenance ANSI A300 and adhere to the most recent edition of ANSI Z133.1.
   d. Treat any disease or insect pest as required to reduce stress on trees.
   e. Remove all invasive vines growing on trees and from the area around the trees
   f. Specifications for work to be performed on individual trees shall be indicated under the "maintenance" column of the Tree Survey.
   g. 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 ½ inches diameter;
      - provide 14 feet of vertical clearance over streets and 8 feet over sidewalks;

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      - 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.
   h. 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.
   i. 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.
   j. 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.
   k. Interior branches shall not be stripped out.
   l. Pruning cuts larger than 4 inches in diameter, except for dead wood, shall be avoided.
   m. Pruning cuts that expose heartwood shall be avoided whenever possible.
   n. No more than 20 percent of live foliage shall be removed from a tree at on time.
   o. 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.
   p. 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.
   q. 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". <u>All tree work must be completed prior to construction.</u>
   r. '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".
   s. 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:
   a. 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
   b. Have a licensed and bonded tree contractor remove torn, hazardous, or prominent deadwood as it occurs, using ANSI standards noted under # 4 above. .
   c. 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.
   d. Where compaction occurs during construction, vertical mulch with good quality compost.
   e. 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

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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.
   f. Any roots damaged during grading or construction shall be exposed to sound tissue and cut leanly with a saw and promptly covered with moist soil.
   g. 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.
   h. 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.
   i. Maintain fire-safe areas around fenced areas. Also, no heat sources, flames, ignition sources, or smoking is allowed near mulch of trees.
   j. A copy of the "approved plan" and TREE PRESERVATION PROCEDURES AND SPECIFICATIONS must be maintained on site at all times.
   k. 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.
   l. 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.
   m. 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.
   n. If injury should occur to any tree during construction, it should be treated as soon as possible under the direction of the City Arborist.
   o. The City Arborist must monitor any grading, construction, demolition, or other work that is expected to encounter tree roots.
   p. 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.

8. 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.

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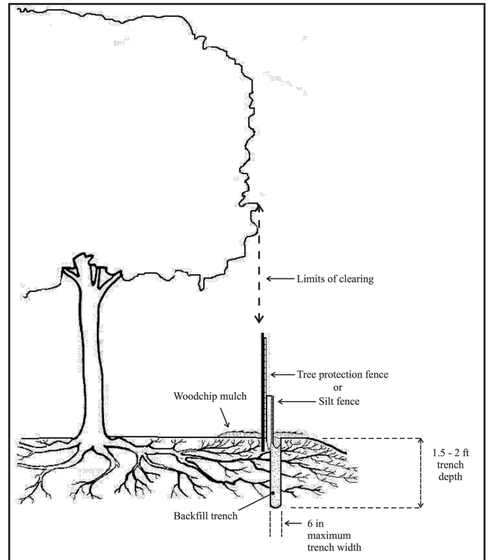
TREE PRESERVATION PROCEDURES AND SPECIFICATIONS

FAIRFAX COUNTY PUBLIC FACILITIES MANUAL



Ref. Sec. 12-0702.1	ROOT PRUNING	PLATE NO.	STD. NO.
Rev. 10-08		7-12	

NOTE:
ALL PRUNING SHALL BE CONDUCTED BY AN ISA CERTIFIED ARBORIST IN ACCORDANCE WITH ANSI A300 PRUNING STANDARDS.

NOTE:
IN THE CASE OF CONFLICTING NOTES OR DETAILS, THE CITY OF FALLS CHURCH STANDARD NOTES AND DETAILS FOR TREE PRESERVATION AND PLANTING SHALL SUPERSEDE ANY OTHER DETAILS UNLESS OTHERWISE AUTHORIZED BY THE CITY ARBORIST.

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TREE PRESERVATION DETAILS
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
GEORGE C. RHODES III
Lic. No. 000894
12/16/13
LANDSCAPE ARCHITECT

REVISIONS:

DATE:	
12/18/13	REVISED PER CITY REQUEST

DRAWN BY: CDP
DESIGNED BY: CDP, GCR, SCB
DATE: 11/07/2013
CHECKED BY: SCB
SCALE: VARIES
SHEET: 7 OF 21
JOB#: 4773

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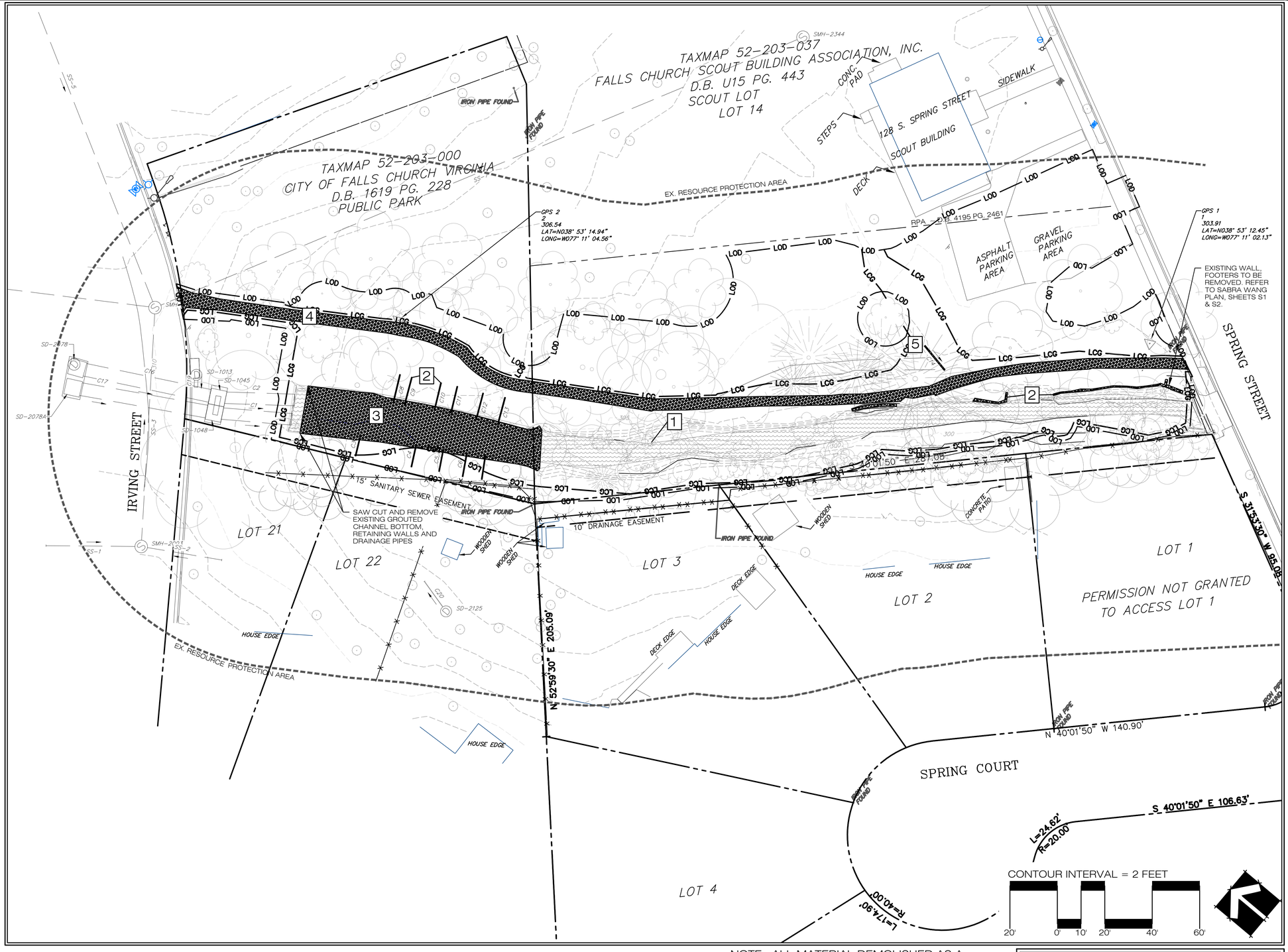
LEGEND

- SURVEYED STREAM CHANNEL LIMITS
- WEG RESOURCE PROTECTION AREA (RPA) LIMITS
- EXISTING CONTOURS
- EXISTING PROPERTY LINES
- EXISTING FENCE
- EXISTING TREE LOCATED BY PACIULLI SIMMONS & ASSOCIATES
- EXISTING TREE LOCATED BY PATTON, HARRIS, RUST, & ASSOCIATES (2013)
- PROJECT BENCHMARK
- EXISTING TRAIL
- PROPOSED HARDSCAPE DEMOLITION



* THIS SHEET FOR DEMOLITION USE ONLY *

NOTE: ALL MATERIAL DEMOLISHED AS A COMPONENT OF THIS PROJECT SHALL BE DISPOSED OF OFFSITE IN AN APPROVED AND CERTIFIED LOCATION.

DEMOLITION NOTES:

1. REMOVE ALL TREES NOTED FOR REMOVAL DURING INITIAL CLEARING AND GRUBBING PHASE. REFER TO TREE PRESERVATION PLAN.
2. REMOVE RETAINING WALLS AS NOTED. YARD DRAINS SHALL BE RETROFITTED TO BE COMPATIBLE WITH NEW CONSTRUCTION.
3. SAW CUT AND REMOVE EXISTING GROUTED CHANNEL BOTTOM AS NOTED.
4. REMOVE EXISTING TRAIL.
5. REMOVE CULVERT C14.

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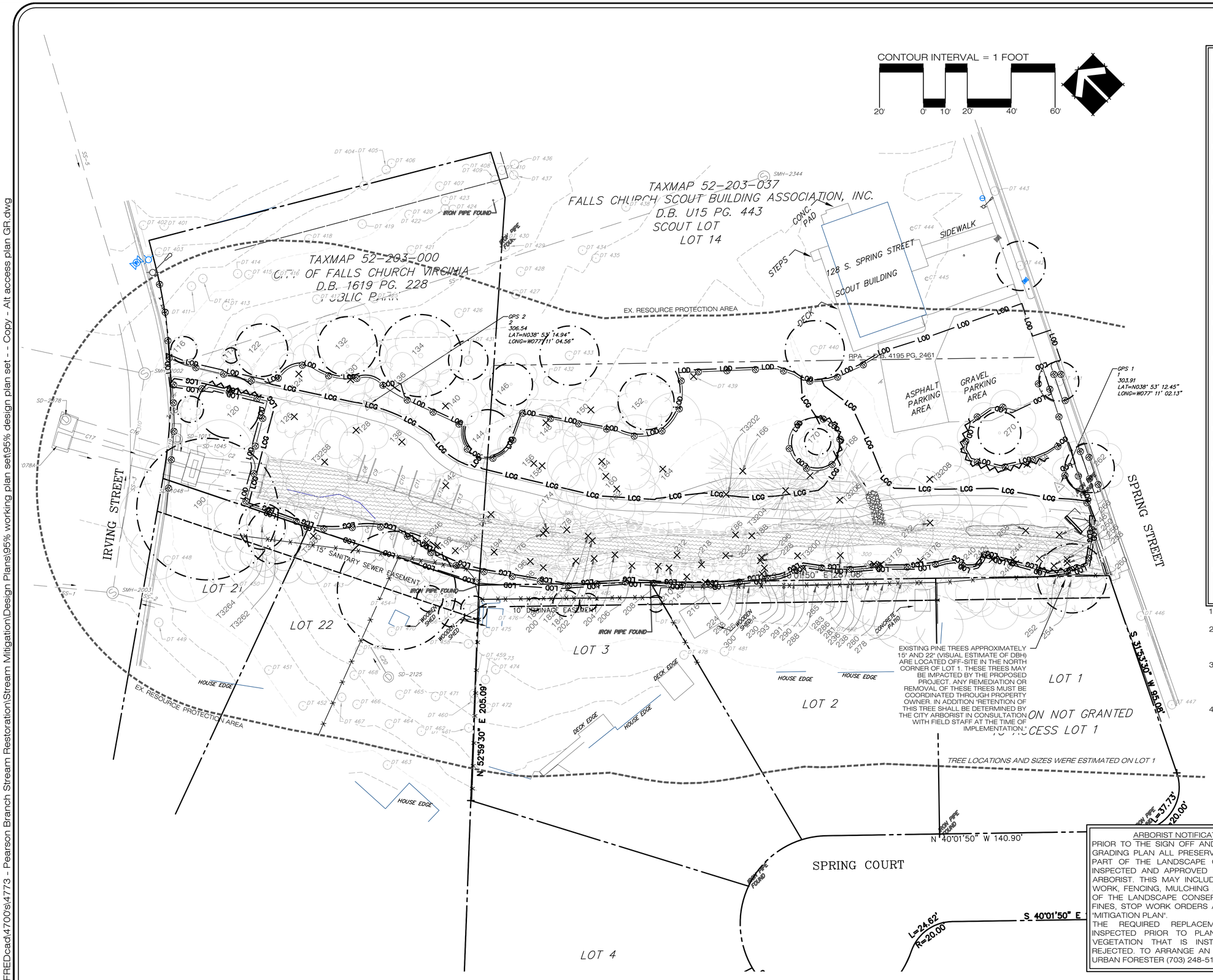
DEMOLITION PLAN
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
SCOTT C. BLOSSOM
Lic. No. 40287
1/20/14
PROFESSIONAL ENGINEER

REVISIONS:

DATE:	
12/16/13	REVISED PER CITY REQUEST
01/20/14	REVISED PER CITY AND/OR FCSBA COMMENTS

DRAWN BY: CDP
DESIGNED BY: CDP, GCR, SCB
DATE: 11/07/2013
CHECKED BY: SCB
SCALE: 1 INCH = 20 FEET
SHEET: 8 OF 21
JOB#: 4773



LEGEND

- SURVEYED STREAM CHANNEL LIMITS
- RESOURCE PROTECTION AREA (RPA) LIMITS
- EXISTING CONTOURS
- EXISTING PROPERTY LINES
- EXISTING FENCE
- EXISTING TREE LOCATED BY PACIULLI SIMMONS & ASSOCIATES
- EXISTING TREE LOCATED BY PENNONI (2012)
- PROJECT BENCHMARK
- EXISTING TRAIL
- PROPOSED TREES TO BE REMOVED
- CRITICAL ROOT ZONE (CRZ)
- LIMITS OF GRADING
- LIMITS OF DISTURBANCE
- TREE PROTECTION
- ROOT PRUNING

1. SEE SHEET 10 FOR TREE TABLE INVENTORIES.
2. SEE SHEET 7 FOR CITY OF FALLS CHURCH STANDARD NOTES AND DETAILS FOR TREE PRESERVATION AND PLANTING.
3. ALL PRUNING SHALL BE CONDUCTED BY AN ISA CERTIFIED ARBORIST IN ACCORDANCE WITH ANSI A300 PRUNING STANDARDS.
4. ANY INVASIVE REMOVAL, GRADING OR DISTURBANCE IN THIS AREA ADJACENT TO LOT 1 SHOULD BE DONE BY HAND.

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) 248-5183.

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WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
Environmental Consultants

TREE PRESERVATION PLAN
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
GEORGE C. RHODES III
Lic. No. 000894
1/20/2014
LANDSCAPE ARCHITECT

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PEARSON BRANCH STREAM RESTORATION– EXISTING TREE SURVEY* - TABLE I LOCATED BY PACIULLI SIMMONS & ASSOCIATES

TREE TAG ID #	Common Name	Botanical Name	DBH (INCHES)	CRZ (FEET)	Notes	Condition	Recommendation
114	Sweetbay magnolia	Magnolia virginiana	3	4.5	Multi-stem (3 stem)	Good	Preserve with fencing
116	Swamp white oak	Quercus bicolor	5	7.5		Very good	Preserve with fencing & tie back branches as needed
118	Swamp white oak	Quercus bicolor	5	7.5		Very good	Preserve with fencing & tie back branches as needed
120	Red maple	Acer rubrum	19	28.5		Fair	Preserve with root pruning
122	River birch	Betula nigra	16	24.0	Multi-stem (3 stem)	Good	Preserve with fencing
122A	Sweetgum	Liquidamber styraciflua	5	7.5		Good	Preserve with fencing
124	Red maple	Acer rubrum	8	11.3		Moderate-fair	Remove – In area of disturbance
126	Red maple	Acer rubrum	8	11.3		Moderate	Remove – In area of disturbance
128	Red maple	Acer rubrum	8	11.3		Moderate – fair	Remove – In area of disturbance
130	River birch	Betula nigra	12	18.0	Multi-stem (3 stem)	Moderate – good	Remove – In area of disturbance
132	Red maple	Acer rubrum	18	27.0		Fair	Preserve with fencing & remove hanger & major deadwood
132A	American elm	Ulmus americana	3	4.5		Moderate – good	Preserve with fencing
134	River birch	Betula nigra	25	37.5	Multi-stem (4 stem)	Moderate – good	Preserve with fencing
134A	Willow oak	Quercus phellos	3	4.5		Good	Preserve with fencing
136	River birch	Betula nigra	20	30.0	Multi-stem, (5 stem)	Moderate – good	Preserve with fencing
138	Green ash	Fraxinus pennsylvanica	48	71.3	Multi-stem (4 stem)	Moderate	Remove – In area of disturbance
140	Red maple	Acer rubrum	13	19.5		Moderate – fair	Remove – In area of disturbance
142	Tupelo	Nyssa sylvatica	4	6.0		Good	Remove – In area of disturbance See Note #4
144	River birch	Betula nigra	14	21.0	Double-stem	Moderate – good	Preserve with fencing
146	Sweetgum	Liquidamber styraciflua	13	19.5		Moderate – good	Preserve with fencing
146A	River birch	Betula nigra	11	16.5	Multi-stem (4 stem)	Good	Preserve with fencing and root pruning if needed; raise low-hanging branches as needed
148	Tulip-tree	Liriodendron tulipifera	18	26.3		Moderate	Remove – In area of disturbance
150	Tulip-tree	Liriodendron tulipifera	25	37.5		DEAD LEAD	Remove – In area of disturbance
152	River birch	Betula nigra	17	25.5	Double	Good	Preserve with fencing; raise low-hanging branches as needed
154	Green ash	Fraxinus pennsylvanica	15	22.5		Fair	Remove – In area of disturbance
156	Pin oak	Quercus palustris	22	32.3		Moderate – fair	Remove – In area of disturbance
158	Green ash	Fraxinus pennsylvanica	15	22.5		Fair – poor	Remove – In area of disturbance
160	Tulip-tree	Liriodendron tulipifera	41	61.5	Double-stem	Moderate - Check cavity for wood decay threshold if to remain for extended period	Remove – In area of disturbance
162	Green ash	Fraxinus pennsylvanica	12	18.0		Moderate – fair	Remove – In area of disturbance
164	Red maple	Acer rubrum	31	46.5		Moderate	Remove – In area of disturbance
166	Eastern white pine	Pinus strobus	17	25.5		Fair to poor	Remove – In area of disturbance
168	Eastern white pine	Pinus strobus	26	39.0	Double-stem	Fair to poor	Remove – In area of disturbance
170	Kousa dogwood	Cornus kousa	8	12.0	Multi-stem	Moderate - Fair	Preserve with fencing & root pruning
184	Mimosa	Albizia julibrissin	10	15.0		Poor	Remove – In area of disturbance
188	Cherry	Prunus sp.	8	12.0		Poor	Remove – In area of disturbance
190	Eastern cottonwood	Populus deloides	43	64.5	Forked, (3 stem)	Moderate – good	Preserve with fencing
192	Red maple	Acer rubrum	8	12.0		Moderate - fair	Remove – In area of disturbance See Note #5
194	Maple spp.	Acer spp.	10	15.0	Double-stem	Poor	Remove – In area of disturbance
196	Sycamore	Platanus occidentalis	22	33.0		Fair	Remove – In area of disturbance See Note #6
200	Black cherry	Prunus serotina	9	13.5		Fair	Remove – In area of disturbance See Note #6
202	Green ash	Fraxinus pennsylvanica	8	12.0		Fair	Remove – In area of disturbance See Note #6
204	White mulberry	Morus alba	8	12.0	Double-stem,	Poor	Remove – In area of disturbance
206	Black walnut	Juglans nigra	6	9.0		Good	Remove – In area of disturbance
212	Black walnut	Juglans nigra	6	9.0		Good	Remove – In area of disturbance
216	Black walnut	Juglans nigra	5	7.5		Poor	Remove – In area of disturbance See Note #5
242	Boxelder	Acer negundo	13	19.5		Fair	Remove - In area of disturbance
244	Boxelder	Acer negundo	10	15.0		Fair	Remove – In area of disturbance
254	Pin oak	Quercus palustris	21	31.5		Moderate- good	Preserve with fencing & root pruning
262	Red maple	Acer rubrum	15	22.5		Poor	Preserve with fencing
264	Norway spruce	Picea abies	4	6.0		Moderate - fair	Remove – In area of disturbance
270	Red oak	Quercus rubra	13	19.5		Moderate	Preserve with fencing & root pruning
278	White pine	Pinus strobus	5	7.5		Moderate	Preserve with fencing

PEARSON BRANCH STREAM RESTORATION– EXISTING TREE SURVEY* - TABLE I LOCATED BY PACIULLI SIMMONS & ASSOCIATES

TREE TAG ID #	Common Name	Botanical Name	DBH (INCHES)	CRZ (FEET)	Notes	Condition	Recommendation
T3170	Black cherry	Prunus serotina	14	21.0			Preserve with fencing
T3176	Red maple	Acer rubrum	36	54.0	Double-stem	Fair	Remove - In area of disturbance
T3178	Red maple	Acer rubrum	24	36.0		Dead	Remove – In area of disturbance
T3180	Green ash	Fraxinus pennsylvainica	24	36.0		Fair	Remove – In area of disturbance
T3200	Black willow	Salix nigra	30	45.0	Multi-stem, (3 stem)	Moderate -poor	Remove – In area of disturbance
T3202	Eastern white pine	Pinus strobus	18	27.0		Fair - poor	Remove – In area of disturbance
T3204	Eastern white pine	Pinus strobus	15	22.5		Fair - poor	Remove – In area of disturbance
T3206	Eastern white pine	Pinus strobus	19	28.5		Moderate - Fair	Remove – In area of disturbance
T3208	Red oak	Quercus rubra	14	21.0		Fair	Remove – In area of disturbance
T3244	Tulip-tree	Liriodendron tulipifera	36	54.0		Moderate – good	Remove – In area of disturbance
T3246	Red maple	Acer rubrum	30	45.0		Poor – large hanger	Preserve with fencing
T3258	Red maple	Acer rubrum	24	35.3		Fair	Remove – In area of disturbance
T3260	White mulberry	Morus alba	30	45.0	Co-dominant	Moderate - poor	Remove (See Note 2)
T3262	White mulberry	Morus alba	17	25.5	Co-dominant	Poor	Preserve with fencing
T3264	Black cherry	Prunus serotina	14	21.0		Fair	Preserve with fencing

NOTE:

1. CERTAIN TREES ARE SHOWN AND IDENTIFIED ON THE PLAN VIEW BUT WERE NOT INVENTORIED ON THE TABLES AS THEY WERE NOT DEEMED SIGNIFICANT FOR DESIGN PURPOSES.
2. TREE T3260 CAN BE FLUSH CUT AT BASE AND LEAVE STUMP AND ROOTS IN THE GROUND, IN ADDITION, REMOVAL OF THE TREE WILL REQUIRE CONSENT OF THE PROPERTY OWNER PRIOR TO REMOVAL.
3. TREE 254 CAN BE FLUSH CUT AT BASE AND LEAVE STUMP AND ROOTS IN THE GROUND, IN ADDITION, REMOVAL OF THE TREE WILL REQUIRE CONSENT OF THE PROPERTY OWNER PRIOR TO REMOVAL.
4. TREE 142, A 4" TUPELO, IS IN GOOD CONDITION BUT CAN NOT BE PRESERVED. USE CARE DURING REMOVAL SO TREE CAN BE TRANSPLANTED.
5. TREES 192 AND 216 ARE POSSIBLE CANDIDATES FOR RETENTION. RETENTION OF THESE TREES SHALL BE DETERMINED BY THE CITY ARBORIST IN CONSULTATION WITH FIELD STAFF AT THE TIME OF IMPLEMENTATION.
6. TREES 196, 200, AND 202 ARE TO BE REMOVED. HOWEVER, THEY HAVE EXPOSED ROOT SYSTEMS THAT ARE HOLDING THE EXISTING STREAMBANK. THE RETENTION OF THE ROOT SYSTEMS OF THESE TREES SHALL BE DETERMINED BY THE LANDSCAPE ARCHITECT/ENGINEER AND FIELD STAFF AT THE TIME OF IMPLEMENTATION.

Pearsons Branch Tree Condition Survey by Pennoni December 2012

TREE TAG ID #	Common Name	Botanical Name	DBH (INCHES)	CRZ (FEET)	Height	Condition	Recommendation
401	red maple	Acer	15	22.5	35'-40'	topped from pruning next to powerline- good condition	Save
402	redbud	Cercis	3-4"	6.0	12'	planted directly under powerline- good condition	Save
403	va cedar	Juniperus	3	4.5	12'	good- ok form not topped	Save
404	red oak	Quercus	30	45.0	100'+	good condition	Save
405	red oak	Quercus	15	22.5	70'+/-	leaning north- good	Save
406	red oak	Quercus	10	15.0	50' +/-	poor form	Save
407	red oak	Quercus	24	36.0	80-90'	good form	Save
408	red oak	Quercus	18	27.0	60'	leaning north	Save
409	red oak	Quercus	4	6.0	disease d		Save
410	ash	Fraxinus	8	12.0	30'+/-	in bamboo- struggling for light at low levels and croweded	Save
411	red maple	Acer	14	21.0	50'	leaning to road-decay- topped-poor	Save
412	red maple	Acer	24	36.0	60'+/-	leaning into powerline- poor form	Save
413	red maple	Acer	12	18.0	40'	hollow bowl and poor condition. Topped and leaning	Save
414	red maple	Acer	30	45.0	60'+/-	decay upper branching, poor condition	Save
415	red oak	Quercus	4	6.0	15'	poor form and leaning	Save
416	red maple	Acer	30	45.0	60'+/-	split trunk- good health, no visible dead wood	Save
417	sweet gum	Liquidambar	6-8"	12.0	40'	good form, couple broken small branches	Save
418	va cedar	Juniperus	12	18.0	40'	condition good, good form. Slight crowding by 416 mapl	Save
419	tulip poplar	Lirodendron	12	18.0	60'	good condition overall	Save
420				####		dead	Save
421	tulip poplar	Lirodendron		####	80-90'	good form - good condition- good overall	Save
422	red oak	Quercus	12-14"	21.0	60'	crowded branching but healthy	Save
423	red oak	Quercus	8-10"	15.0	60'	leaning but healthy	Save
424	red oak	Quercus	12-14"	21.0	60'	crowded branching but healthy	Save
425	ornamental/cherry?	Prunus	4	6.0	15'	poor trunk condition	Save
426	willow oak	Quercus	4-5"	7.5	25'	good oveall condition	Save
427	red oak	Quercus	24	36.0	45'	topped and decay present. Dying	Save
428	red oak	Quercus	48	72.0	100'+	Double; few dead branches to prune, fungus 35' up visable	Save
429	ash (?)	Fraxinus	3	4.5		in bamboo- struggling for light at low levels and croweded	Save
430	ash (?)	Fraxinus	8	12.0	40-50'	in bamboo- struggling for light at low levels and croweded	Save
431	maple stump	Acer	varies	####	12'	hollowed stump with saplings	Save
432	river birch	Betul	quad stump	####	30'	excellent form and conditon	Save
433	ash (?)	Fraxinus	18	27.0	60'	leaning but in good health	Save
434	va pine	Pinus	18	27.0	60'	broken lower branching but appears to be healthy	Save
435	pin oak	Quercus	24	36.0	50'	topped real poor condition and form- hollowed bowl	Save
436	ash (?)	Fraxinus	8	12.0	30-40'	crowned by bamboo	Save
437	ash (?)	Fraxinus	6	9.0	45'	crowned by bamboo	Save
438	tulip poplar	Lirodendron	20	30.0	70'	good form, upper branch appears to be dead	Save
439	?? Stump/Clump/Saplings			####	12'		Remove
440	white pine	Pinus	18	27.0	70'	good form and health overall	Save
441	red maple	Acer	12	18.0	20'	pruned red maple street tree, under powerline, planted in 30" strip	Save
442	red maple	Acer	15	22.5	20'	pruned red maple street tree, under powerline, planted in 30" strip	Save
443	red maple	Acer	14	21.0	20'	pruned red maple street tree, under powerline, planted in 30" strip	Save
444	eastern red cedar	Juniperus	18	27.0	60'	good form, pruned to building height	Save
445	eastern red cedar	Juniperus	18	27.0	60'	good multi stem form, pruned to building height	Save
446	red maple	Acer	14	21.0	20'	bad pruning, in power lines, street tree. Small planting strip	Save
447	red maple	Acer	14	21.0	20'	bad pruning, in power lines, street tree. Small planting strip	Save
448	white oak (swamp)	Quercus	6	9.0	25'	new street tree, good form and health	Save
449	white oak (swamp)	Quercus	6	9.0	25'	new street tree, good form and health	Save
450	ash	Fraxinus	8	12.0	25'	ash in rear of yard	Save
451	cherry	Prunus	10	15.0		bad form, broken near house	Save
452	red maple	Acer	24	36.0	50'	topped at one point,	Save
453	cherrry	Prunus		####		dead with ivy climbing	Save
454	tulip poplar	Lirodendron	36	54.0	100'	excellent form and conditon	Save
455	orn. cherry	Prunus	6"-8"	12.0	15'	ok form and condition for older ornamental tree in yard	Save
456	orn. cherry	Prunus	6"-8"	12.0	15'	ok form and condition for older ornamental tree in yard	Save
457	orn. cherry	Prunus	6"-8"	12.0	15'	ok form and condition for older ornamental tree in yard	Save
458	?		8	12.0	30'	corky bark	Save
459	red maple	Acer	6	9.0	25'	decent form crowded by 460	Save
460	red maple	Acer	8-10"	15.0	45'	good form and health overall	Save
461	orn. cherry	Prunus	6"-8"	12.0	15'	ok form and condition for older ornamental tree in yard	Save
462	orn. cherry	Prunus	6"-8"	12.0	15'	ok form and condition for older ornamental tree in yard	Save
463	orn. cherry	Prunus	6"-8"	12.0	15'	ok form and condition for older ornamental tree in yard	Save
464	orn. cherry	Prunus	6"-8"	12.0	15'	ok form and condition for older ornamental tree in yard	Save
465	orn. cherry	Prunus	6"-8"	12.0	15'	ok form and condition for older ornamental tree in yard	Save
466	orn. cherry	Prunus	6"-8"	12.0	15'	ok form and condition for older ornamental tree in yard	Save
467	am holly	Ilex	4	6.0	12'	good health, leaning a bit	Save
468	black cherry	Prunus	5	7.5	20'	good form and health overall	Save
469	black cherry	Prunus	7	10.5	20'	pruned on fence and yard side. ok but pruned	Save
470	eastern red cedar	Juniperus		####	18'20'	good form	Save
471	orn. cherry	Prunus	6"-8"	12.0	15'	ok form and condition for older ornamental tree in yard	Save
472	dogwood	Cornus	6	9.0	10'	orn. Dogwood, visable buds	Save
473	dogwood	Cornus		####		dead, no budding, poor	Save
474	redbud	Cercis	4	6.0	12'	healthy	Save
475	red maple	Acer	2	3.0	10-12'	Double; healthy volunteer red maple	Save
476	dogwood	Cornus	4	6.0	10' ht	good form and healthy budding	Save
477	burning bush	Euonymus	8	12.0	12'	large burning bush	Save
478	dogwood	Cornus	4	6.0	10'	ok form and condition for older ornamental tree in yard	Save
479	dogwood	Cornus	5	7.5	10'	healthy ornamental	Save
480	dogwood	Cornus	5	7.5	10'	topped, heavily pruned but budding	Save
481	silver maple	Acer	30	45.0	60-70'	healthy and good form	Save
482	dogwood	Cornus	6-8"	12.0	12'	ok form, fungii on bark	Save

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TREE INVENTORY TABLES
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
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LEGEND

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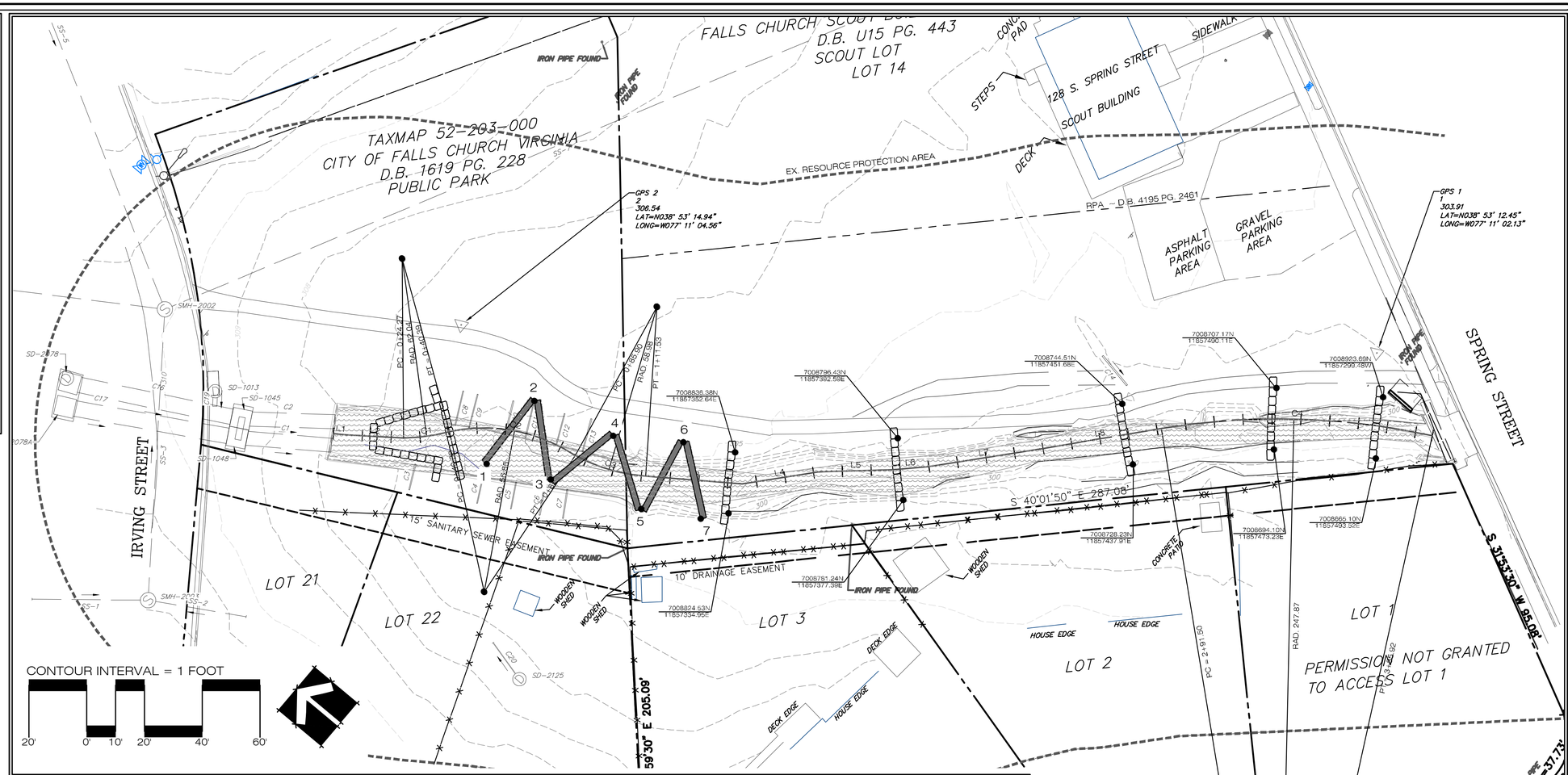
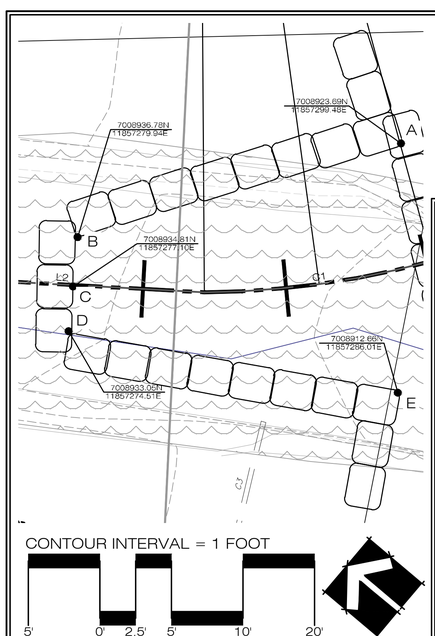
- EXISTING TRAIL
- PROPOSED CHANNEL ALIGNMENT

NOTES:
FIELD ADJUSTMENTS TO STRUCTURE LOCATIONS AND ALIGNMENT MAY BE REQUIRED DURING STAKEOUT SUBJECT TO APPROVAL BY ENGINEER.

EXISTING INFORMATION SUCH AS TREE LOCATIONS ARE INTENTIONAL NOT SHOWN ON THIS SHEET, IN ORDER TO HIGHLIGHT THE STAKEOUT.





CROSS-VANE STRUCTURE STAKEOUT

POINT	NORTHING	EASTING	ELEVATION	STATION	SLOPE (FT/FT)	BETWEEN POINTS	DISTANCE (FT)
A	7008923.69	11857299.48	305.35	0+40.39	0.05	A-B	23.50
B	7008936.78	11857279.94	304.20	0+15.50	0.06	B-C	3.50
C	7008934.81	11857277.10	304.00	0+15.50	0.06	C-D	3.20
D	7008933.05	11857274.51	304.20	0+15.50	0.05	D-E	23.40
E	7008912.66	11857286.01	305.35	0+39.66			

CONSTRUCTED RIFFLE (STATION 40 - 140)

POINT NO.	NORTHING	EASTING
1	7008899.7100	11857294.2422
2	7008901.04	11857321.6100
3	7008879.16	11857304.3872
4	7008872.35	11857329.8945
5	7008848.63	11857316.6790
6	7008852.32	11857343.7318
7	7008830.76	11857327.3408

ALIGNMENT LINE TABLE

LINE #	BEARING	LENGTH
L1	S 34°25'58" E	4.38'
L2	S 36°51'03" E	19.89'
L3	S 35°25'28" E	33.43'
L4	S 48°48'01" E	26.97'
L5	S 41°46'16" E	25.60'
L6	S 44°38'09" E	12.44'
L7	S 49°04'50" E	39.18'
L8	S 49°37'08" E	42.35'

ALIGNMENT CURVE TABLE

CURVE #	DELTA	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	092°21'31"	16.12'	62.04'	S47°49'48"E	16.07'
C2	100°54'36"	45.25'	58.78'	S29°20'05"E	44.06'
C3	097°30'39"	25.89'	58.76'	S23°33'28"E	25.68'
C4	023°06'53"	94.42'	247.88'	S38°28'00"E	93.85'

SHEET FOR STREAM CHANNEL CENTERLINE AND STRUCTURE STAKEOUT PURPOSES ONLY

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STAKEOUT PLAN
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
GEORGE C. RHODES III
Lic. No. 000894
11/07/2013
LANDSCAPE ARCHITECT

REVISIONS:
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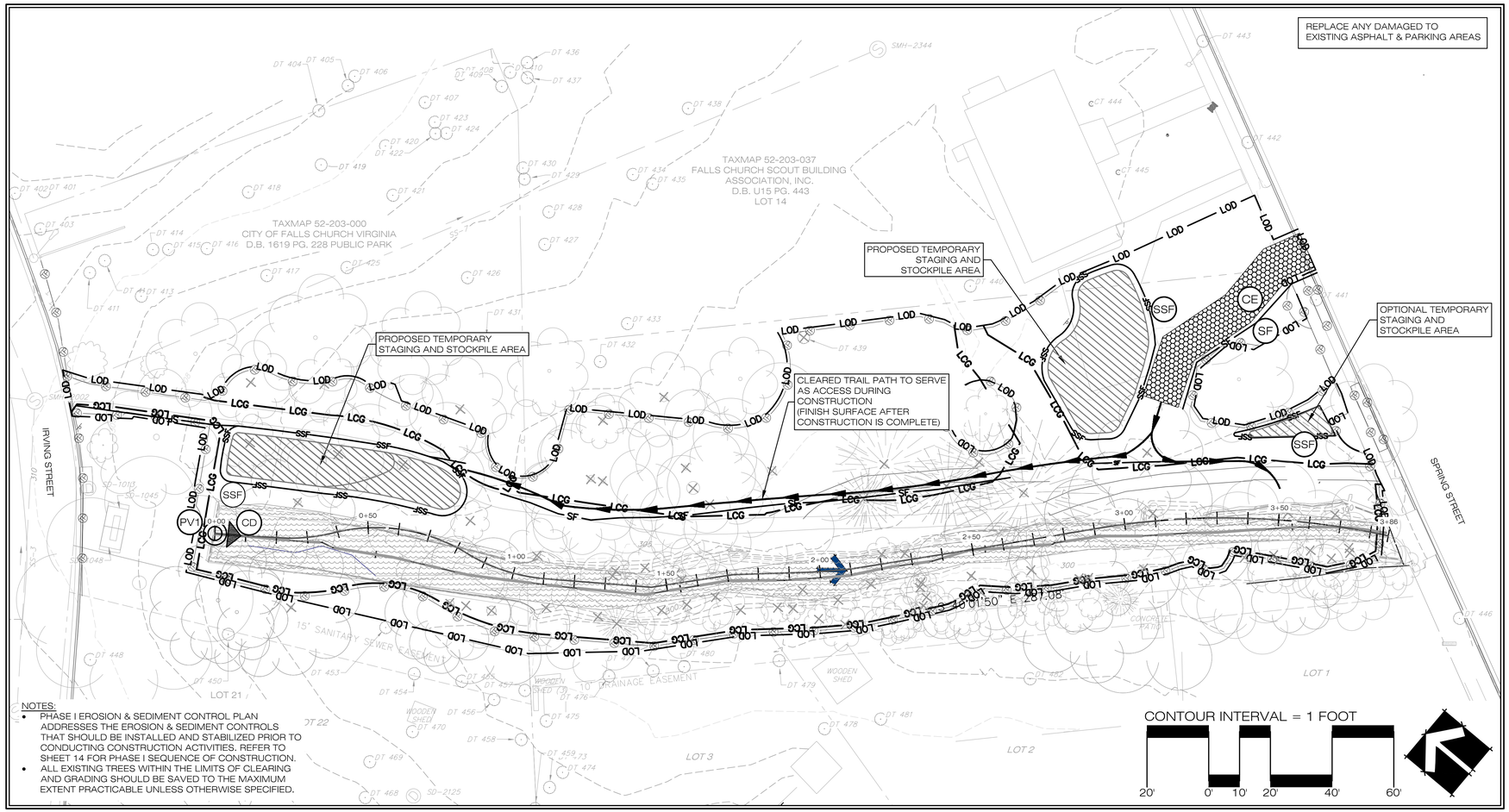

NOTES:

- PHASE I EROSION & SEDIMENT CONTROL PLAN ADDRESSES THE EROSION & SEDIMENT CONTROLS THAT SHOULD BE INSTALLED AND STABILIZED PRIOR TO CONDUCTING CONSTRUCTION ACTIVITIES. REFER TO SHEET 14 FOR PHASE I SEQUENCE OF CONSTRUCTION.
- ALL EXISTING TREES WITHIN THE LIMITS OF CLEARING AND GRADING SHOULD BE SAVED TO THE MAXIMUM EXTENT PRACTICABLE UNLESS OTHERWISE SPECIFIED.

NOTES

1.) THE PROPOSED LIMITS OF DISTURBANCE (LOD) REPRESENT THE FURTHEST POTENTIAL EXTENT OF CLEARING AND DISTURBANCE, BUT DO NOT IMPLY FULL CLEARING OF ALL AREAS WITHIN THESE LIMITS. THE SITES SHALL BE SELECTIVELY CLEARED TO ALLOW FOR SAFE ACCESS WHILE PRESERVING SPECIMEN TREES WHERE PRACTICABLE AS SPECIFIED HEREIN.

2.) LIMIT CLEARING TO THE IMMEDIATE WORK AREA TO AVOID EXCESSIVE DISTURBANCE BETWEEN STABILIZATION ACTIVITIES. ALL DISTURBANCE SHALL BE STABILIZED AT THE END OF EACH WORKING DAY.

3.) CUT-TO-HAUL STOCKPILE LOCATIONS WILL BE VERIFIED AND COORDINATED IN THE FIELD WITH THE CITY AND DESIGNER OR ENGINEER PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.

4.) LOCATION OF ALL DEWATERING STRUCTURES SHALL BE COORDINATED IN THE FIELD WITH THE CITY AND DESIGNER OR ENGINEER PRIOR TO CONSTRUCTION. DEWATERING STRUCTURES MAY NOT BE PLACED IN OR ADJACENT TO FILL AREAS.

5.) ALL MATERIAL STOCKPILED MUST BE MOVED TO THE FINAL CUT-TO-HAUL STOCKPILE LOCATIONS AT THE END OF EACH DAY.

6.) IF DEEMED APPLICABLE BASED ON SITE CONDITIONS, A TEMPORARY STREAM CROSSING (TSC) MAY BE INSTALLED AT/NEAR STATION 1+75 TO FACILITATE ACCESS TO THE RIGHT BANK.

EROSION AND SEDIMENT CONTROL NARRATIVE

THIS EROSION AND SEDIMENT CONTROL PLAN HAS BEEN DEVELOPED TO PROTECT THE DOWNSTREAM STREAMS, WETLANDS, WATERCOURSES, AND OTHER AQUATIC RESOURCES FROM ADDITIONAL DEGRADATION FROM EROSION AND SEDIMENT-LADEN WATER. CARE SHALL BE TAKEN TO ENSURE THAT ALL DOWNSTREAM WATERCOURSES REMAIN FREE OF ADDITIONAL SEDIMENT DURING CONSTRUCTION. EROSION & SEDIMENT CONTROL WILL BE PROVIDED USING A COMBINATION OF MEASURES WHICH INCLUDE 1) SUPER SILT FENCE, 2) BLANKETING AND MATTING, 3) OUTLET PROTECTION, 4)CHECK DAMS, AND (5) PUMP AROUND DIVERSIONS. THESE PRACTICES WILL BE CONSTRUCTED IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK 3RD EDITION (1992).

THE EXISTING SITE CONSISTS OF A PARK AREA WITH A STAND OF MATURE HARDWOODS SURROUNDED BY RESIDENTIAL DEVELOPMENT. THE EXISTING STREAM, PARTIALLY CHANNELIZED WITH CONCRETE, APPEARS TO BE ACTIVELY DEGRADING WITH SIGNS OF INCISION AND UNDERCUTTING OF THE BANKS AND PROPERTY LOSS DUE TO EROSION. THE EROSION AND SEDIMENT CONTROL PLAN WILL RELY PREDOMINANTLY ON PUMP AROUND DIVERSIONS WHEN BASEFLOW IS PRESENT AND EROSION CONTROL MATTING TO CONTROL THE SEDIMENT ACCUMULATION FROM THE STREAM GRADING AND STABILIZATION. THE PUMP AROUND DIVERSIONS WILL ALLOW THE EXISTING CHANNEL DISCHARGE TO CONTINUE NORMAL FLOW THROUGH THE SITE AND MINIMIZE THE AMOUNT OF SEDIMENT BEING TRANSPORTED DOWNSTREAM INTO UNDISTURBED AREAS. SILT FENCE WILL BE PLACED AT THE DOWNSLOPE SIDE OF ACCESS ROADS, STAGING AND STOCKPILING AREAS TO PREVENT SEDIMENT FROM ENTERING THE STREAM LIMITING THE DISTURBED AREAS BY IMPLEMENTING A PHASED EROSION AND SEDIMENT CONTROL PLAN UTILIZING THE AFFECT OF STABILIZING ONE AREA BEFORE CONSTRUCTION BEGINS ON ANOTHER. ADDITIONALLY, ALL DISTURBED AREAS SHALL BE IMMEDIATELY STABILIZED FOLLOWING GRADING ACTIVITIES. ALL EROSION AND SEDIMENT CONTROL MEASURES IMPLEMENTED IN THE FIELD THAT ARE NOT INCLUDED HEREIN MUST BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS NOTED ABOVE AND APPROVED BY THE ENGINEER.

LEGEND

	PROPOSED TREE PROTECTION (SAFETY FENCE)	TP	SSF	PROPOSED SUPER SILT FENCE	SSF		EXISTING TREE TO BE REMOVED (SEE SHEET 9)
	PROPOSED PUMP AROUND DIVERSION	PV	LOD	PROPOSED LIMITS OF DISTURBANCE	LOD		EXISTING TREE TO REMAIN (SEE TREE PRESERVATION PLAN FOR ADDITIONAL DETAIL)
	PROPOSED STAGING & STOCKPILE LOCATION (TO BE DETERMINED IN COORDINATION WITH MATERIALS DELIVERY)		LOG	PROPOSED LIMITS OF CLEARING & GRADING	LOG	3+50	PROPOSED STREAM CHANNEL ALIGNMENT
	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE		OPTIONAL CONSTRUCTION ROAD STABILIZATION	CRS		EXISTING CONTOURS
SF	PROPOSED SILT FENCE	SF		CHECK DAM	CD		PROPOSED ACCESS ROUTE
	FLOW ARROW						

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Environmental Consultants

EROSION & SEDIMENT CONTROL PLAN - PHASE I
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
SCOTT C. BLOSSOM
Lic. No. 40287
1/28/14
PROFESSIONAL ENGINEER

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01/20/14	REVISED PER CITY AND/OR FCSBA COMMENTS

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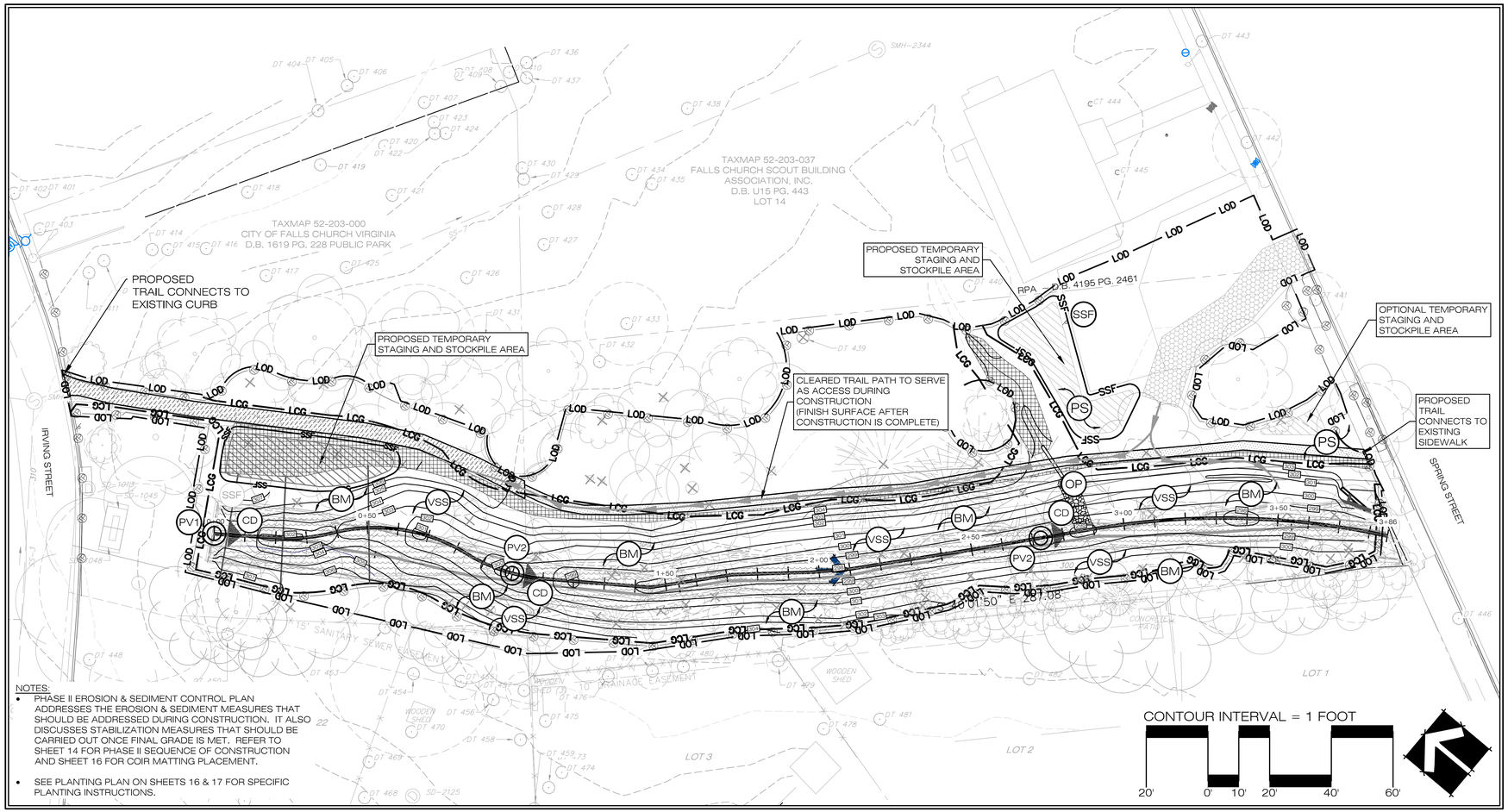

NOTES:

- PHASE II EROSION & SEDIMENT CONTROL PLAN ADDRESSES THE EROSION & SEDIMENT MEASURES THAT SHOULD BE ADDRESSED DURING CONSTRUCTION. IT ALSO DISCUSSES STABILIZATION MEASURES THAT SHOULD BE CARRIED OUT ONCE FINAL GRADE IS MET. REFER TO SHEET 14 FOR PHASE II SEQUENCE OF CONSTRUCTION AND SHEET 16 FOR COIR MATTING PLACEMENT.
- SEE PLANTING PLAN ON SHEETS 16 & 17 FOR SPECIFIC PLANTING INSTRUCTIONS.

LEGEND

EXISTING CONTOURS		PROPOSED SUPER SILT FENCE	SSF	PROPOSED PERMANENT SEEDING	PS
PROPOSED ACCESS ROUTE		PROPOSED LIMITS OF DISTURBANCE	LOD	PROPOSED BLANKETING & MATTING (SEE SHEET 16)	BM
PROPOSED STAGING & STOCKPILE LOCATION (TO BE DETERMINED IN COORDINATION WITH MATERIALS DELIVERY)		PROPOSED LIMITS OF GRADING		EXISTING TREE TO BE REMOVED	
PROPOSED SILT FENCE	SF	PROPOSED TREE PROTECTION	TP	EXISTING TREE TO REMAIN	
OUTFALL PROTECTION	OP	PROPOSED PUMP AROUND DIVERSION	PV	PROPOSED STREAM CHANNEL ALIGNMENT	
PROPOSED GRADING		PROPOSED VEGETATIVE STREAMBANK STABILIZATION	VSS	CHECK DAM	CD
FLOW ARROW		PROPOSED EC2 MATTING			
PROPOSED ASPHALT PARK TRAIL		PROPOSED PERMEABLE FCSBA TRAIL			

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EROSION & SEDIMENT CONTROL PHASE II
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
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1/20/14
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EROSION AND SEDIMENT CONTROL CONSTRUCTION NOTES

ALL CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO THE CONSTRUCTION STANDARDS AND SPECIFICATIONS OF THE CITY OF FALLS CHURCH AND THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 3RD EDITION, 1993

THE CONTRACTOR OR DEVELOPER IS REQUIRED TO NOTIFY THE CITY OF FALLS CHURCH (CITY) PUBLIC WORKS DEPARTMENT, STORMWATER AND FLOODPLAIN DIVISION IN WRITING AT LEAST THREE (3) DAYS PRIOR TO ANY CONSTRUCTION, INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:

A. INSTALLATION OF APPROVED EROSION CONTROL DEVICES
B. CLEARING AND GRUBBING
C. SUBGRADE EXCAVATION
D. INSTALLING NEW RETAINING WALL ON LEFT BANK

BEFORE ANY WORK BEGINS A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD TO ENSURE THAT ALL AFFECTED PARTIES (DESIGN ENGINEER, CONSTRUCTION CONTRACTOR, CITY STAFF TO ENSURE COORDINATED UNDERSTANDING OF E&S CONTROL PLANS, SPECIFICATIONS, AND SEQUENCE OF CONSTRUCTION. THE PRE-CONSTRUCTION CONFERENCE SHALL BE SCHEDULED BY THE CONTRACTOR.

PLAN APPROVAL IN NO WAY RELIEVES THE DEVELOPER OR CONTRACTOR OF THE RESPONSIBILITIES CONTAINED WITHIN THE EROSION AND SEDIMENT CONTROL REGULATIONS.

AN APPROVED SET OF PLANS AND ALL PERMITS SHALL BE AVAILABLE ON THE CONSTRUCTION SITE AT ALL TIME.

ALL UNSUITABLE MATERIAL SHALL BE REMOVED FROM THE CONSTRUCTION LIMITS OF THE PROJECT AS PER VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY (VDEQ) GUIDELINES.

CONSTRUCTION DEBRIS SHALL BE CONTAINERIZED IN ACCORDANCE WITH THE VIRGINIA LITTER CONTROL ACT. NO LESS THAN ONE LITTER RECEPTACLE SHALL BE PROVIDED ON SITE.

THE CONTRACTOR SHALL PROVIDE ADEQUATE MEANS OF CLEANING MUD FROM TRUCKS AND/OR OTHER EQUIPMENT PRIOR TO ENTERING PUBLIC STREETS. IT IS THE CONTRACTORS RESPONSIBILITY TO INSURE THAT THE STREETS ARE IN A CLEAN, MUD AND DUST FREE CONDITION AT ALL TIMES.

ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY CITY INSPECTORS.

FIELD CORRECTIONS SHALL BE APPROVED BY THE DESIGN ENGINEER AND THE CITY. WRITTEN DOCUMENTATION OF ANY DESIGN CHANGES DURING CONSTRUCTION ARE TO BE DOCUMENTED IN WRITING AND SUBMITTED TO THE CITY.

GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. ALL SOIL EROSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION
2. THE APPROVING AUTHORITY, CITY, MAY ADD TO, DELETE, RELOCATE, CHANGE, OR OTHERWISE MODIFY CERTAIN EROSION AND SEDIMENT CONTROL MEASURES WHERE FIELD CONDITIONS ARE ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS.
3. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLAN SHALL BE PLACED AND INSPECTED AND APPROVED BY THE CITY IN ADVANCE OF THE WORK BEING PERFORMED.
4. IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN PROVIDED.
5. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO LEAVE THE SITE ADEQUATELY PROTECTED AGAINST EROSION, SEDIMENTATION, OR ANY DAMAGE TO ANY ADJACENT PROPERTY AT THE END OF EACH DAY'S WORK.
6. FOR THE EROSION CONTROL KEY SYMBOLS SHOWN ON THE PLANS, REFER TO THE VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
7. 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 4VAC50-30 EROSION AND SEDIMENT CONTROL REGULATIONS
8. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED AND INSPECTED AND APPROVED BY THE CITY PRIOR TO OR AS THE FIRST STEP IN CLEARING.
9. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
10. PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
11. 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.
12. 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.
13. DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
14. 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 THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

EROSION, SEDIMENTATION, AND LAND CONSERVATION NOTES

1. MEASURES TO CONTROL EROSION AND SILTATION SHALL BE PROVIDED PURSUANT TO AND IN COMPLIANCE WITH CURRENT FEDERAL, STATE, AND LOCAL REGULATIONS. THE INFORMATION CONTAINED IN THE CONSTRUCTION PLANS AND/OR THE APPROVAL OF THE PLANS SHALL IN NO WAY RELIEVE THE CONTRACTOR OR HIS AGENT OF ANY LEGAL RESPONSIBILITY WHICH MAY BE REQUIRED BY THE CODE OF VIRGINIA OR ANY ORDINANCE ENACTED BY THE CITY.
2. 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. ACCEPTABLE STABILIZATION SHALL CONSIST OF PERMANENT GRASS SEED MIXTURE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. ALL SLOPES 2:1 AND GREATER SHALL BE SODDED AND STAKED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE ENGINEER.
3. ANY DISTURBED AREA NOT PAVED, PERMANENTLY SEEDED, SODDED, OR BUILT UPON BY 1 NOVEMBER OR DISTURBED AFTER THAT DATE, IS TO BE SEEDED WITHIN 14 DAYS WITH TALL FESCUE OR APPROVED EQUIVALENT, AND MULCHED WITH HAY OR STRAW MULCH AT THE RATE OF 2 TONS PER ACRE. FOR ADDITIONAL DETAILS, REFER TO THE CURRENT EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK
4. NO AREA SHALL BE DENUDED AND NOT BE DISTURBED FOR A PERIOD LONGER THAN 14 DAYS.
5. TEMPORARY DIVERSIONS, SEEDED AND MULCHED AND OTHER CONTROL MEASURES NECESSARY, ARE TO BE PLACED AS INDICATED ON THE DRAWINGS PRIOR TO OR AS THE FIRST STEP IN EXCAVATION.
6. WHEN IN ACCORDANCE WITH STATE AND FEDERAL JOB SAFETY REQUIREMENTS, ALL EXCAVATED MATERIAL IS TO BE PLACED ON THE UPHILL SIDE OF TRENCHES. NO MATERIAL OR EQUIPMENT IS TO BE PLACED IN AN ACTIVE STREAM. ANY STOCKPILED MATERIAL WHICH WILL REMAIN IN PLACE LONGER THAN 14 DAYS IS TO BE SEEDED FOR TEMPORARY VEGETATION AND MULCHED. WHERE SPOIL IS PLACED ON DOWNHILL SIDE OF TRENCH, IT IS TO BE BACK-SLOPED TO DRAIN TOWARD TRENCH. WHEN NECESSARY TO DEWATER THE TRENCH, THE PUMP DISCHARGE HOSE MUST OUTLET IN A STABILIZED AREA OR A SEDIMENT BASIN.
7. WHERE STREAM CROSSINGS ARE REQUIRED FOR EQUIPMENT, TEMPORARY CULVERTS SHALL BE PROVIDED.
8. DURING CONSTRUCTION, ALL STORM SEWER INLETS WILL BE PROTECTED BY SILT TRAPS, MAINTAINED AND MODIFIED AS REQUIRED BY CONSTRUCTION PROGRESS.
9. ALL DISTURBED AREAS ARE TO BE SEEDED AND MULCHED OR SODDED WITHIN 5 DAYS AFTER BACKFILL OF THE APPLICABLE TRENCH SECTION, IN ACCORDANCE WITH THE PROVISIONS CONTAINED IN THE PROJECT SPECIFICATIONS RELATING TO SEEDING AND SODDING. SPEED IS THE ESSENTIAL LAND CONSERVATION ELEMENT FOR A LINEAR PROJECT.
10. FOR FURTHER REQUIREMENTS AND DETAILS OF TREE PRESERVATION, PLANTING, EROSION AND SEDIMENT CONTROL, THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.

EROSION AND SEDIMENT CONTROL NARRATIVES

I. PROJECT DESCRIPTION

THE STREAM RESTORATION / STABILIZATION PROJECT WILL RESTORE APPROXIMATELY 386 LINEAR FEET OF STREAM. THE SITE IS LOCATED WITHIN THE TRIPPS RUN WATERSHED. THE TOTAL LIMITS OF DISTURBANCE PROPOSED ARE 0.796 ACRES.

II. EXISTING SITE CONDITIONS

THE PROJECT IS LOCATED WITHIN BERMAN PARK IN THE CITY OF FALLS CHURCH, VIRGINIA AND IS AN UPSTREAM TRIBUTARY TO TRIPPS RUN. THE ADJACENT WATERSHED IS CHARACTERIZED BY A NARROW HARDWOOD BUFFER AND URBAN RESIDENTIAL DEVELOPMENT. THE EXISTING STREAM CHANNEL IS BOUNDED BY LARGE STORM SEWERS AT THE UPSTREAM AND DOWNSTREAM ENDS. THE UPSTREAM SEGMENT OF THE SUBJECT REACH IS A CONCRETE LINED CHANNEL WHICH TRANSITIONS TO AN EARTH BOTTOM CHANNEL WITH VERTICAL MASONRY BANKS.

III. ADJACENT PROPERTY

THE SITE IS BOUNDED BY URBAN RESIDENTIAL DEVELOPMENT.

IV. OFF-SITE AREAS

THERE WILL BE NO OFF-SITE DISTURBANCE.

V. CRITICAL AREAS

PORTIONS OF THE STREAM RESTORATION PROJECT ARE LOCATED WITHIN A CITY DEFINED RESOURCE PROTECTION AREA. THE PROPOSED IMPROVEMENTS WILL OCCUR GENERALLY ALONG THE ALIGNMENT OF THE EXISTING CHANNEL, THUS IMPROVING THE WATER QUALITY OF THE DOWNSTREAM RECEIVING WATER. ALL APPLICABLE PERMITS SHALL BE ACQUIRED BEFORE WORK COMMENCES. NO SLOPES GREATER THAN 25% WILL BE DISTURBED WITHOUT CONSENT AND PROPER PERMITTING FROM THE CITY OF FALLS CHURCH.

VI. SOIL

ACCORDING TO USGS WEB SOIL SURVEY FINDINGS, THE SOIL NAME PRESENT ON THE SITE IS WHEATON-MEADOWVILLE COMPLEX.

VII. EROSION AND SEDIMENT CONTROL MEASURES

THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH, 1992). ALL SPECIFICATION NUMBERS LISTED BELOW REFER TO THE PRACTICES' PLATE NUMBER IN THE VESCH.

A. STRUCTURAL PRACTICES

TEMPORARY STONE CONSTRUCTION ENTRANCE - 3.02
SILT FENCE AND SUPER SILT FENCE - 3.05
VEGETATIVE STREAMBANK STABILIZATION - 3.22
STRUCTURAL STREAMBANK STABILIZATION - 3.23
DEWATERING STRUCTURE - 3.26
SOIL STABILIZATION BLANKETS AND MATTING - 3.36
TREE PRESERVATION AND PROTECTION - 3.38 (SAFETY FENCE)
ROCK CHECK DAMS - 3.20
PUMP AROUND DIVERSION - 3.12
OUTLET PROTECTION - 3.18
CONSTRUCTION ROAD STABILIZATION - 3.03
TEMPORARY STREAM CROSSING - 3.24 (BID ALTERNATE, USE ONLY IF DEEMED APPLICABLE BY CITY AND/OR ENGINEER)

B. VEGETATIVE PRACTICES

TOPSOIL (STOCKPILE) - 3.30 - EXCAVATED TOPSOIL SHALL BE REAPPLIED TO AREAS BEING PLANTED AFTER CONSTRUCTION TO PROVIDE A SUITABLE GROWTH MEDIUM FOR FINAL SITE STABILIZATION WITH VEGETATION.

TEMPORARY SEEDING - 3.31 - RAPIDLY GROWING ANNUAL PLANTS SHALL BE SEEDED ON DISTURBED AREAS NOT YET BROUGHT TO FINAL GRADE.

PERMANENT SEEDING - 3.32 - THE ESTABLISHMENT OF PERENNIAL VEGETATIVE COVER ON DISTURBED AREAS BY PLANTING SEED.

TEMPORARY STABILIZATION: REFER TO SEEDING SCHEDULE ON SHEET 16 (PLANTING PLAN: SEEDING).

MULCHING - STD & SPEC. 3.36: MULCH SHALL BE APPLIED TO AREAS THAT REQUIRE TEMPORARY SEEDING TO PREVENT EROSION BY PROTECTING THE SOIL SURFACE FROM RAINDROP IMPACT AND REDUCING THE VELOCITY OF OVERLAND FLOW. IN ADDITION, THE MULCH WILL FOSTER THE GROWTH OF VEGETATION BY INCREASING AVAILABLE MOISTURE AND PROVIDING INSULATION AGAINST EXTREME HEAT OR COLD. STRAW MULCH SHALL BE APPLIED AT 2 TONS/ACRE. MULCH MUST BE WEED FREE.

NO CONTRACTOR MIXES FESCUE, ETC. WILL BE USED ON THIS PROJECT.

C. MANAGEMENT STRATEGIES

1. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, INSPECTED, AND APPROVED BY CITY STAFF PRIOR TO WORK PROGRESSING INTO NEW AND UNPROTECTED AREAS.
2. THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE A FIRST STEP IN THE CONSTRUCTION.
3. TEMPORARY SEEDING OR OTHER STABILIZATION WILL FOLLOW IMMEDIATELY AFTER GRADING.
4. THE PROJECT SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.
5. AFTER ACHIEVING ADEQUATE STABILIZATION, THE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES WILL BE CLEANED AND REMOVED. NO EROSION AND SEDIMENT CONTROL MEASURES CAN BE REMOVED WITHOUT APPROVAL OF THE CITY OF FALLS CHURCH INSPECTOR.

D. PERMANENT STABILIZATION

ALL OF THE STREAMBANKS WILL BE STABILIZED WITH COBBLE/GRAVEL BED LINING, ROCK BANK PROTECTION, EROSION CONTROL MATTING (I.E. COIR), SEED, NATIVE GRASSES, OR LIVE STAKE PLANTINGS AS SHOWN ON SHEETS 17. THE LIVE STAKE PLANTINGS CAN ONLY BE INSTALLED DURING THE DORMANT SEASON. ALL OTHER AREAS (I.E. SIDE SLOPES DRAINING TOWARDS THE STREAM CHANNELS) DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING AND EROSION CONTROL MATTING IMMEDIATELY FOLLOWING FINISH GRADING. SEEDING SHALL BE DONE WITH THE SPECIFIED SEED MIX AND ACCORDING TO STD. & SPEC 3.32, PERMANENT SEEDING, OF THE VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK (VESCH).

VIII. STORMWATER MANAGEMENT

THIS PROJECT WILL PROVIDE WATER QUALITY AS WELL AS CHANNEL PROTECTION. THERE IS NO PROPOSED IMPERVIOUS SURFACE WITH THIS PROJECT.

IX. MAINTENANCE

IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER EACH SIGNIFICANT RAINFALL. THE FOLLOWING WILL BE CHECKED IN PARTICULAR:

1. TREE PROTECTION MEASURES SHALL BE ADEQUATE TO ENSURE THAT EXISTING VEGETATION IS PROTECTED.
2. THE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR THE WASHING AND REWORKING OF EXISTING STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY STRUCTURES USED TO TRAP SEDIMENT. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY. THE USE OF WATER TRUCKS TO REMOVE MATERIALS WILL NOT BE PERMITTED UNDER ANY CIRCUMSTANCES.
3. SILT FENCE AND SUPER SILT FENCE BARRIERS SHALL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF DEPOSITION REACHES HALF THE HEIGHT OF THE BARRIER. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.
4. ALL PUMP-AROUNDS, FLOW BARRIERS, AND FILTER BAGS SHALL BE CHECKED ON A DAILY BASIS AND MAINTAINED AS REQUIRED TO PERFORM TO SPECIFICATION.
5. TEMPORARY STOCKPILE AREAS MUST BE STABILIZED AND CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED.
6. TEMPORARY STREAM CROSSINGS SHOULD BE CHECKED PERIODICALLY TO ENSURE THAT THERE IS NO UNDERMINING OF THE STRUCTURES OR THE CHANNEL.

CONSTRUCTION SEQUENCE

PRE-CONSTRUCTION

1. PRIOR TO PRE-CONSTRUCTION MEETING, THE CONTRACTOR SHALL CLEARLY STAKE THE LIMITS OF DISTURBANCE (LOD), LIMITS OF GRADING (LOG), ACCESS, AND STOCKPILE LOCATIONS. CARE SHALL BE TAKEN TO AVOID LARGE WOODY VEGETATION WHERE POSSIBLE.
2. CONTRACTOR TO CONDUCT AN ON-SITE PRE-CONSTRUCTION MEETING WITH THE CITY OF FALLS CHURCH (CITY) AND THE ENGINEER OR DESIGNER (WEG). THE CITY AND ENGINEER SHALL APPROVE THE STAKED LIMITS PRIOR TO CONSTRUCTION ACTIVITIES. DURING THIS PRE-CONSTRUCTION MEETING, THE CITY OR ENGINEER MAY CHOOSE TO ALTER THE STAKED LIMITS TO AVOID LARGE WOODY VEGETATION
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS OF ALL EXISTING UTILITIES WITHIN THE PROJECT AREA PRIOR TO CONSTRUCTION OPERATIONS, AND MUST CONTACT MISS UTILITY (811) PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES

PHASE I

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS OF ALL EXISTING UTILITIES WITHIN THE PROJECT AREA PRIOR TO CONSTRUCTION OPERATIONS, AND MUST CONTACT MISS UTILITY (811) PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES
5. INSTALL STONE CONSTRUCTION ENTRANCE PER STD. AND SPEC. 3.02 OFF OF SPRING STREET.
6. INSTALL SILT FENCE AND TREE PROTECTION AS SHOWN ON THE PLANS.
7. TREE PROTECTION FENCE SHALL BE PLACED AROUND ALL TREES SPECIFIED TO BE SAVED WITHIN THE LOD AS DEPICTED ON SHEETS 9, 12 AND 13.
8. INSTALL ALL PHASE I EROSION AND SEDIMENT CONTROL MEASURES ACCORDING TO STANDARDS SET FORTH IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, THIRD EDITION 1992. THESE MEASURES SHALL BE IMPLEMENTED PRIOR TO THE COMMENCEMENT OF ANY EARTHWORK ACTIVITIES ON-SITE.
9. TREE REMOVAL, CLEARING, AND GRUBBING SHALL BE PERFORMED AS NEEDED FOR THE ACCESS ROADS SHOWN ON THE PLANS. PROTECT THE ACCESS ROADS IN AN APPROVED MANNER AS SPECIFIED HEREIN AND UTILIZE CONSTRUCTION ROAD STABILIZATION AS NEEDED.
10. CLEAR THE CORRIDOR TO ACCESS THE DEMO AREAS AND INSTALL PV1. CONTRACTOR SHALL ONLY CLEAR THAT WHICH CAN BE STABILIZED IN THE SAME WORKING DAY. COMPLETE DEMOLITION ACTIVITIES IN DRY WORKING CONDITIONS.
11. IT IS THE INTENT OF THESE PLANS TO AVOID CLEARING TO THE GREATEST EXTENT PRACTICAL. HOWEVER, CLEARING AND GRUBBING OPERATIONS SHALL PROCEED AS NECESSARY TO FACILITATE DEMOLITION AND ASSOCIATED EARTHWORK ACTIVITES. EXISTING VEGETATION CALLED OUT TO BE PRESERVED SHALL BE PROTECTED FROM DISTURBANCE AND COMPACTION OF HEAVY EQUIPMENT. ALL ADDITIONAL CLEARED WOODY VEGETATION SHALL BE REMOVED, CHIPPED, STOCKPILED, AND USED FOR ORGANIC MATTER ON-SITE AND/OR HAULED OFF-SITE.
12. TREE ROOT PRUNING SHALL OCCUR PRIOR TO GRADING (CUT) ACTIVITIES, AND/OR PRIOR TO RUNNING HEAVY EQUIPMENT UNDER CERTAIN SPECIMEN CANOPY TREES. IN ADDITION, BRANCH PRUNING SHALL OCCUR DURING CONSTRUCTION IN ORDER TO SAVE EXISTING VEGETATION TO THE GREATEST EXTENT PRACTICABLE AND ALLOW A REASONABLE WORK AREA.
13. PROTECT ALL SANITARY PIPES AND STORM PIPES CROSSED THROUGHOUT THE PROJECT USING TIMBER MATTING OR APPROVED ALTERNATIVE.

PHASE II

14. CONSTRUCTION SHALL BE PERFORMED IN REACH SEGMENTS IN AN EFFORT TO MINIMIZE DISTURBANCE. GRADING OPERATIONS SHALL BEGIN ON THE MAIN RESTORATION/RELOCATION CHANNEL BEGINNING AT STATION 0+00 AND SHALL BE PERFORMED UPSTREAM TO DOWNSTREAM.
15. ALL STREAM WORK SHALL BE PERFORMED IN THE DRY. APPROVED CLEAN WATER DIVERSION MEASURES PV2 PUMP AROUND DIVERSION PUMP WITH DE-WATERING BAG SHALL BE USED TO ENSURE THAT SEDIMENT LADEN WATER IS NOT DISCHARGED INTO PEARSON BRANCH. THE CLEAN WATER DIVERSION SHALL BE OF SUFFICIENT LENGTH TO ENSURE THAT ALL WORK WITHIN THE DAILY WORK ZONE IS PERFORMED IN THE DRY. THE CONSTRUCTION SEGMENTS SHALL BE DETERMINED BY THE CONTRACTOR BUT THE STREAM WILL BE STABILIZED AT THE END OF EACH WORK DAY.
16. COMMENCE WITH GRADING OF THE NEW STREAM CHANNEL, SECTIONS, PROFILE, AND INSTALLATION OF CONSTRUCTED RIFFLES, ROCK SILLS, CROSS-VANES, AS CONSTRUCTION MOVES DOWNSTREAM.
17. DURING GRADING OPERATIONS, STRIP EXISTING TOPSOIL (6 INCHES) WITHIN LIMITS OF DISTURBANCE AND THE SEGMENT TO BE EXCAVATED AND STOCKPILE SEPARATELY. TOPSOIL MUST BE FREE OF UNSUITABLES.
18. NO STREAMBANKS SHALL BE LEFT DENUDED (I.E. BARE) AT THE END OF THE WORK DAY. ALL STREAMBANKS SHALL BE COVERED WITH MATTING BEFORE THE CONTRACTOR STOPS WORK FOR THE DAY. CONTRACTOR SHALL TEMPORARILY COVER ANY DISTURBED AREAS WITH MATTING AT THE END OF EACH WORK DAY, ONLY IF FINAL STABILIZATION IS NOT COMPLETED BY THE END OF THE DAY. IN ADDITION, ANY REMAINING DISTURBED AREAS IN THE OVERBANK ZONES SHALL BE PROTECTED FROM SHEET FLOW WITH SILT FENCE UNTIL WORK CONTINUES THE NEXT DAY.
19. BY REACH AND UPON REACHING FINAL GRADE, INSTALL STREAMBANK STABILIZATION MEASURES, RE-APPLY TOPSOIL, APPLY PERMANENT SEEDING, AND COIR MATTING. SEE PLANTING PLAN (SHEET 16) FOR PERMANENT SEEDING PLAN COIR MATTING AND SPECIES. APPLY EC-2 MATTING TO ADDITIONAL AREAS AS SHOWN ON SHEET 13.
20. PRIOR TO REACHING THE FINAL SEGMENT, CONTRACTOR SHALL ENSURE THAT ALL UPSTREAM AREAS ARE STABILIZED AND SEDIMENT LADEN WATER HAS BEEN REMOVED FROM THE NEW CHANNEL.
21. ENGINEER, CITY OR DESIGNER TO APPROVE FINAL STABILIZATION BEFORE E & S MEASURES ARE REMOVED.

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WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
Environmental Consultants

EROSION & SEDIMENT CONTROL NOTES
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
SCOTT C. BLOSSOM
Lic. No. 40287
1/20/14
PROFESSIONAL ENGINEER

REVISIONS:

DATE:	
01/20/14	UPDATED CONSTRUCTION SEQUENCE, PHASE II, STEP 19

DRAWN BY: CSA/AWT
DESIGNED BY: SCB/CSA
DATE: 11/06/2013
CHECKED BY: SCB
SCALE: N/A
SHEET: 14 OF 21
JOB#: 4773

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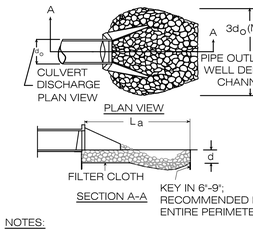
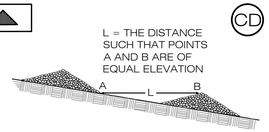


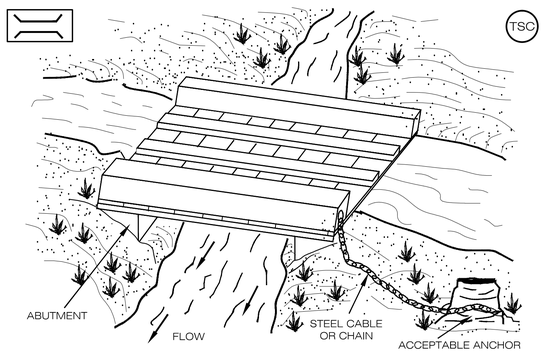
NOTES:

1. APRON LINING MAY BE RIPRAP, GROUTED RIPRAP, GABION BASKET, OR CONCRETE.
2. La IS THE LENGTH OF THE RIPRAP APRON AS CALCULATED USING PLATES 3.18-3 AND 3.18-4.
3. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER, BUT NOT LESS THAN 6 INCHES.
4. LEVEL SPREADER TRENCH TO BE INSTALLED PARALLEL TO CONTOUR AND TO MATCH THE PROPOSED GRADE. TOP LIP ELEVATION TO BE UNIFORM TO WITHIN 1'.
5. LENGTHS PROVIDED ARE A MINIMUM, APRONS SHOULD BE EXTENDED INTO THE CHANNEL TO PREVENT EROSION OF PROPOSED STREAM BANKS.
6. CLASS I TOE PROTECTION SHALL BE USED ON OUTER BENDS OF OUTFALL CHANNEL OF THE 18" RCP CULVERT AT STA 05+80 PROPOSED STREAM CHANNEL.

1/15 DETAIL: OUTFALL PROTECTION
VESCH STD & SPEC 3.18 NTS



2/15 DETAIL : CHECK DAM
NTS

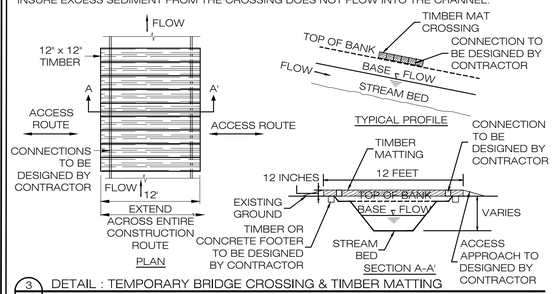


1. TIMBER MATTING SHALL BE USED WHERE CONSTRUCTION EQUIPMENT CROSSES THE BASE/LOW FLOW CHANNEL WITHIN THE STREAM CHANNEL OR ANY NON-TIDAL WETLANDS.

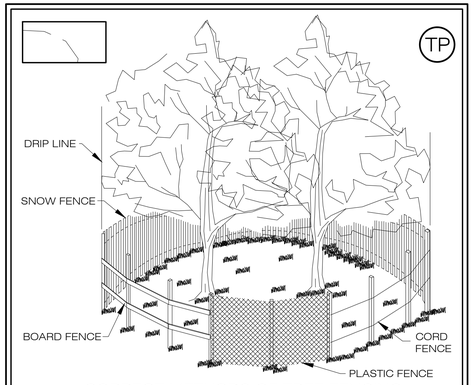
2. CONTRACTOR SHALL DESIGN THE TIMBER MATTING TO PROTECT THE STREAM CHANNEL BOTTOM OR WETLAND AREAS FROM VEHICLES. THE MATTING SHALL BE DESIGNED TO BE STABLE WHEN TRAVERSED BY CONSTRUCTION VEHICLES.

3. THE TIMBER MATTING WILL BE REMOVED FROM THE STREAM CHANNEL AT THE END OF EACH WORK DAY.

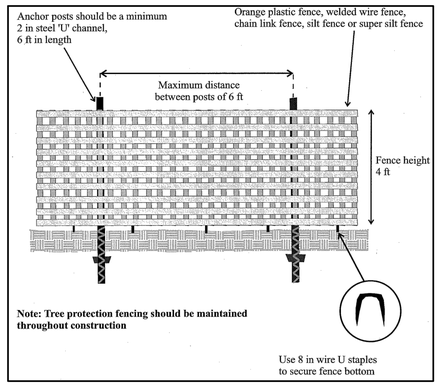
4. SILT FENCE SHALL BE INSTALLED ALONG BOTH BANKS ADJACENT TO THE TIMBER MATTING TO INSURE EXCESS SEDIMENT FROM THE CROSSING DOES NOT FLOW INTO THE CHANNEL.



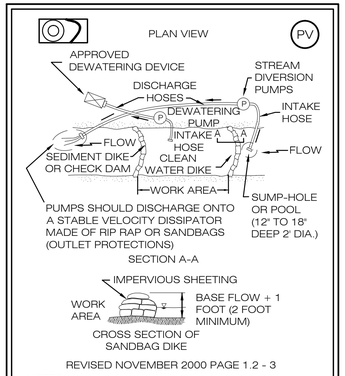
3/15 DETAIL : TEMPORARY BRIDGE CROSSING & TIMBER MATTING
(BID ALTERNATE: APPLY ONLY IF NEEDED FOR ACCESS) NTS



CORRECT METHODS OF TREE FENCING



5/15 DETAIL : TREE PROTECTION
NTS

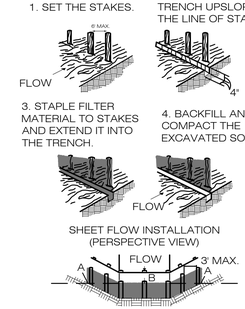


REVISED NOVEMBER 2000 PAGE 1.2 - 3

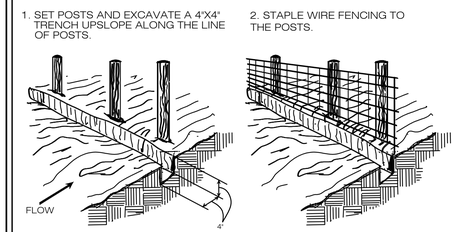
NOTES:
1. SET UP PUMP AND HOSE AS SHOWN, OR USE OTHER PRACTICAL ALTERNATIVES. PUMP SHOULD HAVE TWICE THE PUMPING CAPACITY OF ANTICIPATED FLOW.
2. ALL INTAKE HOSES WILL BE SCREENED.
3. DISMANTLE DOWNSTREAM DAM, THEN UPSTREAM DAM. KEEP PUMP RUNNING TO MAINTAIN STREAM FLOW.
4. PUMP AROUND MAY NOT BE LEFT IN PLACE FOR MORE THAN 24 HOURS.

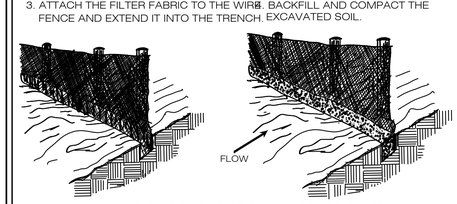
6/15 DETAIL : PUMP AROUND PRACTICE
NTS

CONSTRUCTION OF A SILT FENCE (WITHOUT WIRE SUPPORT)

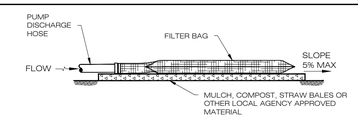


7/15 DETAIL : SILT FENCE
NTS
VESCH STD & SPEC 3.05





9/15 DETAIL: SUPER SILT FENCE
NTS

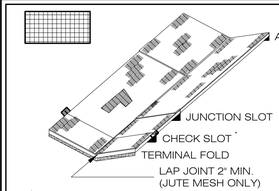


CONSTRUCTION SPECIFICATIONS

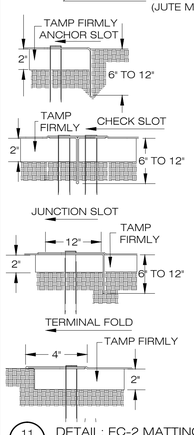
1. MATERIAL: NON-WOVEN GEOTEXTILE WITH A MINIMUM SURFACE AREA OF 225 SQUARE FEET PER SIDE.
2. SEAM STRENGTH: WITHSTAND 100 POUNDS/INCH USING ASTM D-4884 TEST METHOD. DOUBLE STITCH SEWN USING A DOUBLE NEEDLE MACHINE WITH HIGH STRENGTH THREAD
3. SLEEVE SIZE TO ACCOMMODATE A 4 INCH DIAMETER PUMP DISCHARGE HOSE.
4. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
5. PLACE FILTER BAG UPON MULCH, COMPOST, STRAW BALES OR OTHER LOCAL AGENCY APPROVED MATERIAL LOCATED ON LEVEL OR GENTLY SLOPING (5% MAXIMUM) STABILIZED AREA.
6. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTERBAG. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE
7. DEWATER, REMOVE AND DISPOSE FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZED BY THE END OF THE WORK DAY. RESTORE SURFACE AREA BENEATH BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE
8. MINIMUM GEOTEXTILE REQUIREMENTS AND SPECIFICATIONS:

GRAB TENSILE STRENGTH	300 LB	ASTM D-4632
PUNCTURE	175 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN/SF	ASTM D-4491
PERMITTIVITY	1.3 SEC-I	ASTM D-4491
UV RESISTANCE	70% STRENGTH AT 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.40-0.80 MM	ASTM D-4751

10/15 DETAIL: FILTER BAG
NTS

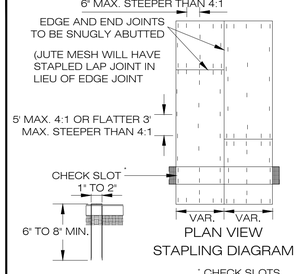


NOTES
APPROXIMATELY 200 STAPLES REQUIRED PER 100 SQ. YDS. OF MATERIAL ROLL. ANCHOR SLOTS, JUNCTION SLOTS & CHECK SLOTS TO BE BURIED 6" TO 12".



CHECK SLOTS TO BE BURIED 6" TO 12".

12" MAX. 4:1 OR FLATTER
6" MAX. STEEPER THAN 4:1



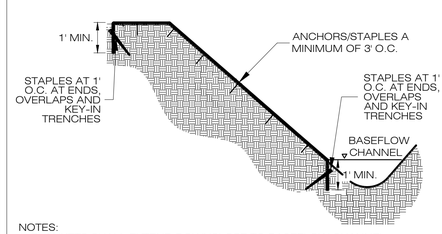
PLAN VIEW
STAPLING DIAGRAM

STAPLE FORMED FROM NO.11 STEEL WIRE. 8' STAPLE MIN. LENGTH FOR SANDY SOIL. 6" STAPLE MIN. LENGTH FOR OTHER SOIL.

* CHECK SLOTS AT MIN. 50' C-C INTERVALS; NOT REQ'D WITH ALL COMBINATION BLANKETS

11/15 DETAIL: EC-2 MATTING STAPLING DETAIL
NTS

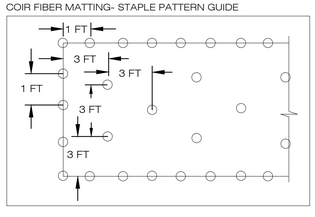
COIR FIBER MATTING - TYPICAL SLOPE CROSS SECTION



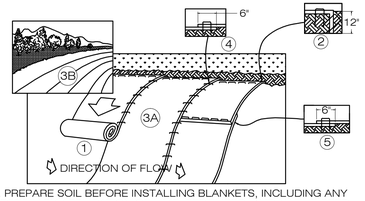
NOTES:
1. BLANKETS SHALL EXTEND DOWNSLOPE TO BASEFLOW CHANNEL.
2. SECURE BOTTOM EDGE OF BLANKET AS DONE AT TOP OF SLOPE.
3. KEY IN MATTING A MINIMUM OF 1' BELOW FINISHED GRADE AT EDGES.

NOTE: COIR FIBER MATTING SHALL BE PLACED ALONG EACH BANK FROM TOE OF SLOPE TO TOP OF SLOPE UPON COMPLETION OF GRADING AND APPLICATION OF PERMANENT SEEDING. MATTING CAN BE INSTALLED INCREMENTALLY AS CONSTRUCTION PROGRESSES, PER THE SEQUENCE OF CONSTRUCTION.

COIR FIBER MATTING- STAPLE PATTERN GUIDE



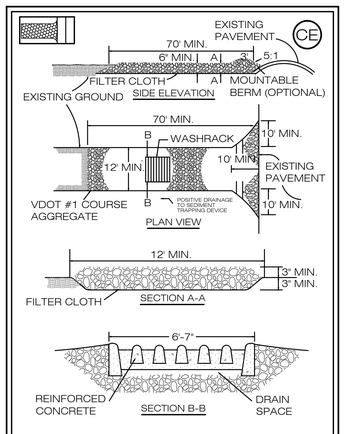
COIR FIBER MATTING- INSTALLATION



1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND NATIVE SEED MIX IN ACCORDANCE WITH PERMANENT SEEDING.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 12" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE TRENCH.
3. ROLL THE BLANKETS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 6" OVERLAP DEPENDING ON BLANKET TYPE. SEAMS OF ADJACENT BLANKETS MUST BE ALIGNED.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 6" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH.

REFER TO PRODUCT MANUFACTURER INSTALLATION GUIDANCE AND THE VDOT EC-2 SPECIFICATIONS FOR ANY ITEMS NOT DISCUSSED HEREIN. DEFAULT TO THE MOST RESTRICTIVE CRITERIA IF THE MANUFACTURER SPECIFICATIONS CONFLICT WITH THOSE HEREIN.

4/15 DETAIL : BLANKETING AND MATTING



SOURCE: ADAPTED FROM 1983 MARYLAND STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL, AND Va. DSWC.

8/15 DETAIL : TEMPORARY STONE CONSTRUCTION ENTRANCE NTS
VESCH STD & SPEC 3.02

NOTES

CONTRACTOR TO USE MOST APPROPRIATE MEASURE BASED ON SPECIFIC SITE CONSTRAINTS UPON APPROVAL OF ENGINEER AND IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 3RD EDITION 1993.

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Environmental Consultants

EROSION & SEDIMENT CONTROL DETAILS
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
SCOTT C. BLOSSOM
Lic. No. 40287
1/20/14
PROFESSIONAL ENGINEER

REVISIONS:
DATE:
01/20/14 ADDED EC-2 MATTING DETAIL

DRAWN BY: CSA/AWT
DESIGNED BY: SCB/CSA
DATE: 11/06/2013
CHECKED BY: SCB
SCALE: N/A
JOB#: 4773
SHEET: 15 OF 21

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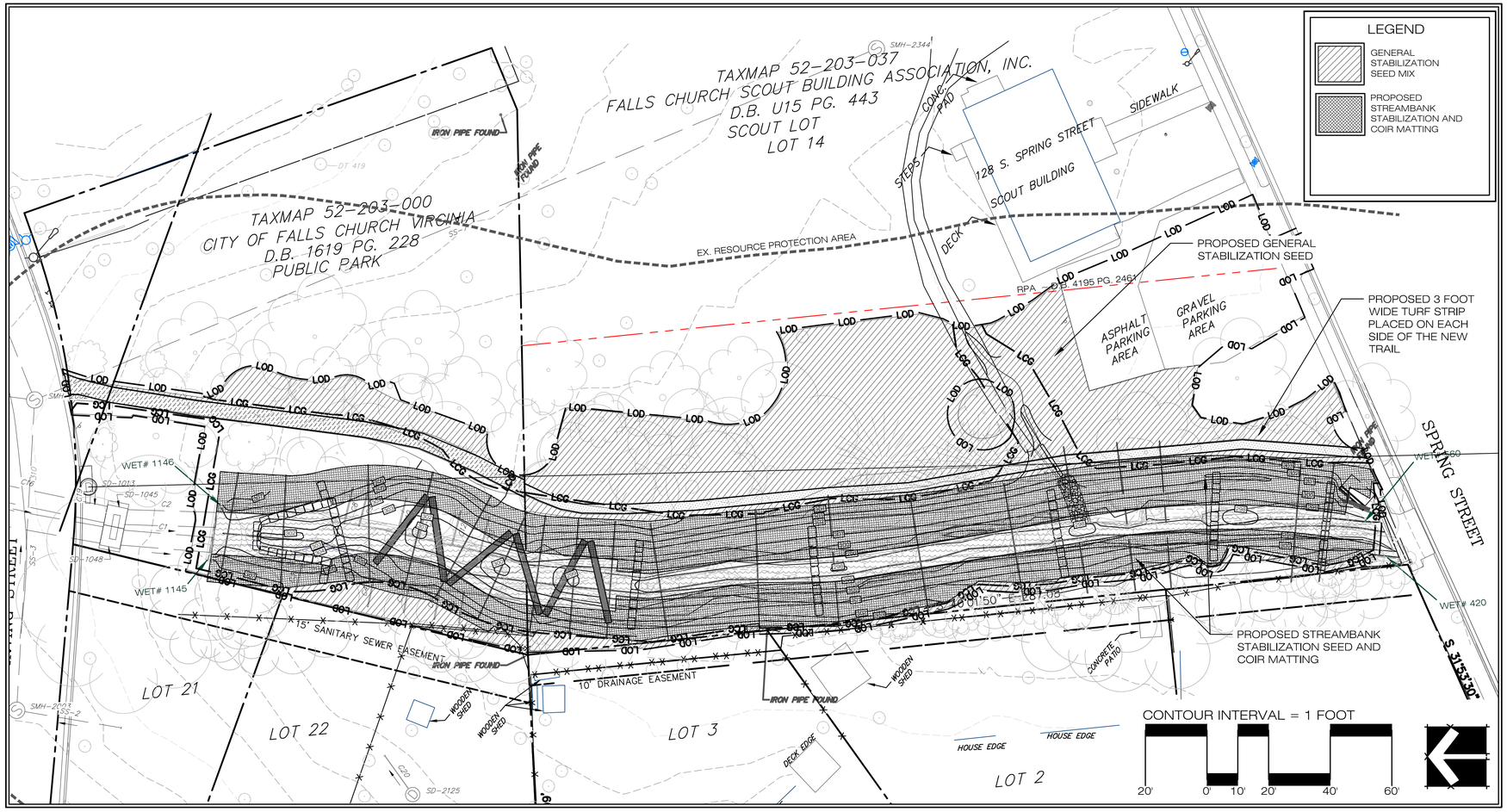

GENERAL

1. CONTRACTOR MUST SUBMIT ALL PAPER WORK AND CERTIFICATION FOR ALL SEED MIXES AND COMPOST FOR APPROVAL TO CITY OF FALLS CHURCH AND ENGINEER PRIOR TO PURCHASING AND INSTALLATION.
2. ANY PLANT SUBSTITUTIONS OR CHANGES MUST BE APPROVED BY THE CITY OF FALLS CHURCH PRIOR TO INSTALLATION. REQUESTS FOR SUBSTITUTIONS OR CHANGES SHALL BE SUBMITTED IN WRITING TO CITY OF FALLS CHURCH. CONTRACTOR SHOULD ALLOW CITY OF FALLS CHURCH REVIEW TIME, AND CONTRACTOR SHOULD BE PROACTIVE WITH ALL REQUESTS, IF SUBSTITUTIONS ARE REQUESTED

COVER CROP

3. CONTRACTOR SHALL APPLY A COVER CROP/SEASONAL NURSE CROP SEED MIX ACCORDING TO PLANT SCHEDULE ON THIS SHEET.

SEEDING MATERIALS

4. SEED MIX - SEED SHALL BE CERTIFIED THAT THE PURE LIVE SEED (PLS) PERCENTAGE IS EQUAL TO OR GREATER THAN THAT WHICH IS SPECIFIED ON THE PLANT SCHEDULES. IF THE PLS IS LESS THAN SPECIFIED, THE CONTRACTOR SHALL INCREASE THE SEEDING RATE TO COMPENSATE FOR THE PLS DIFFERENCE AT HIS/HER OWN EXPENSE.
5. STRAW MULCH - STRAW MULCH SHALL CONSIST OF UN-ROTTEN SMALL GRAIN STRAW. ALL MULCH SHALL BE FREE FROM STATE AND FEDERAL PROHIBITED NOXIOUS WEED SEEDS LISTED AS ALIEN INVASIVE SPECIES BY THE VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION NATURAL HERITAGE PROGRAM, THE US DEPARTMENT OF AGRICULTURE AND THE MID-ATLANTIC EXOTIC PEST PLANT COUNCIL.

SEEDING INSTALLATION

6. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE SEEDED IN ACCORDANCE WITH THE PLANTING PLANS AND SCHEDULES. AREAS NOT DISTURBED, SHALL NOT BE SEEDED.
7. CONTRACTOR SHALL SUPPLY THE CONTENT ANALYSIS SEED TAG FROM EACH BAG OF SEED USED TO CITY OF FALLS CHURCH FOR APPROVAL PRIOR TO SEEDING.
8. ALL AREAS TO BE SEEDED SHALL CONFORM TO THE FINISHED GRADES AS SPECIFIED ON THE PLANS AND BE FREE OF ALL WEEDS, TRASH, DEBRIS, BRUSH, CLODS, LOOSE ROCKS AND OTHER FOREIGN MATERIALS LARGER THAN 3 INCHES IN DIAMETER OR LENGTH THAT WOULD INTERFERE WITH SEEDING. ALL GULLIES, WASHES OR DISTURBED AREAS THAT DEVELOP SUBSEQUENT TO FINAL DRESSING SHALL BE REPAIRED PRIOR TO SEEDING.
9. TO ALL PROPOSED SEEDING AREAS, APPLY A 2-INCH BLANKET OF SPECIFIED COMPOST PRIOR TO SEED APPLICATION. COMPOST SHALL BE SOILMATE® COMPOST OR AN APPROVED EQUAL. THE PAPERWORK (SHIPPING INVOICES), SAMPLES AND THE U.S. COMPOSTING COUNCIL'S SEAL OF TESTING ASSURANCE (STA) CERTIFICATIONS FOR THE PRODUCT SHALL BE SUBMITTED TO AND APPROVED BY THE CITY OF FALLS CHURCH PRIOR TO PURCHASE. PROPOSED EQUAL PRODUCTS MUST BE STA APPROVED.
10. NO SEEDING SHALL BE PERFORMED ON FROZEN GROUND OR WHEN THE TEMPERATURE IS 32°/0°C OR LOWER.
11. SEEDING SHALL BE ACCOMPLISHED BY USING A BROADCAST SPREADER. ANY ALTERNATIVE SEEDING METHODS MUST BE APPROVED BY CITY OF FALLS CHURCH, PRIOR TO SEEDING. SEED INSTALLED BY A BROADCAST SPREADER SHALL BE CAPABLE OF PLACING SEED AT THE SPECIFIED RATE. ALL SEEDING EQUIPMENT SHALL BE CALIBRATED BEFORE APPLICATION TO THE SATISFACTION OF CITY OF FALLS CHURCH SO THAT THE MATERIAL IS APPLIED ACCURATELY AND EVENLY TO AVOID MISSES AND OVERLAPS.
12. SEED SHALL BE APPLIED TO THE TOP OF THE FURNISHED COMPOST IN TWO DIFFERENT DIRECTIONS. FOLLOWING THE PLACEMENT OF THE FURNISHED COMPOST AND PERMANENT SEED MIX, THE CONTRACTOR SHALL HAND RAKE THE SEEDED AREAS TO MIX PERMANENT SEED MIX INTO THE FIRST ONE (1) INCH OF THE FURNISHED COMPOST. THE CONTRACTOR SHALL THEN COVER THE SEEDED AREAS WITH STRAW MULCH, AND WITH COIR MATTING ALONG THE STREAM BANKS AND TRIBUTARY STREAM BANKS.
13. SEEDING MUST ACHIEVE 80% GERMINATION. CONTRACTOR SHALL RESEED AND RESTRAW ALL AREAS WITH LESS THAN 80% GERMINATION.

TEMPORARY STABILIZATION/SEASONAL NURSE CROP

QUANTITY	BOTANICAL NAME	COMMON NAME	SPECIFICATION	SEEDING DATE	RATE (LBS./ACRE)	NOTES
100%	SECALE CEREALE	CEREAL RYE	SEED	NOVEMBER 1 - FEBRUARY 15	30	APPLY TEMPORARY STABILIZATION/SEASONAL NURSE CROP TO ALL DISTURBED AREAS IN ACCORDANCE WITH SEEDING DATES SHOWN.
100%	LOLIUM MULTIFLORUM	ANNUAL RYEGRASS	SEED	FEBRUARY 16 - APRIL 30	10	
100%	UROCHLOA RAMOSA	BROWN TOP MILLET	SEED	MAY 1 - AUGUST 15	15	
100%	LOLIUM MULTIFLORUM	ANNUAL RYEGRASS	SEED	AUGUST 16 - OCTOBER 31	10	

NOTE: TRITICUM AESTIVUM (WINTER WHEAT) CAN BE USED AS A SUBSTITTUE FOR SECALE CEREALE (CEREAL RYE) DURING SAME SEEDING DATES AND AT SAME APPLICATION RATE.

Streambank Stabilization Seed Mix

Botanical Name	Scientific Name	Indicator	Quantity	Remarks
Andropogon gerardii	Big Bluestem	FAC	2%	Apply seed mix at a rate of 20 Lbs/Acre. Cover crop seed mix shall be applied with the Streambank Stabilization Seed Mix.
Asclepias incarnata	Swamp Milkweed	OBL	1%	
Carex frankii	Frank's Sedge	OBL	5%	
Carex lurida	Shallow Sedge	OBL	5%	
Carex vulpinoidea	Fox Sedge	OBL	20%	
Elymus riparius	Riverbank Wild Rye	FACW	20%	
Elymus virginicus	Virginia Wild Rye	FACW	20%	
Eupatorium fistulosum	Hollow Joe-pye Weed	FACW	1%	
Juncus effusus	Soft Rush	FACW	2%	
Lobelia cardinalis	Cardinal Flower	FACW	1%	
Panicum clandestinum	Deer Tongue	FAC	8%	
Schizachyrium scoparium	Little Bluestem	FACU	15%	

General Stabilization Seed Mix

Botanical Name	Scientific Name	Indicator	Quantity	Remarks
Agrostis perennans	Autumn Bentgrass	FACU	1.0%	Apply seed mix at a rate of 40 Lbs/Acre. Cover crop seed mix shall be applied with the General Stabilization Seed Mix.
Carex vulpinoidea	Fox Sedge	OBL	15.0%	
Elymus riparius	Riverbank Wild Rye	FACW	15.0%	
Elymus virginicus	Virginia Wild Rye	FACW	15.0%	
Festuca rubra	Creeping Red Fescue	FACU	15.0%	
Juncus effusus	Soft Rush	FACW	0.5%	
Leersia oryzoides	Rice Cutgrass	OBL	0.5%	
Panicum clandestinum	Deer Tongue	FAC	9.0%	
Schizachyrium scoparium	Little Bluestem	FACU	14.0%	
Tridens flavus	Purple Top	FACU	15.0%	

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WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
Environmental Consultants

PLANTING PLAN: SEEDING
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
GEORGE C. RHODES III
Lic. No. 000894
1/20/2014
LANDSCAPE ARCHITECT

REVISIONS:

DATE:	
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CITY OF FALLS CHURCH STANDARD PLANTING NOTES

1. 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.

2. 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.

3. 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.

4. 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 (BERM CONSTRUCTION)

5. EXAMINE SOIL FOR COMPACTION BEFORE PLANTING. IF SOILS ARE COMPACTED IN AN AREA WHERE A GROUP OF PLANTS ARE TO BE INSTALLED, INCORPORATED 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.

6. 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.

7. 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 THAT 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 RATES IN ACCORDANCE WITH MANUFACTURERS DIRECTIONS. ALTERNATIVELY, FOR SHADE PERENNIALS USE HOLLYTONE OR APPROVED EQUAL, TOGETHER WITH SUPER PHOSPHATE AT A RATE IN ACCORDANCE WITH MANUFACTURER'S 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

8. 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 DAM OF SOIL SHALL BE CONSTRUCTED AROUND THE PLANTING PIT.

9. 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.

10. 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.

11. 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.

12. REMOVE TAGS AND LABELS FROM TREES AND SHRUBS TO PREVENT GIRDLING BRANCHES AND TRUNKS.

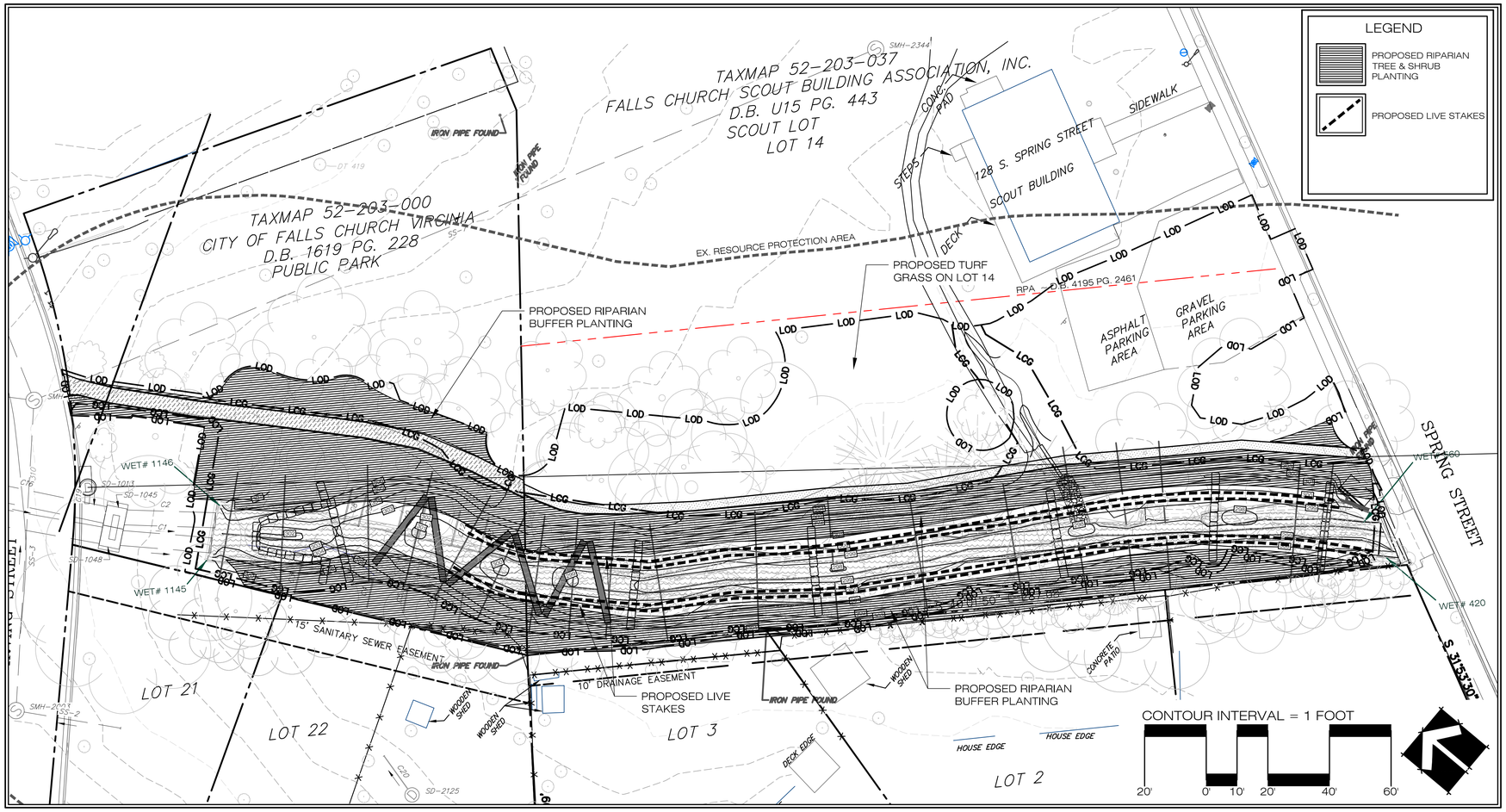
13. STAKES SHALL BE USED ONLY IN AREA OF HIGH TRAFFIC OR HIGHLY WINDY LOCATIONS. A TREE-STAKING DIAGRAM SHOULD BE PROVIDED IF STAKING IS NECESSARY. STAKE FOR MAXIMUM OF ONE YEAR. ALLOW TREES A SLIGHT AMOUNT OF FLEX RATHER THAN HOLDING THEM RIGIDLY IN PLACE. USE GUYING OR ATTACHING THAT WONT DAMAGE THE BARK. TO PREVENT TRUNK GIRDLING, REMOVE ALL GUYING MATERIAL AFTER ONE YEAR.

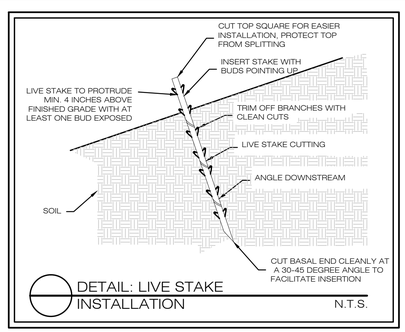
14. USE TREE WRAP ONLY ON THIN BARKED TREES PLANTED IN SPRING OR SUMMER INTO HOT OR PAVED AREAS. IN THESE INSTANCES USE WHITE WRAP, ATTACHING WITHOUT THE USE OF WIRE, ROPE, TIES OR TAPE, AND REMOVE AFTER ONE YEAR.

15. PLANTING SEASON-PLANTING SHALL BE DONE ONLY WITHIN THE FOLLOWING DATES: A. DECIDUOUS TREES-MARCH 15 TO MAY 30 OR SEPTEMBER 15 TO DECEMBER 15 (OAKS AND BLACK GUM TO BE SPRING DUG AND PLANTED ONLY). B. EVERGREEN TREES-MARCH 1 TO MAY 15 OR SEPTEMBER 15 TO NOVEMBER 15.

16. 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.

17. 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.





DETAIL: LIVE STAKE INSTALLATION

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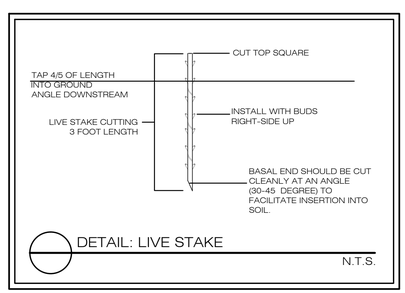

DETAIL: LIVE STAKE

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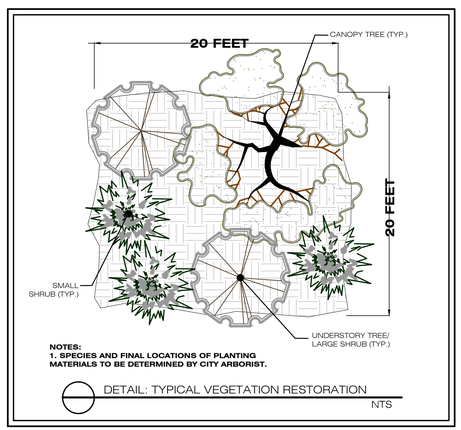

NOTES:
1. SPECIES AND FINAL LOCATIONS OF PLANTING MATERIALS TO BE DETERMINED BY CITY ARBORIST.

DETAIL: TYPICAL VEGETATION RESTORATION

NTS

PROPOSED PLANTING SCHEDULE

LEGEND	QUANTITY PARK	QUANTITY LOT 14	BOTANICAL NAME	COMMON NAME	SPECIFICATION	INDICATOR	REMARKS
			RIPARIAN BUFFER TREES & SHRUBS, TOTAL 11,101 SQ.FT. (0.254 ACRE); 4,925 SQ.FT. ON BERMAN PARK AND 6,176 SQ.FT. ON SCOUT LOT 14				
			CANOPY TREES (ONE PER 400 SQ.FT.)				
	2	2	Celtis occidentalis	HACKBERRY	MIN. 1-1/2" CALIPER, B&B	FACU	CANOPY TREES TO BE PLANTED AT ONE (1) PER 400 SQUARE FEET IN BUFFER RESTORATION AREA. CANOPY TREES TO BE LOCATED OPPOSITE EXISTING TREES IN PLANTING AREA. USE 1½-INCH CALIPER TREES AT MINIMUM.
	1	2	Liquidambar styraciflua	SWEETGUM	MIN. 1-1/2" CALIPER, B&B	FAC	
	2	2	Nyssa sylvatica	BLACK GUM	MIN. 1-1/2" CALIPER, B&B	FAC	
	2	2	Platanus occidentalis	SYCAMORE	MIN. 1-1/2" CALIPER, B&B	FACW-	
	2	3	Quercus bicolor	SWAMP WHITE OAK	MIN. 1-1/2" CALIPER, B&B	FACW+	
	2	2	Quercus palustris	PIN OAK	MIN. 1-1/2" CALIPER, B&B	FACW	
	1	2	Tilia americana	BASSWOOD	MIN. 1-1/2" CALIPER, B&B	FACU	
			UNDERSTORY TREES (TWO PER 400 SQ.FT)				UNDERSTORY TREES TO BE PLANTED AT TWO (2) PER 400 SQUARE FEET IN BUFFER RESTORATION AREA. UNDERSTORY TREES TO BE SPACED AT 8' O.C. MINIMUM. USE ½ INCH CALIPER TREES AT MINIMUM.
	6	8	Betula nigra	RIVER BIRCH	MIN. 4' TALL, B&B	FACW	
	6	7	Carpinus caroliniana	AMERICAN HORNBEAM	MIN. 4' TALL, B&B	FAC	
	7	8	Cercis canadensis	REDBUD	MIN. 4' TALL, B&B	FACU	
	6	8	Ilex opaca	AMERICAN HOLLY	MIN. 4' TALL, B&B	FACU	
			SHRUBS (THREE PER 400 SQ.FT.)				SMALL SHRUBS TO BE PLANTED AT THREE (3) PER 400 SQUARE FEET IN BUFFER RESTORATION AREA. SMALL SHRUBS TO BE SPACED AT 5' O.C. MINIMUM. USE MINIMUM 15-INCH SHRUBS.
	4	5	Aronia arbutifolia	CHOKEBERRY	1-GALLON CONTAINER	FACW	
	4	5	Clethra alnifolia	SUMMERSWEET	1-GALLON CONTAINER	FAC	
	4	5	Hamamelis virginiana	WITCH HAZEL	1-GALLON CONTAINER	FAC	
	4	5	Ilex verticillata	WINTERBERRY	1-GALLON CONTAINER	FACW	
	4	5	Itea virginica	SWEETSPIRE	1-GALLON CONTAINER	OBL	
	4	5	Lindera benzoin	SPICEBUSH	1-GALLON CONTAINER	FACW-	
	4	5	Rhododendron viscosum	SWAMP AZALEA	1-GALLON CONTAINER	OBL	
	4	5	Sambucus canadensis	ELDERBERRY	1-GALLON CONTAINER	FACW	
	5	6	Viburnum dentatum	ARROWWOOD VIBURNUM	1-GALLON CONTAINER	FAC	
			LIVE STAKES				QUANTITIES BASED ON PLANTINGS IN TWO PARALLEL ROWS ON 3-FOOT CENTERS. LEFT BANK: 30 LF ON PARK, 265 LF ON LOT 14; RIGHT BANK: 30 LF ON PARK, 277 LF ON LOT 14
	50	225	Cornus amomum	SILKY DOGWOOD	3' LIVE STAKE	FACW	
	25	75	Alnus serrulata	TAG ALDER	3' LIVE STAKE	OBL	
	25	75	Salix lucida	SHINING WILLOW	3' LIVE STAKE	FACW	

NOTES:
1. ALL PLANT MATERIALS FOR THE PROJECT MUST BE OF THE SAME REGIONAL GENETIC ORIGIN AS NATIVE VEGETATION FOUND WITHIN THE CHESAPEAKE BAY WATERSHED.
2. ANY PLANT SUBSTITUTIONS OR CHANGES MUST BE APPROVED BY THE CITY ARBORIST PRIOR TO INSTALLATION. REQUESTS FOR SUBSTITUTIONS OR CHANGES SHALL BE SUBMITTED IN WRITING TO CITY OF FALLS CHURCH ARBORIST. CONTRACTOR SHOULD ALLOW ARBORISST REVIEW TIME, AND CONTRACTOR SHOULD BE PROACTIVE WITH ALL REQUESTS, IF SUBSTITUTIONS ARE REQUESTED.
3. CITY ARBORIST AND DESIGN ENGINEER SHALL BE NOTIFIED AT LEAST THREE DAYS PRIOR TO INSTALLATION OF TREES AND SHRUBS. CITY ARBORIST AND DESIGN ENGINEER SHALL REVIEW LOCATION AND LAYOUT OF PLANTINGS PRIOR TO INSTALLATION.
4. ALL TREES MUST BE BALLED-AND-BURLAPPED STOCK; CONTAINERIZED TREES WILL NOT BE ACCEPTED. CONTAINERIZED SHRUBS ARE ACCEPTABLE.
5. SEE TREE & SHRUB PLANTING DETAILS ON SHEET 7.
6. CITY ARBORIST CONTACT PHONE NUMBER IS (703) 248-5183.

5209 Center Street
Williamsburg, Virginia 23188
(757) 220-6869
1011 Boulder Springs Drive, Suite 225
Richmond, Virginia 23225
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WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
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PLANTING PLAN: TREES & SHRUBS
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
GEORGE C. RHODES III
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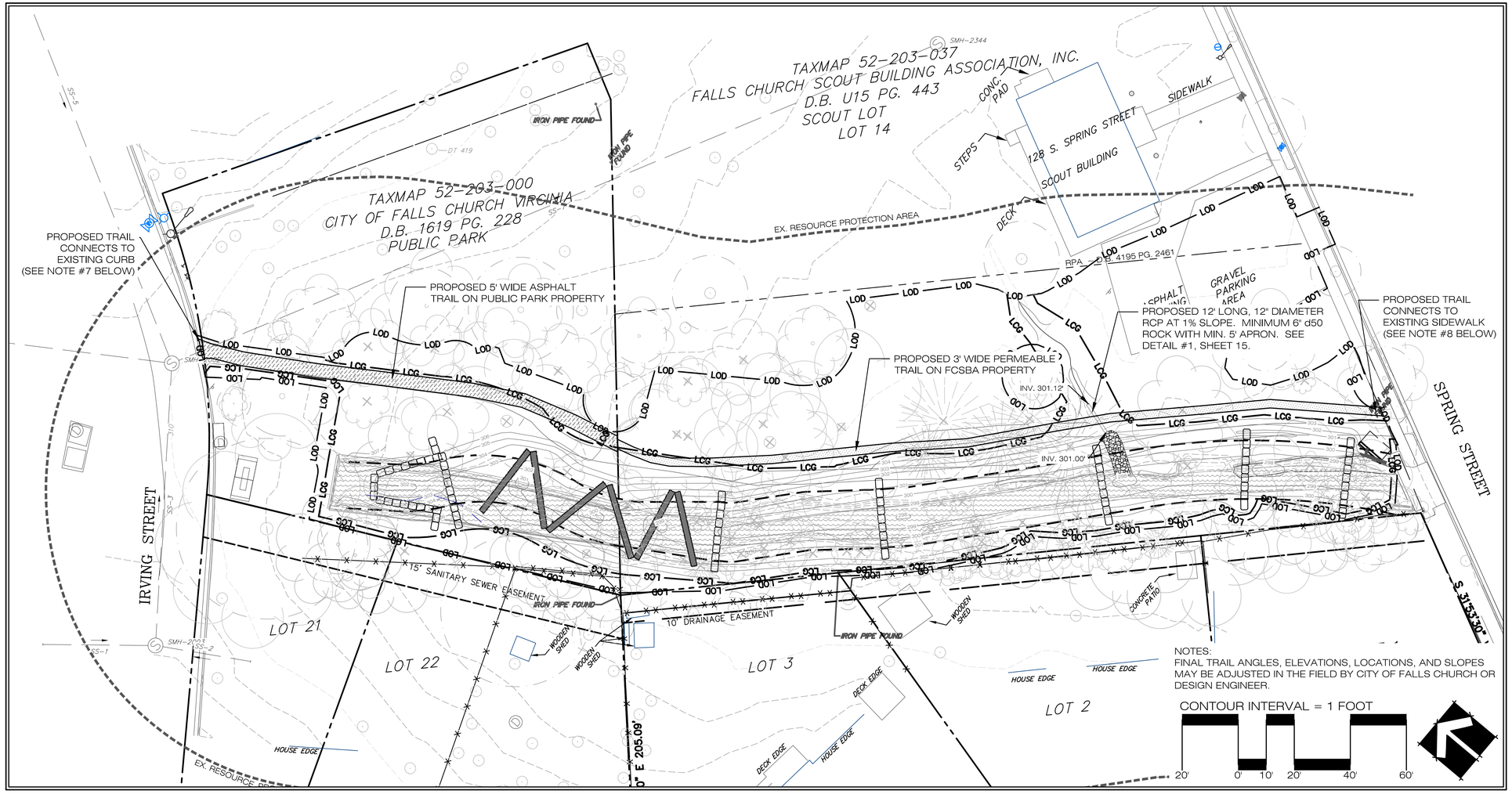
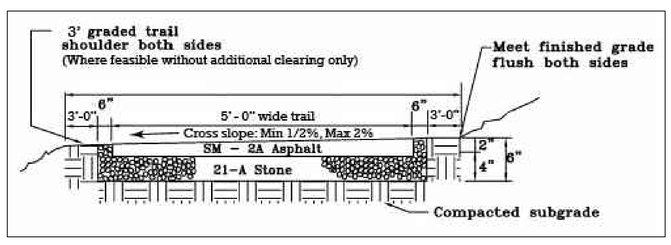
LEGEND

- SURVEYED STREAM CHANNEL LIMITS
- RESOURCE PROTECTION AREA (RPA) LIMITS
- EXISTING CONTOURS
- EXISTING PROPERTY LINES
- EXISTING FENCE
- EXISTING TREE LOCATED BY PACIULLI SIMMONS & ASSOCIATES
- EXISTING TREE LOCATED BY PATTON, HARRIS, RUST, & ASSOCIATES (2013)
- PROJECT BENCHMARK
- EXISTING TRAIL
- PROPOSED GRADING
- BANKFULL LIMITS
- LIMITS OF GRADING
- LIMITS OF DISTURBANCE
- PROPOSED ASPHALT PARK TRAIL
- PROPOSED PERMEABLE FCSBA TRAIL



NOTES:
FINAL TRAIL ANGLES, ELEVATIONS, LOCATIONS, AND SLOPES MAY BE ADJUSTED IN THE FIELD BY CITY OF FALLS CHURCH OR DESIGN ENGINEER.

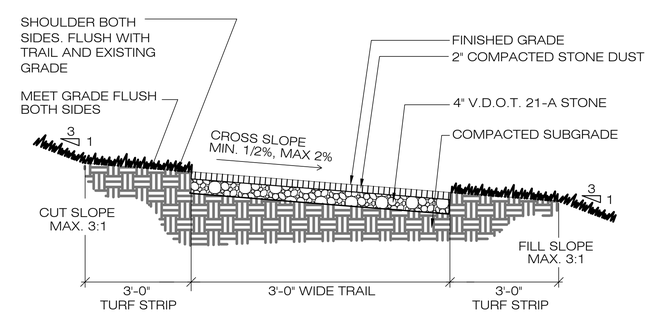
DETAIL FOR ASPHALT TRAIL ON PARK PROPERTY



1 / 18 **5' ASPHALT TRAIL**
NTS

NOTES:
1. CONTRACTOR IS RESPONSIBLE FOR LAYOUT, STAKEOUT, INSTALLATION, GRADING AND VEGETATIVE STABILIZATION ASSOCIATED WITH THE PROPOSED TRAIL.
2. CONTRACTOR SHALL STAKE OUT AND FLAG THE CENTERLINE OF THE PROPOSED TRAIL AT 25 TO 50 FOOT INTERVALS AND SCHEDULE AN ONSITE MEETING WITH THE CITY AND DESIGN ENGINEER TO REVIEW THE LAYOUT PRIOR TO INSTALLATION.
3. THE STAKE OUT OF THE PROPOSED TRAIL SHOULD BE COMPLETED IN CLOSE COORDINATION WITH THE OWNERS OF THE FALLS CHURCH SCOUT BUILDING ASSOCIATION, INC (FCSBA).
4. CONTRACTOR MAY PROCEED WITH INSTALLATION OF TRAIL AFTER RECEIVING APPROVAL FROM THE CITY.
5. A 5 FOOT WIDE ASPHALT TRAIL SHALL BE CONSTRUCTED WITHIN THE PUBLIC PARK PROPERTY AND A 3 FOOT WIDE PERMEABLE TRAIL SHALL BE CONSTRUCTED WITHIN THE FCSBA PROPERTY.
6. CONTRACTOR TO FILL AND COMPACT VOID SPACE FROM TREE ROOT REMOVAL WITH COMPACTED STRUCTURAL FILL PRIOR TO PLACEMENT OF TRAIL MATERIALS.
7. PROPOSED TRAIL WILL CONNECT TO AND MATCH EXISTING DIMENSIONS AND SLOPE OF EXISTING CURB CUT AT IRVING STREET.
8. FINISHED GRADE AT PROPOSED TRAIL AND EXISTING SIDEWALK SHALL BE FLUSH.

DETAIL FOR TRAIL ON FCSBA PROPERTY



2 / 18 **3' PERMEABLE TRAIL**
NTS

** THIS SHEET FOR TRAIL LAYOUT AND INSTALLATION ONLY **

WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
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150 Riverside Parkway, Suite 301
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(540) 785-5544

PROPOSED TRAIL PLAN
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
George C. Rhodes III
Lic. No. 0008894
1/20/2014
LANDSCAPE ARCHITECT

REVISIONS:

DATE:	
01/20/14	REVISED PER CITY AND/OR FCSBA COMMENTS

DRAWN BY: CDP
DESIGNED BY: CDP, GCR, SCB
DATE: 11/07/2013
CHECKED BY: SCB
SCALE: 1 INCH = 20 FEET
SHEET: 18 OF 21
JOB#: 4773

WATERSHED MAP

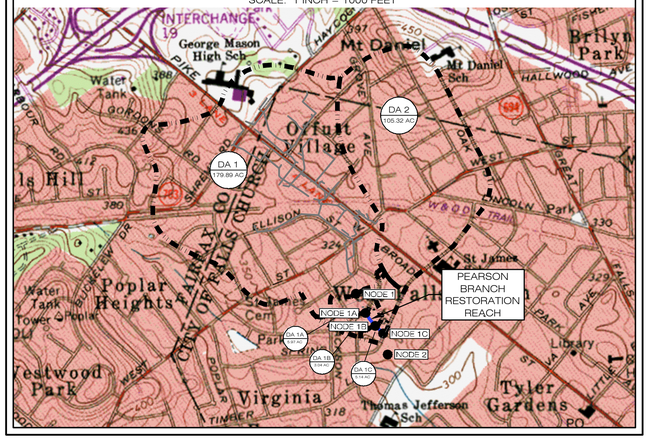
SCALE: 1 INCH = 60 FEET

CONTOUR INTERVAL = 1 FEET

60' 0' 30' 60'

OVERALL DRAINAGE AREA

SCALE: 1 INCH = 1000 FEET



LEGEND

- EXISTING CONTOURS
- CONTRIBUTING STORM DRAIN
- DRAINAGE LABEL (DA 2 / 5.42 AC)
- SUBWATERSHED BOUNDARY LIMITS
- APPROXIMATE WATER LIMITS
- DRAINAGE NODES (NODE 1)
- CULVERT
- FLOW DIRECTION
- SOIL BOUNDARIES & LABELS (105B)

SOIL SUMMARY TABLE

Map unit symbol and soil name	Hydrologic group	Surface runoff	Water table	Flooding
31B—Danripple gravelly loam, 2 to 7 percent slopes	C	Low	3.3-6.6	None
31C—Danripple gravelly loam, 7 to 15 percent slopes	C	Low	3.3-6.6	None
38C—Fairfax loam, 7 to 15 percent slopes	B	Medium	—	None
39B—Glenelg silt loam, 2 to 7 percent slopes	B	Low	—	None
68B—Kingstowne-Danripple complex, 2 to 7 percent slopes	C/D	Very high	2.0-6.6	None
68C—Kingstowne-Danripple complex, 7 to 15 percent slopes	B/D	Very high	2.0-6.6	None
95—Urban land	—	Very high	—	None
101—Urban land-Wheaton complex	D	Very high	—	None
104C—Wheaton-Fairfax complex, 7 to 15 percent slopes	B/D	Very high	—	None
105B—Wheaton-Glenelg complex, 2 to 7 percent slopes	B/D	Very high	—	None
105C—Wheaton-Glenelg complex, 7 to 15 percent slopes	B/D	Very high	—	None
107B—Wheaton - Meadowville complex, 2 t0 7 percent slopes	B/D	Very high	3.4-6.6	None

HYDROLOGY SUMMARY NARRATIVE

THE SUBJECT OF THIS HYDROLOGIC ANALYSIS, A TRIBUTARY TO TRIPPS RUN, IS A CHANNELIZED STREAM WHICH DRAINS A SIGNIFICANT PORTION OF THE NORTH-WESTERN CORNER OF THE FALLS CHURCH CITY LIMITS. THE IMMEDIATE WATERSHED IS WITHIN A RESIDENTIAL PARK. THE NEIGHBORHOOD IS CHARACTERIZED BY A SIGNIFICANT AMOUNT OF MATURE TREES AND URBAN DEVELOPMENT.

DRAINAGE TO THE SUBJECT REACH CONSISTS PRIMARILY OF STORM SEWERS FED BY DROP INLETS AND CURB AND GUTTER SYSTEMS ALONG ROADWAYS, AS WELL AS SOME OVERLAND CONTRIBUTING DRAINAGE. IN ORDER TO DETERMINE PEAK FLOWS TO THE PROJECT SITE, WEG MODELED TR-55 WATERSHED PARAMETERS IN HEC-HMS AND UTILIZED PREVIOUS STUDY RESULTS PROVIDED BY THE CITY OF FALLS CHURCH AND A SWMM MODEL OF THE ADJACENT FOUR MILE RUN WATERSHED PROVIDED BY THE NORTHERN VIRGINIA REGIONAL COMMISSION (NVRC) AS POINTS OF COMPARISON. RESULTS ARE DEPICTED ON THE ATTACHED HYDROLOGY ANALYSIS SUMMARY GRAPHIC, SHOWING THE WATERSHED AND RESULTS HYDROLOGY ROUTING TO SELECTED NODE LOCATIONS. THE FOLLOWING ITEMS ARE NOTED:

- THE CITY OF FALLS CHURCH GIS STORM DRAIN NETWORK WAS USED TO SUPPLEMENT GIS BASED TOPOGRAPHY IN THE EVALUATION OF THE EXTENTS OF THE CONTRIBUTING DRAINAGE AREA. BRANCHES OF THE STORM DRAIN NETWORK THAT WERE QUESTIONABLE IN REGARDS TO DIRECTION OF FLOW AND HYDRAULIC CONNECTIVITY WERE FIELD VERIFIED TO THE EXTENT PRACTICABLE.
- APPROXIMATELY 180-ACRES DRAIN TO THE CULVERT OUTFALL AT THE UPSTREAM TERMINUS OF THE PEARSON BRANCH RESTORATION REACH.
- TIME OF CONCENTRATION VALUES WERE ADJUSTED FOR LESS FREQUENT EVENTS (>10 YEAR) IN ORDER TO ACCOUNT FOR ATTENUATION OF FLOW BY THE STORM SEWER NETWORK.
- A BANKFULL DESIGN DISCHARGE OF APPROXIMATELY 200 CFS WAS SELECTED AS THE CHANNEL FORMING FLOW AND UTILIZED FOR DESIGN OF BANKFULL CHANNEL DIMENSIONS. IN ADDITION, PEAK DISCHARGE AND RUNOFF VOLUMES FOR THE 1-, 2-, 10-, 25- AND 100-YEAR 24-HOUR EVENTS WERE CALCULATED USING STANDARD TR-55 METHODOLOGY AND ATLAS 14 RAINFALL DATA.
- CALCULATED PEAK DISCHARGES AND VOLUMES WERE COMPARED TO 4-HOUR PEAK DISCHARGES GENERATED FROM THE NVRC STORMWATER MANAGEMENT MODEL (SWMM) OF THE ADJACENT WATERSHED, AND WERE FOUND TO BE WITHIN AN ACCEPTABLE RANGE OF TOLERANCE GIVEN THE CORRELATION WITH FIELD IDENTIFIED INDICATORS.
- ESTIMATED BASE FLOW IS 1-3 CFS WITH SEASONAL FLUCTUATIONS.

HYDROLOGY SUMMARY TABLE

DA	Area (ac)	CN	Tc 1-5 YR (hr)	Tc 10-500 YR (hr)
1	179.90	83	0.415	0.500
1A	6.00	81	0.083	0.083
1B	3.00	81	0.083	0.083
1C	5.10	87	0.083	0.083
2	105.30	89	0.650	0.650

	Q1 (CFS)	Q2 (CFS)	Q5 (CFS)	Q10 (CFS)	Q25 (CFS)	Q50 (CFS)	Q100 (CFS)	Q500 (CFS)
DA 1	151.3	211.4	315.7	362.3	494.6	611.7	745.1	1133.6
DA 1A	9.5	13.4	20.2	26.4	36.2	44.8	54.7	83.4
DA 1B	4.9	6.8	10.3	13.4	18.4	22.8	27.9	42.5
DA 1C	11.3	14.9	21.1	26.6	35.1	42.5	50.9	75.3
NODE 1	151.3	211.4	315.7	362.3	494.6	611.7	745.1	1133.6
NODE 1A	153.0	213.5	319.0	365.7	499.1	617.2	751.7	1143.8
NODE 1B	153.8	214.7	320.7	367.5	501.4	620.0	755.1	1149.0
NODE 1C	155.5	216.9	323.9	370.7	505.6	625.1	761.1	1158.1

DESIGN STORMS

STORM RECURRANCE INTERVAL (YR)	RAINFALL DEPTH (IN)
1	2.64
2	3.19
5	4.10
10	4.90
25	6.14
50	7.23
100	8.47
500	12.1

DESIGN STORM DEPTHS ARE BASED ON A DURATION OF 24-HOURS. DATA GATHERED FROM NOAA PRECIPITATION DATA SERVER WHICH REPRESENTS A LOCATION BASED INTERPOLATION OF ATLAS 14 RAINFALL ESTIMATES.

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WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
Environmental Consultants

HYDROLOGY SUMMARY
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
SCOTT C. BLOSSOM
Lic. No. 40287
11/2/13
PROFESSIONAL ENGINEER

REVISIONS:
DATE:

DRAWN BY: AWT/CSA
DESIGNED BY: SCB/CSA
DATE: 11/07/2013
CHECKED BY: SCB
SCALE: AS SHOWN
SHEET: 19 OF 21
JOB#: 4773

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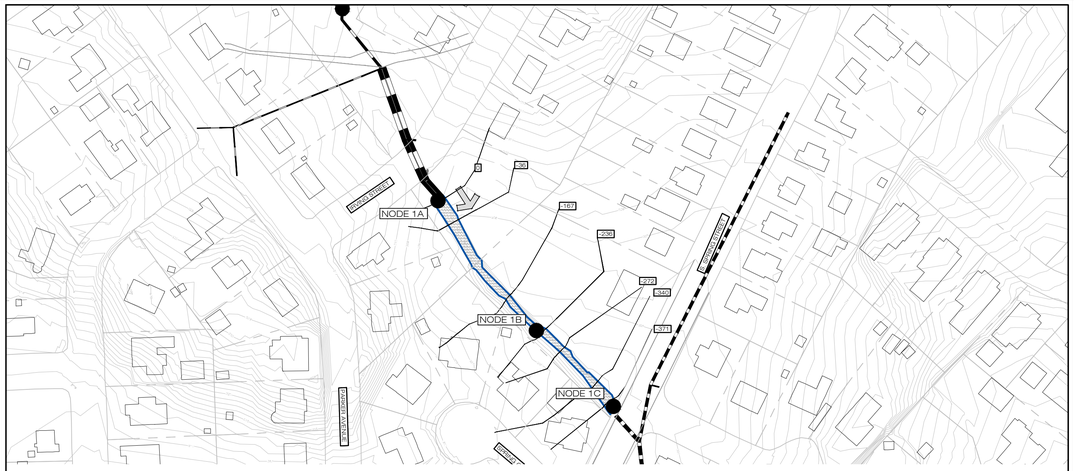
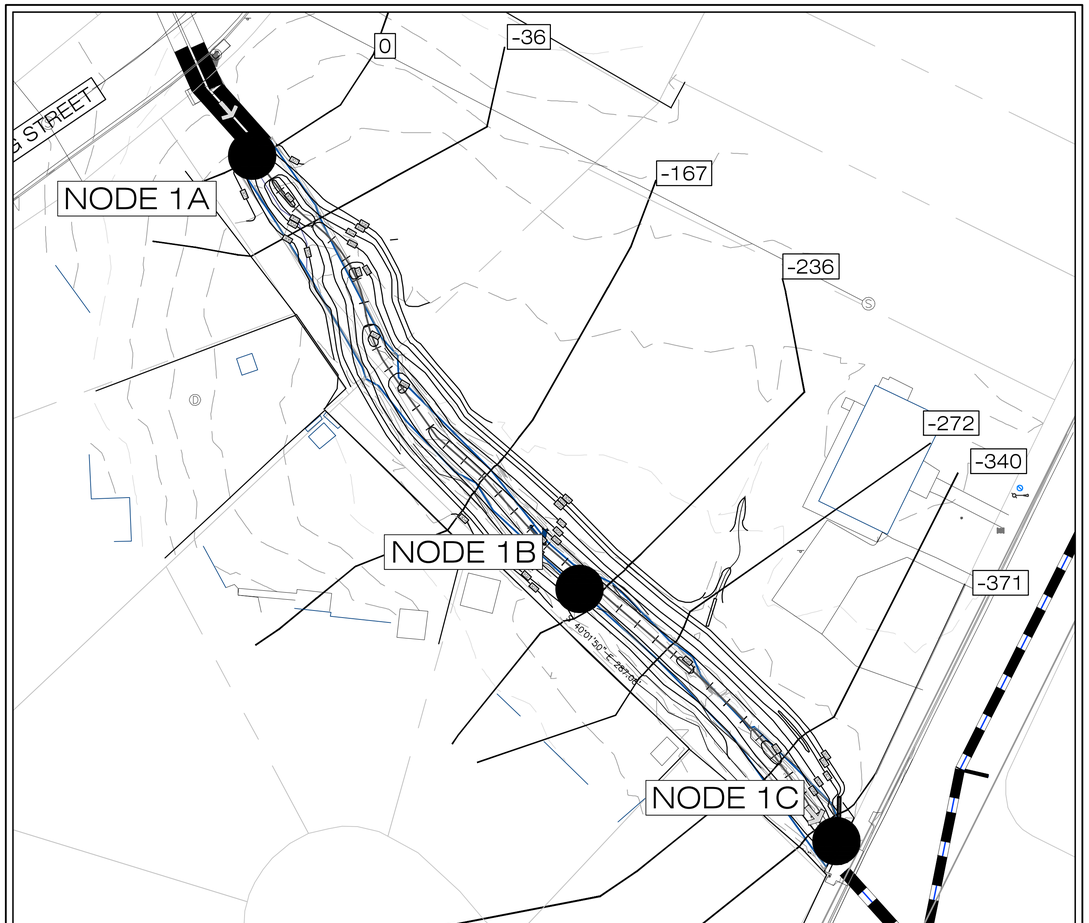


OVERALL SECTION MAP

SCALE: 1 INCH = 100 FEET



PROJECT SECTION MAP

SCALE: 1 INCH = 30 FEET

LEGEND

- EXISTING GIS CONTOURS
- NODE 1 — DRAINAGE NODES
- EXISTING CULVERT/ STORM DRAIN INFRASTRUCTURE
- FLOW DIRECTION
- PROPOSED CHANNEL ALIGNMENT
- -340 — HEC-RAS CROSS SECTION
- APPROXIMATE WATER LIMITS
- SURVEYED CONTOURS
- PROPOSED CONTOURS

HEC-RAS SUMMARY

EXISTING CONDITIONS

River Sta	Profile	Q Total	W.S. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Chan
		(cfs)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)
0	1 YR	153.0	306.35	0.00477	7.74	19.77	18.07	1.00	0.55
0	2 YR	213.0	306.82	0.00439	8.61	24.73	19.16	1.00	0.63
0	10 YR	365.7	307.81	0.00392	10.33	35.39	77.48	1.00	0.81
0	100 YR	751.7	309.85	0.00334	13.14	57.19	156.18	1.00	1.12
-36	1 YR	153.0	304.34	0.01865	6.20	24.67	20.89	1.01	1.29
-36	2 YR	213.0	304.65	0.01775	6.80	31.33	22.04	1.00	1.46
-36	10 YR	365.7	305.30	0.01656	7.87	46.47	24.46	1.01	1.79
-36	100 YR	751.7	306.79	0.00988	8.46	105.01	76.65	0.84	1.75
-167	1 YR	153.0	303.22	0.00124	2.23	68.46	21.16	0.22	0.21
-167	2 YR	213.0	303.86	0.00160	2.56	83.21	24.98	0.25	0.27
-167	10 YR	365.7	305.22	0.00161	2.75	146.39	83.88	0.26	0.30
-167	100 YR	751.7	305.59	0.00449	4.92	184.56	121.98	0.44	0.93
-236	1 YR	153.8	303.11	0.00190	2.34	65.68	28.34	0.27	0.25
-236	2 YR	214.7	303.75	0.00166	2.51	88.33	42.18	0.26	0.26
-236	10 YR	367.5	305.16	0.00093	2.46	207.84	139.35	0.21	0.22
-236	100 YR	755.0	305.41	0.00292	4.52	244.90	159.02	0.38	0.74
-272	1 YR	153.8	303.07	0.00123	2.02	78.05	39.01	0.23	0.18
-272	2 YR	214.7	303.72	0.00104	2.17	107.03	49.68	0.22	0.19
-272	10 YR	367.5	305.14	0.00063	2.18	240.80	146.76	0.18	0.17
-272	100 YR	755.0	305.35	0.00213	4.12	272.35	161.94	0.33	0.59
-340	1 YR	153.8	302.94	0.00213	2.29	72.61	40.64	0.24	0.33
-340	2 YR	214.7	303.62	0.00173	2.36	113.78	82.20	0.23	0.33
-340	10 YR	367.5	305.12	0.00063	1.83	354.05	228.25	0.15	0.17
-340	100 YR	755.0	305.27	0.00218	3.47	389.46	240.55	0.27	0.62
-371	1 YR	155.5	301.70	0.04607	7.58	20.50	13.50	1.00	4.30
-371	2 YR	216.9	302.18	0.04371	8.31	26.10	14.89	1.00	4.87
-371	10 YR	370.7	303.11	0.03896	9.95	37.26	24.77	1.00	6.20
-371	100 YR	761.1	304.63	0.01223	6.70	199.33	213.16	0.59	2.56

PROPOSED CONDITIONS

River Sta	Profile	Q Total	W.S. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Shear Chan
		(cfs)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(lb/sq ft)
0	1 YR	153.0	306.35	0.0048	7.74	19.77	18.07	1.00	0.55
0	2 YR	213.0	306.82	0.0044	8.61	24.73	19.16	1.00	0.63
0	10 YR	365.7	307.81	0.0039	10.33	35.39	77.48	1.00	0.81
0	100 YR	751.7	309.85	0.0033	13.14	57.19	156.18	1.00	1.12
-36	1 YR	153.0	304.96	0.0239	5.66	27.08	27.74	1.00	1.46
-36	2 YR	213.0	305.20	0.0223	6.32	33.93	28.96	1.00	1.69
-36	10 YR	365.7	305.75	0.0188	7.41	50.52	31.71	0.98	2.06
-36	100 YR	751.7	306.99	0.0111	8.08	117.03	89.95	0.82	2.05
-167	1 YR	153.0	302.22	0.0019	2.81	54.48	27.98	0.35	0.22
-167	2 YR	213.0	302.85	0.0016	2.92	72.94	30.51	0.33	0.23
-167	10 YR	365.7	304.32	0.0011	3.00	123.19	44.19	0.29	0.21
-167	100 YR	751.7	304.99	0.0025	5.07	159.07	63.02	0.45	0.58
-236	1 YR	153.8	302.10	0.0018	2.73	56.24	28.63	0.34	0.21
-236	2 YR	214.7	302.75	0.0014	2.83	75.78	30.61	0.32	0.21
-236	10 YR	367.5	304.26	0.0009	2.90	139.31	68.14	0.26	0.19
-236	100 YR	755.0	304.86	0.0021	4.92	194.18	115.47	0.42	0.53
-272	1 YR	153.8	302.04	0.0016	2.62	58.68	28.98	0.32	0.19
-272	2 YR	214.7	302.71	0.0013	2.72	80.45	36.75	0.30	0.19
-272	10 YR	367.5	304.24	0.0007	2.75	155.06	79.67	0.24	0.17
-272	100 YR	755.0	304.81	0.0018	4.72	212.56	122.03	0.39	0.48
-340	1 YR	153.8	301.96	0.0012	2.38	64.58	30.50	0.29	0.16
-340	2 YR	214.7	302.65	0.0010	2.44	91.07	45.63	0.27	0.15
-340	10 YR	367.5	304.23	0.0005	2.30	218.04	155.43	0.20	0.12
-340	100 YR	755.0	304.82	0.0011	3.73	323.76	203.46	0.31	0.29
-371	1 YR	155.5	300.88	0.0052	7.47	20.81	15.58	1.00	0.53
-371	2 YR	216.9	301.31	0.0048	8.33	26.04	16.60	1.00	0.62
-371	10 YR	370.7	303.04	0.0020	7.91	46.88	22.33	0.71	0.46
-371	100 YR	761.1	304.63	0.0015	4.46	219.93	213.21	0.55	0.18

HYDRAULIC ANALYSIS SUMMARY

IN ORDER TO EVALUATE THE HYDRAULIC CHARACTERISTICS IN RELATION TO STREAM CHANNEL MORPHOLOGY,U.S ARMY CORPS OF ENGINEERS RIVER ANALYSIS SOFTWARE (HEC-RAS) WAS UTILIZED TO PERFORM A HYDRAULIC ANALYSIS FOR THE PROPOSED RESTORATION REACH AT PEARSON BRANCH. HEC-RAS, WHICH UTILIZES ENERGY BALANCE EQUATIONS TO SOLVE FOR HYDRAULIC FLOW CHARACTERISTICS, WAS USED TO MODEL A RESTORATION REACH OF 340 LINEAR FEET DOWNSTREAM FROM THE CULVERT OUTFALL AT IRVING STREET.
THE HYDRAULIC ANALYSIS WAS PERFORMED FOR THE 1-YEAR, 2-YEAR, 5-YEAR, 10-YEAR, 25-YEAR, 50-YEAR, 100-YEAR, 500-YEAR STORM EVENTS (AS WELL AS A CHOSEN DESIGN DISCHARGE) IN ORDER TO EVALUATE THE CHANNEL CAPACITY, VELOCITIES, SHEAR STRESSES AND OTHER HYDRAULIC CHARACTERISTICS RELATIVE TO PEAK DISCHARGES (SEE HYDROLOGIC SUMMARY TABLE PRESENTED HYDROLOGY SHEET). HYDRAULIC CONDITIONS FOR 1-YEAR, 2-YEAR, AND 10- YEAR STORM EVENTS WERE ANALYZED IN GREATER DETAIL IN ORDER TO ESTABLISH DESIGN ELEVATIONS, CHANNEL GEOMETRY, AND CHANNEL SINUOSITY FOR THE CHANNEL FORMING EVENT.

ASSUMPTIONS FOR THE BOUNDARY CONDITIONS IN HEC-RAS INCLUDED LEFT AND RIGHT OVERBANK MANNING'S "N" OF 0.055 AND A CHANNEL MANNING'S N OF 0.045 (FOR EXISTING CONDITIONS) AND 0.035 (FOR PROPOSED CONDITIONS), BASED ON SURVEY NOTES DURING THE FIELD ASSESSMENT. THE SLOPES FOR THE EXISTING CULVERTS WERE DETERMINED FROM FIELD SURVEY AND GIS INFORMATION FROM THE CITY OF FALLS CHURCH WHERE AVAILABLE.

AN ANALYSIS OF THE HYDRAULIC OUTPUTS FOR EXISTING CONDITIONS SHOWS THAT EROSIVE VELOCITIES AND SHEAR STRESSES ARE PRESENT THROUGHOUT THE RESTORATION REACH. AN ANALYSIS OF THE HYDRAULIC OUTPUTS FOR THE PROPOSED GEOMETRY SHOWS A GENERAL DECREASE IN FLOW DEPTH IN RESTORATION REACHES FOR THE 10 AND 100 YEAR STORM AS WELL AS A GENERAL DECREASE IN VELOCITIES AND SHEARS, PROVIDING BALANCED CONDITIONS SUITABLE FOR A NATURAL CHANNEL.

1. DESIGN STORM EVENT PRODUCING 200 CFS WAS SELECTED AND UTILIZED TO EVALUATE PROPOSED BANKFULL BENCH ACCESS AS WELL AS FLOOD PRONE AREA WIDTH AS IT RELATES TO ENTRENCHMENT AND STABLE GEOMORPHIC DESIGN PARAMETERS. PROPOSED CROSS SECTIONS WERE MODELED IN HEC-RAS AND ADJUSTED TO MATCH EXISTING SIDE SLOPES AND PROPOSED BED SLOPE.
2. BASED ON HYDRAULIC ANALYSIS AND EVALUATION OF SHEAR STRESS, CHANNEL LINING AND GRADE CONTROL WILL BE REQUIRED IN THE PROPOSED DESIGN CONDITION TO LIMIT BOTH HORIZONTAL AND VERTICAL EROSION. PROPOSED CHANNEL LININGS ARE DEPICTED ON STREAM RESTORATION DESIGN SHEETS PRESENTED HEREIN.
3. IN ADDITION, A STABILIZED OUTFALL APRON AND ENERGY DISSIPATER IS PROPOSED IN CONJUNCTION WITH VERTICAL GRADE CONTROL. HEC-14 WAS UTILIZED IN DETERMINING APPROPRIATE ENERGY DISSIPATION GIVEN CRITICAL FLOW CHARACTERISTICS. THE STABILIZED OUTFALL WAS SIZED TO MEET MINIMUM VDOT ROAD AND BRIDGE STANDARDS AND SPECIFICATIONS (2008)

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WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
Environmental Consultants

HYDRAULIC SUMMARY
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
SCOTT C. BLOSSOM
Lic. No. 40287
11/7/13
PROFESSIONAL ENGINEER

REVISIONS:
DATE:

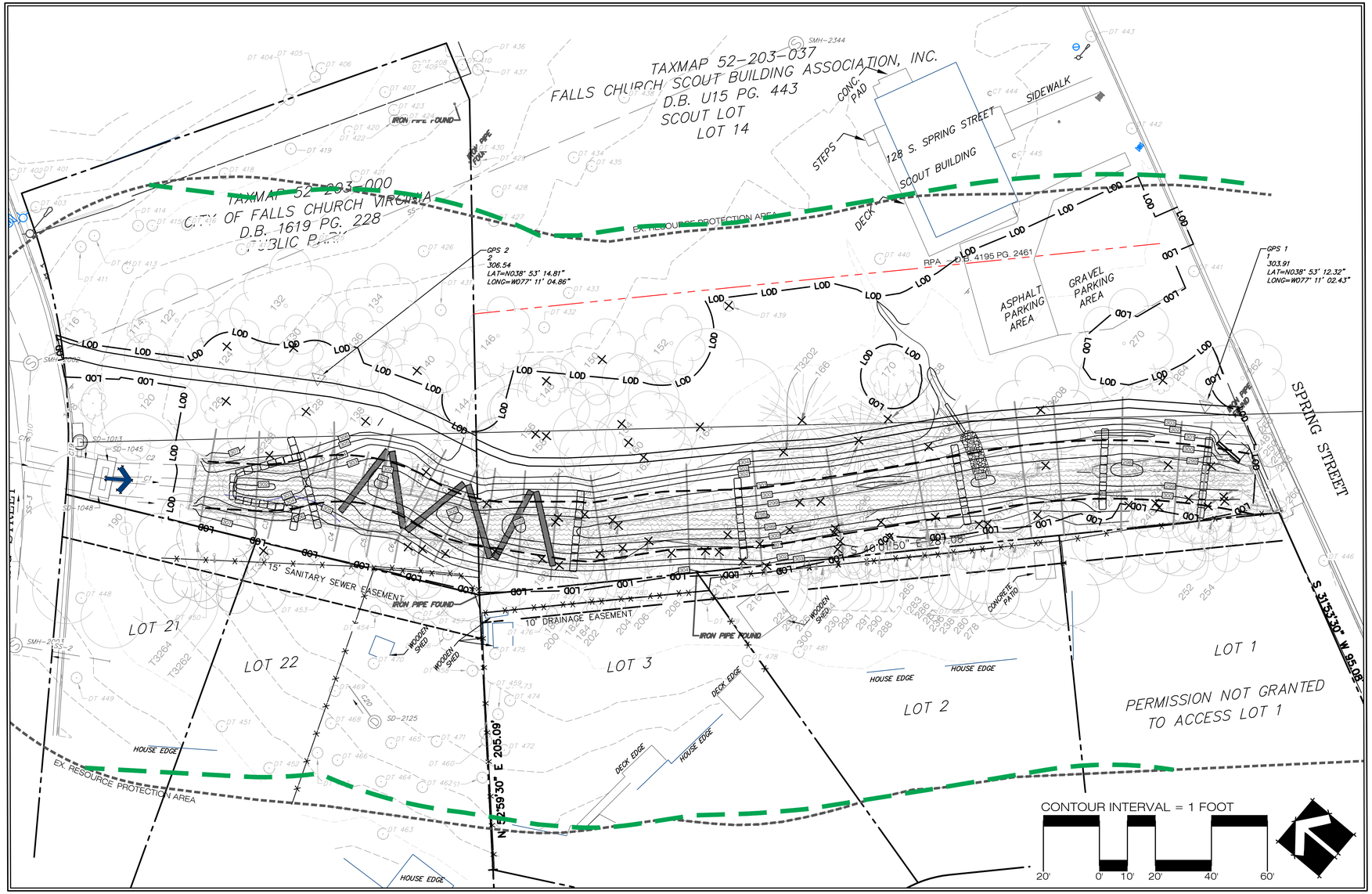
DRAWN BY: CSA
DESIGNED BY: SCB/CSA
DATE: 11/07/2013
CHECKED BY: SCB
SCALE: AS SHOWN
SHEET: 20 OF 21
JOB#: 4773

I:\4700s\4773 - Pearson Branch Stream Restoration\Stormwater Analysis\H&H\4773 -Pearson Branch H&H (csa).dwg

W:\FREDcad\4700s\4773 - Pearson Branch Stream Restoration\Stream Mitigation\Design Plans\95% working plan set\Pearson WQIA Plan.dwg

LEGEND

- SURVEYED STREAM CHANNEL LIMITS
- FLOW DIRECTION
- PROPOSED LIMITS OF RESOURCE PROTECTION AREA (RPA)
- EXISTING LIMITS OF RESOURCE PROTECTION AREA (RPA)



WATER QUALITY IMPACT ASSESSMENT

In accordance with Chapter 48, Article IV, Division 16 of the Code of the City of Falls Church entitled 'CBPA, Chesapeake Bay Preservation Area Overlay District', the following water quality impact assessment (WQIA) for the Pearson Branch stream restoration project was prepared.

Sec. 48-838 (b) (1) Identification of Impacts with Specificity

Identification of impacts are based on the existing Resource Protection Area (RPA) boundary. The perennial stream channel, Pearson Branch, will be stabilized and restored using natural stream channel design techniques. By its nature, stream stabilization/restoration projects are water-dependent activities.

This project is located in the Tripps Run watershed on Pearson Branch. The project begins on the City of Fall Berman Park and ends on the Falls Church Scout Building Association property. A walking trail extends from Irving Street to Spring Street along the stream. The City of Falls Church proposes to restore and stabilize approximately 386 linear feet of perennial stream using natural channel design practices. In addition, riparian buffer planting areas are proposed within the floodplain and RPA to increase the habitat diversity. The total limits of disturbance for this project are 0.725 acres, of which 0.725 acres is located within the RPA.

Restoration will involve removing existing concrete and riprap channel, concrete retaining walls, riprap, debris and invasive species. The stream will be restored to a more natural state with a riparian buffer and new pedestrian trail.

The project includes extensive plantings to restore and enhance the riparian community. Native seed mixes will be used along the streambanks, and within the floodplain areas. The existing riparian vegetation will be saved to the greatest extent practicable, and some invasive species will be removed.

Sec. 48-838 (b) (2) Site Drawing

RPA Components
The boundaries of the existing and proposed Resource Protection Area (RPA) are shown on the attached plans, Sheet 21. The RPA components include Pearson Branch, which is perennial a stream. The 100-foot RPA buffer is measured from the top of the stream bank.

Proposed Encroachment
Natural stream design techniques will be used to restore Pearson Branch. The proposed stream restoration project includes re-alignment of the stream channel, placement of in-stream stabilization structures, creation of riffles and pools, habitat structures, and plantings. The channel re-alignment will reduce shear stress and erosion along streambanks and improve habitat. Bankfull benches and inner berms will be created along the new channel to accommodate the bankfull and smaller discharges, and to reduce bank erosion.

The in-stream structures are designed to protect banks from erosion and to create pools of varying depth to increase habitat diversity. The created riffles and pools have been designed to mimic other stable stream channels within the urban Piedmont watersheds. The proposed channel dimension, plan and profile are based on a reference reach and hydraulic analysis of varying storm discharges.

The project includes habitat structures, such as constructed riffles and pools to provide habitat diversity. Created riffles are built from rock that is placed to stabilize the channel and prevent down cutting.

RPA mitigation will consist of the re-establishment of approximately 0.25-acre of native riparian buffer, and approximately 386 linear feet of stream bank stabilization and planting. The buffer will improve the existing wooded area by adding native understory vegetation and canopy trees. Due to site conditions/constraints, the site will be planted to the maximum extent practicable. See the attached planting plans on sheets 16 and 17.

The buffer plantings will follow the guidance from the City of Falls Church recommended trees and/or native floodplain species lists. The density of the buffer shall be as described in the Riparian Buffers Modification and Mitigation Guidance Manual. The required plantings are as follows: 27 Overstory Trees, of which 12 are on Park site and 15 are on Lot 14 (based on density of 1 overstory trees per 400 sq.ft.), 55 Understory Trees, of which 24 are on Park Site and 31 are on Lot 14 (based on density of 2 understory trees per 400 sq.ft) and 83 Shrubs, of which 37 are on Park site and 46 are on Lot 14 (based on density of 3 shrubs per 400 sq.ft.).

All work within the stream channel shall be performed in the dry. Approved clean water diversion measures will be utilized to ensure that sediment laden water is not discharged into the stream channel. The clean water diversion will be of sufficient length to ensure that all work within the daily work zone is performed in the dry. Only an area that can be stabilized within the same work day is allowed. A stable flow channel will be operable at the end of each day so any base flow or storm flow can be safely conveyed. No work will be conducted within the channel during storm events (rain events).

No wetlands will be permanently impacted by this project. Wetlands will be temporarily impacted during restoration activities. These activities have been approved by the U.S. Army Corps of Engineers.

The existing trail will be replaced with a new permeable trail that connects Irving and Spring Streets.

Demonstrate the extent to which the proposed activity will comply with applicable performance criteria

The project will improve water quality by stabilizing the stream using natural channel design criteria. In addition, the in-stream structures, habitat features, such as pools, and riffles will provide habitat for fish, macroinvertebrates and amphibians. The riparian buffer restoration provide further habitat diversity for the floodplain community. Riparian plantings will enhance the floodplain, using native species (See Sheets 16 and 17, which provide a breakdown of the species and planting quantities along with the seed mixtures.

Based on the design and the calcuations provided in Table 1, a total of 27 overstory trees (12 on Park site and 18 on Lot 15), 55 understory trees (25 on Park site and 31 on Lot 14), and 83 shrubs (37 on Park site and 46 on Lot 14) will be installed. In addition, 475 live stakes (100 on Park site and 375 on Lot 14) will be installed. The planting density requirements can be met.

TABLE 1

Park	Lot 14	Total	Note
7968 Sq.Ft.	23608 Sq.Ft.	31576 Sq.Ft.	Total Area of Disturance
0 Sq.Ft.	3094 Sq.Ft.	3094 Sq.Ft.	Existing Parking area
750 Sq.Ft.	1250 Sq.Ft.	2000 Sq.Ft.	Existing trail
145 Sq.Ft.	0 Sq.Ft.	145 Sq.Ft.	Ex SWM pipe area
0 Sq.Ft.	7439 Sq.Ft.	7439 Sq.Ft.	Existing lawn area
2080 Sq.Ft.	6757 Sq.Ft.	8837 Sq.Ft.	Stream channel TOB-TOB
4925 Sq.Ft.	6176 Sq.Ft.	11101 Sq.Ft.	Proposed Planting area
772 Sq.Ft.	825 Sq.Ft.	1597 Sq.Ft.	Proposed Trail
0 Sq.Ft.	8292 Sq.Ft.	8292 Sq.Ft.	Proposed lawn area
4925 Sq.Ft.	6176 Sq.Ft.	11101 Sq.Ft.	Area to be counted toward buffer requirement

5209 Center Street
Williamsburg, Virginia 23188
(757) 220-6869
1011 Boulder Springs Drive, Suite 225
Richmond, Virginia 23225
(804) 267-3474
150 Riverside Parkway, Suite 301
Fredericksburg, Virginia 22406
(540) 785-5944
WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
Environmental Consultants

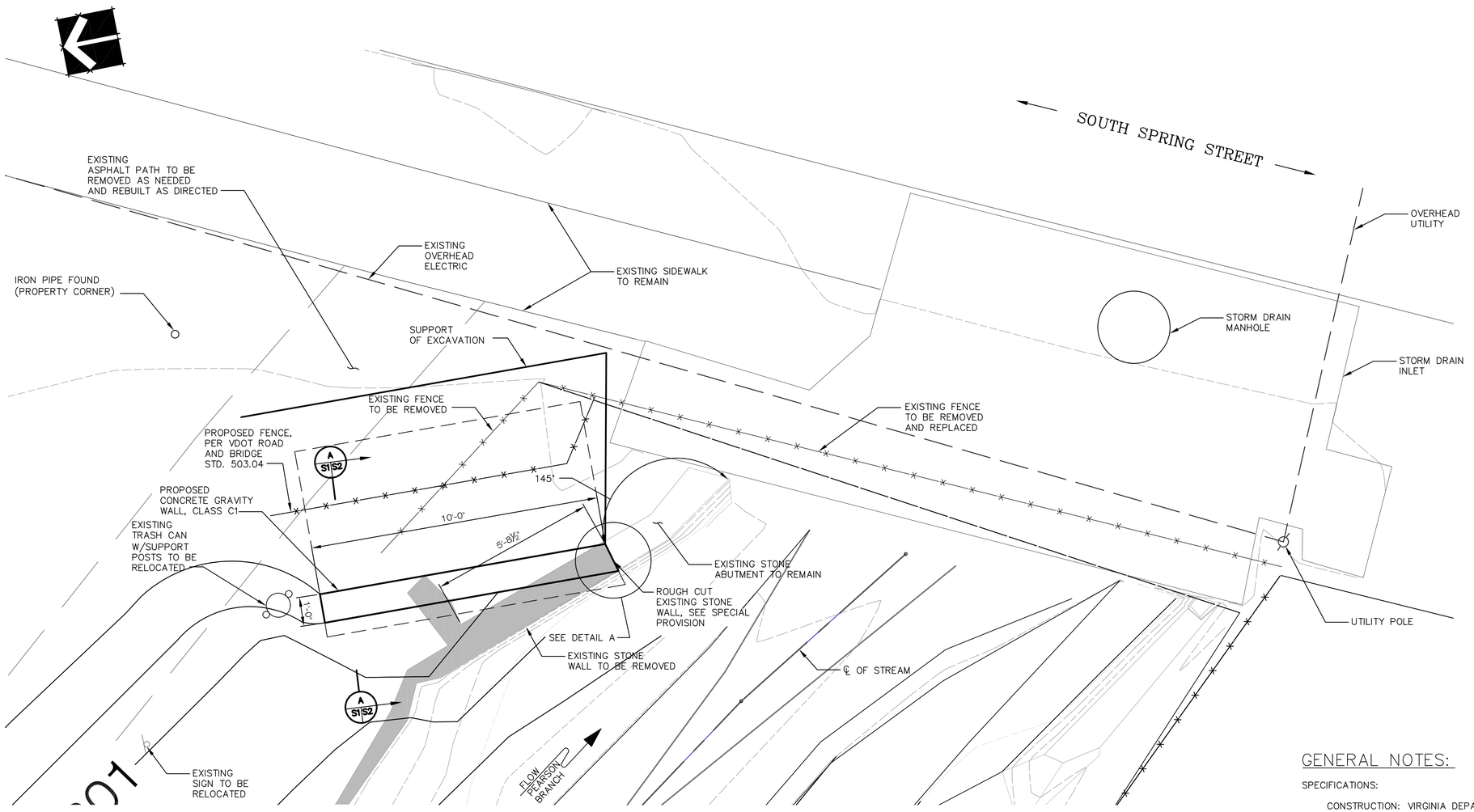
WATER QUALITY IMPACT ASSESSMENT
PEARSON BRANCH STREAM RESTORATION
CITY OF FALLS CHURCH, VIRGINIA

COMMONWEALTH OF VIRGINIA
GEORGE C. RHODES III
Lic. No. 000894
1/20/2014
LANDSCAPE ARCHITECT

REVISIONS:

DATE:	
12/16/13	REVISED PER CITY COMMENTS
01/20/14	REVISED PER CITY AND/OR FCSBA COMMENTS

DRAWN BY: CDP
DESIGNED BY: CDP, GCR, SCB
DATE: 11/07/2013
CHECKED BY: SCB
SCALE: 1 INCH = 20 FEET
SHEET: 21 OF 21
JOB#: 4773



PLAN

SCALE: 1/2" = 1'-0"

GENERAL NOTES:

SPECIFICATIONS:

CONSTRUCTION: VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE SPECIFICATIONS, 2007, UPDATED TO JANUARY 9, 2013.

DESIGN: AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES, 2002 INTERIM SPECIFICATIONS AND VDOT MODIFICATIONS

STANDARDS: VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE STANDARDS, 2008.

THESE PLANS ARE INCOMPLETE UNLESS ACCOMPANIED BY THE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDED IN THE CONTRACT DOCUMENT.

THIS PROJECT IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE VIRGINIA DEPARTMENT OF TRANSPORTATION WORK AREA PROTECTION MANUAL, JULY 2011 AND LATEST REVISIONS.

CONCRETE IN RETAINING WALL SHALL BE CLASS C1.

FORM LINERS SHALL BE USED AT THE FRONT FACE OF THE WALL TO CREATE A STONE MASONRY APPEARANCE. THE FORM LINER STYLE, SIZE AND COLOR SHALL BE SUBMITTED TO THE CITY FOR APPROVAL PRIOR TO ORDERING THE MATERIAL.

JOINT SEALANT SHALL BE CLASS A SILICONE SEALANTS IN ACCORDANCE WITH SPECIFICATION NO. 212.

ALL UNDERGROUND UTILITIES SHALL BE MAINTAINED IN OPERATION BY THE CONTRACTOR DURING ENTIRE CONSTRUCTION PERIOD. ANY DAMAGE TO THE EXISTING UTILITIES BY THE CONTRACTOR SHALL BE REPAIRED/REPLACED AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST.

THE CONTRACTOR IS ADVISED THAT SUPPORT OF EXCAVATION WILL BE NECESSARY BEHIND THE RETAINING WALLS IN ACCORDANCE WITH SPECIFICATION NO. 401 TO SUPPORT THE SIDEWALK DURING CONSTRUCTION AND AT THE END OF STONE ABUTMENT FOOTING.

TOPOGRAPHY PROVIDED BY WILLIAMSBURG ENVIRONMENTAL GROUP.

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FALLS CHURCH, VA 22046
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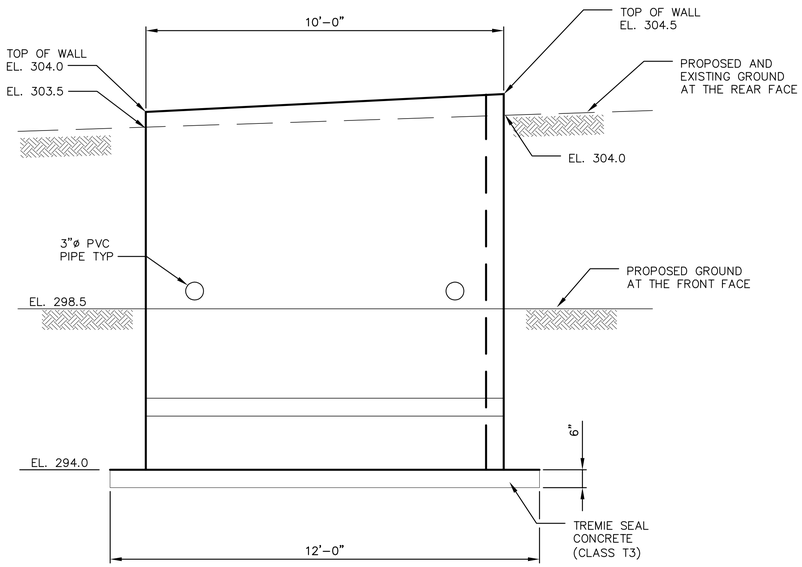
PEARSON BRANCH STREAM RESTORATION
RETAINING WALL
GENERAL PLAN
CITY OF FALLS CHURCH, VIRGINIA

REVISIONS:
DATE:

DRAWN BY: YM	DESIGNED BY: DD
DATE: 07/01/2013	CHECKED BY: OWC

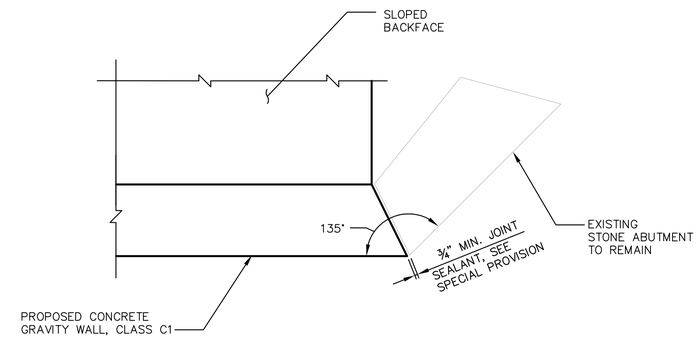
SCALE: 1/2" INCH = 1 FOOT

SHEET: S1 OF S2



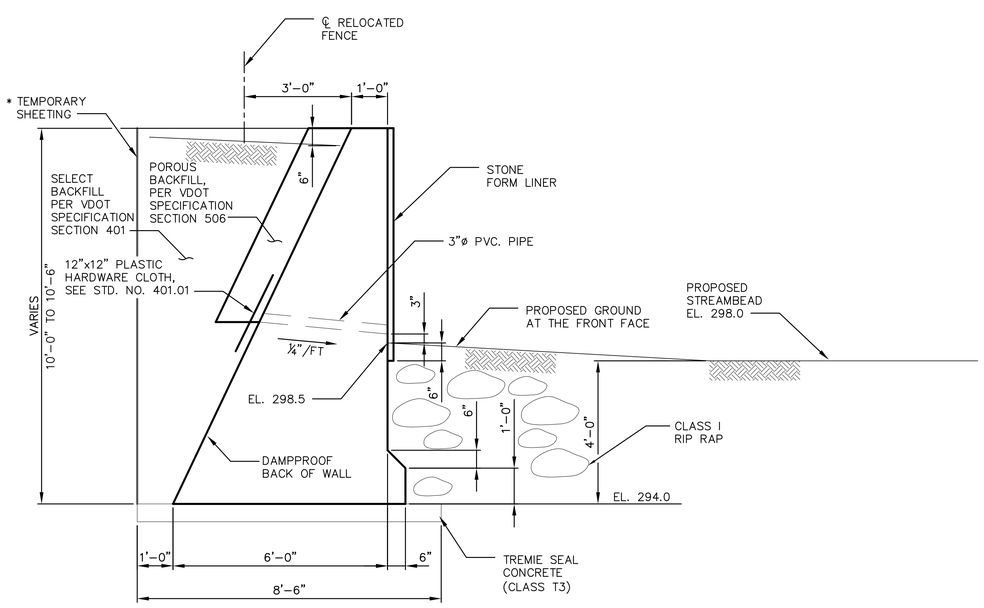
ELEVATION

SCALE: 1/2" = 1'-0"



DETAIL A

SCALE: 1/2" = 1'-0"



SECTION A-A

SCALE: 1/2" = 1'-0"

*CONTRACTOR HAS THE OPTION OF REMOVING TEMPORARY SHEETING OR CUT-OFF ONE FEET BELOW FINISH GRADE AND LEAVE THE REMAINING IN PLACE.

REFERENCE NOTE:

1. FOR GENERAL NOTES AND PLAN, SEE SHEET NO. S-1.

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PEARSON BRANCH STREAM RESTORATION
RETAINING WALL
ELEVATION AND DETAILS
CITY OF FALLS CHURCH, VIRGINIA

REVISIONS:
DATE:

DRAWN BY: YM	DESIGNED BY: DD
DATE: 07/01/2013	CHECKED BY: OWC
SCALE: 1/2" INCH = 1 FOOT	

SHEET: S2 OF S2