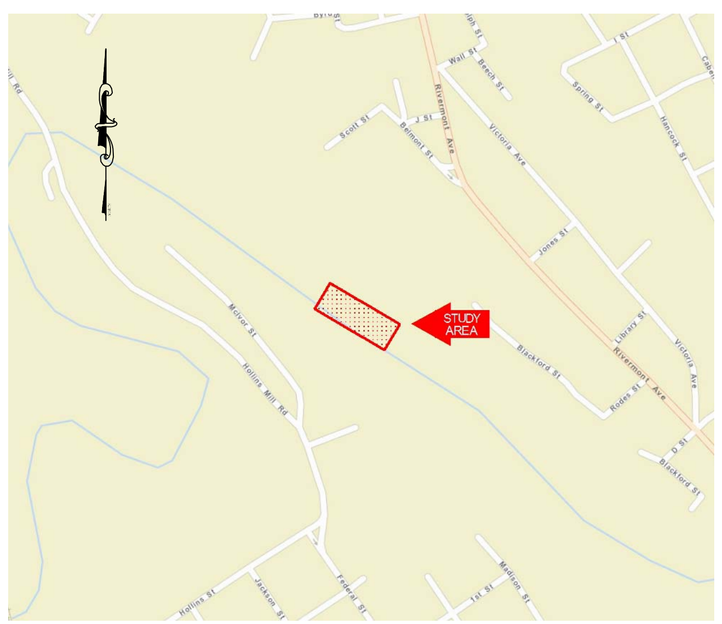
CITY OF LYNCHBURG
PARKS AND RECREATION DEPARTMENT

301 GROVE STREET
LYNCHBURG, VA 24501

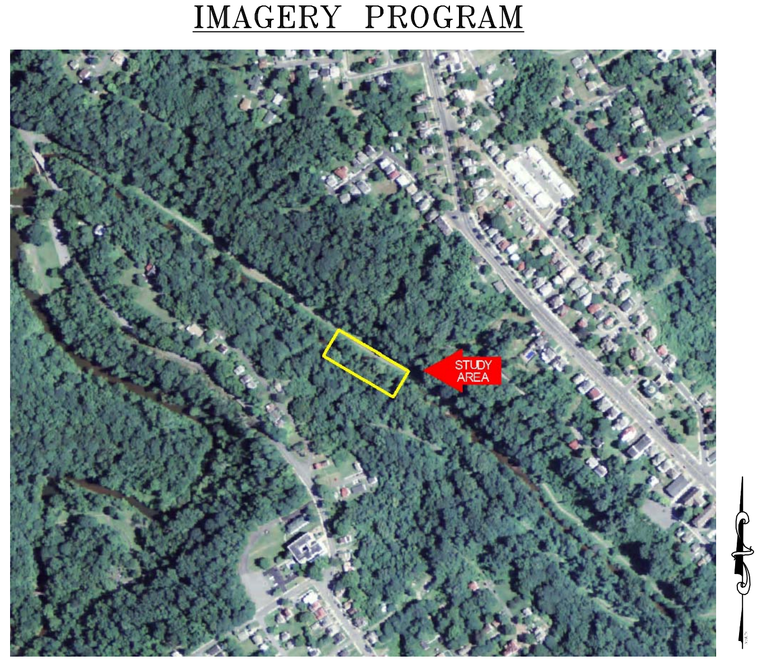
POINT OF HONOR
STREAM STABILIZATION
(POHSS)

VICINITY MAP



DATA SOURCE: ESRI SCALE: 1" = 500'

2014 NATIONAL AGRICULTURE IMAGERY PROGRAM



DATA SOURCE: NAIP SCALE: 1" = 500'

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COMMONWEALTH OF VIRGINIA
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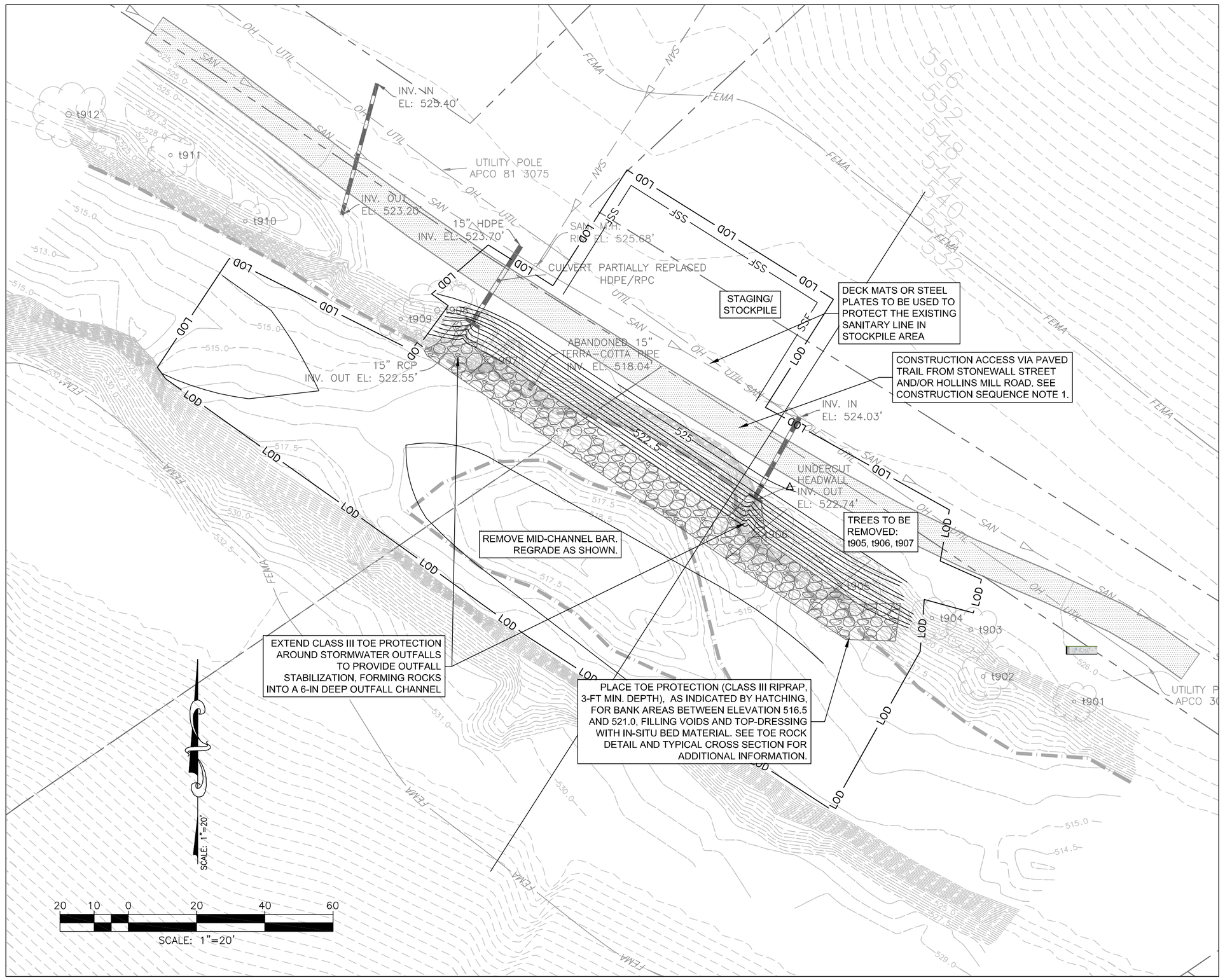
Point Of Honor
Stream Stabilization
CITY OF LYNCHBURG
LYNCHBURG, VIRGINIA

CITY PLAN IDENTIFIER
POHSS

PLAN REVIEWER



DESIGN NARRATIVE

THIS PLAN SET PROPOSES WORK ASSOCIATED WITH THE STABILIZATION OF THE SEVERELY ERODED BANK SEGMENT (APPROXIMATELY 150 LINEAR FEET) ALONG THE NORTH BANK OF BLACKWATER CREEK IN LYNCHBURG, VA. THE STABILIZATION MEASURES ARE NECESSARY TO ENSURE THE PUBLIC SAFETY OF POINT OF HONOR TRAIL USERS, PROTECT TRAIL INFRASTRUCTURE, AND PREVENT DAMAGE TO THE EXISTING SANITARY SEWER SYSTEM. UNDER CURRENT CONDITIONS SEVERE BANK EROSION THREATENS TO DESTABILIZE THE EXISTING PAVED TRAIL. TEMPORARY ORANGE SAFETY FENCE HAS BEEN INSTALLED TO PREVENT TRAIL USERS FROM APPROACHING THE EXISTING 12-FT HIGH NEAR-VERTICAL BANK.

THE DESIGN PROPOSES TO STABILIZE THE BANK BY PLACING TOE ROCK AND FILLING THE EXISTING BANK TO CREATE A 2.5:1 (MAX.) BANK SLOPE IN THE PLANE OF THE ADJACENT BANKS (UPSTREAM AND DOWNSTREAM). THE BANK WILL THEN BE REVEGETATED WITH A DIVERSE MIX OF NATIVE RIPARIAN VEGETATION. WORK WILL ALSO INCLUDE REMOVAL OF THE MID-CHANNEL BAR AND RESHAPING OF THE CHANNEL BED IN ORDER TO FURTHER REDUCE STRESSES ON THE ADJACENT BANKS.

FLOODPLAIN MODELING

THE ENTIRE PROJECT AREA LIES WITHIN A FEMA-MAPPED (ZONE A) FLOODPLAIN AND ALL PROPOSED GRADING LIES BELOW THE FEMA-MAPPED BASE FLOOD ELEVATION ASSOCIATED WITH THE JAMES RIVER (APPROXIMATELY 5,000 LF DOWNSTREAM). THUS THE PROPOSED ACTIVITIES DO NOT INFLUENCE THE BASE FLOOD ELEVATION WHEN CONSIDERING BACKWATER EFFECTS. HOWEVER, TO BE CONSERVATIVE, THE EFFECTS OF THE PROJECT ON FLOODPLAIN ELEVATIONS WERE ALSO CONSIDERED WITHOUT BACKWATER EFFECTS.

SINCE DEVELOPMENT OF A HYDROLOGIC MODEL IS BEYOND THE SCOPE OF THIS PROJECT, EXISTING FEMA DATA UPSTREAM AND DOWNSTREAM OF THE PROJECT AREA WAS USED TO APPROXIMATE THE 100-YR FLOW RATE IN ORDER TO ASSESS THE EFFECTS OF THE PROPOSED STABILIZATION MEASURES ON BASE FLOOD ELEVATIONS (WITHOUT CONSIDERATION OF THE JAMES RIVER BACKWATER). AN APPROXIMATE 100-YR FLOW RATE OF 30,000 CFS WAS DETERMINED BY COMBINING FEMA FLOW RATES FROM BLACKWATER CREEK (WITHOUT ATTENUATION ASSOCIATED WITH COLLEGE LAKE) AND IVY CREEK AT LOCATIONS UPSTREAM OF THE PROJECT AREA AND NEAR THE CONFLUENCE OF THESE TWO MAJOR CONTRIBUTING DRAINAGE AREAS. TEN PERCENT (10%) WAS ADDED TO THE COMBINED FEMA FLOW TO ACCOUNT FOR THE ADDITIONAL DRAINAGE AREA BETWEEN THE NEAREST UPSTREAM FEMA DATA AND THE PROJECT AREA.

A BASIC HYDRAULIC MODEL (HEC-RAS) WAS DEVELOPED FOR THE PROPOSED CONDITIONS IN ORDER TO CONFIRM THAT THE PROPOSED WORK WILL NOT INCREASE FLOODING OR ADVERSELY IMPACT ADJACENT PROPERTIES. THE HEC-RAS MODEL UTILIZED THE ESTIMATED FLOW RATE AND INCLUDED THREE CROSS-SECTIONS: ONE APPROXIMATELY 400 FEET UPSTREAM OF THE PROJECT AREA, ONE WITHIN THE PROJECT AREA, AND ONE APPROXIMATELY 400 FEET DOWNSTREAM. THE REACH WAS ANALYZED USING NORMAL DEPTH BOUNDARY CONDITIONS UNDER SUB-CRITICAL FLOW. THE RESULTS OF THIS MODEL SHOWED AN INSIGNIFICANT INCREASE IN WATER SURFACE ELEVATION (<0.1 FT), WITH NO IMPACTS TO ADJACENT PROPERTIES.

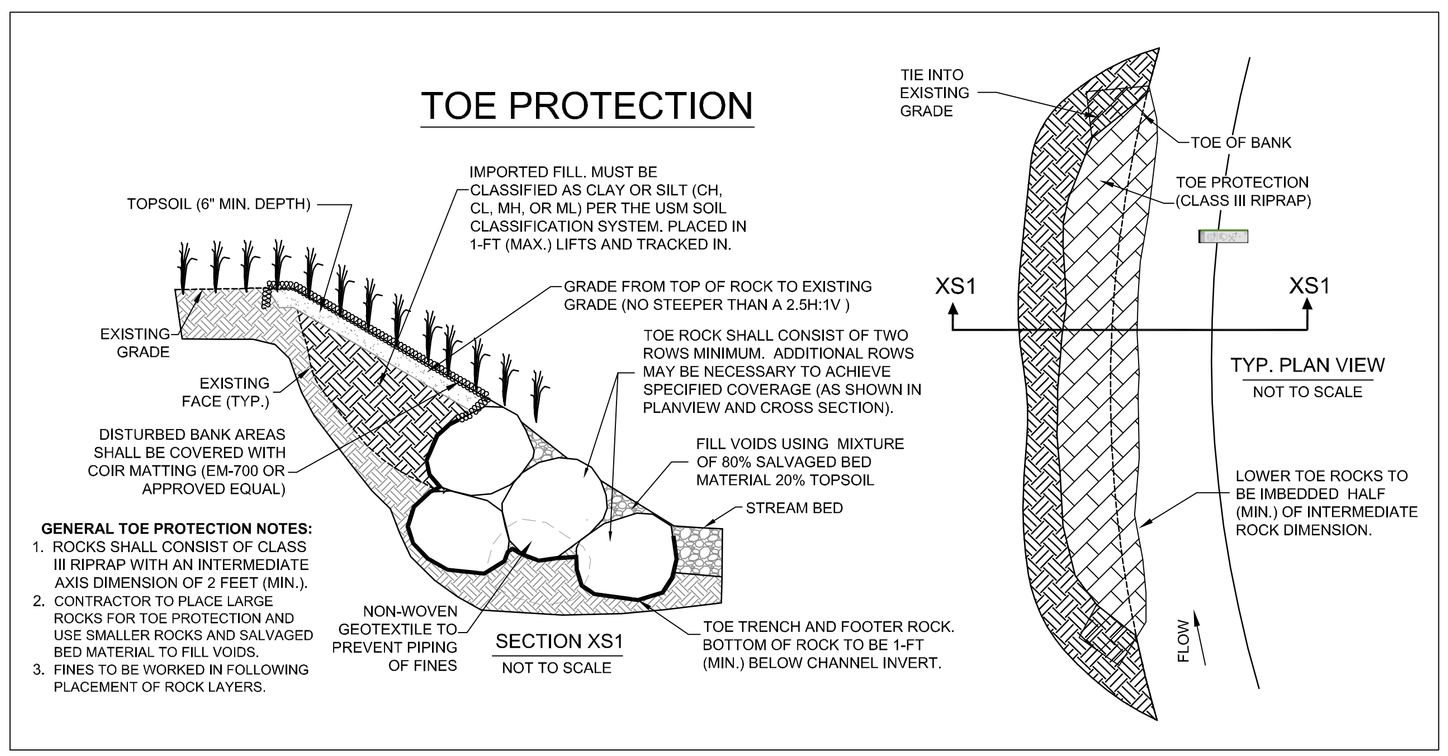
CONSTRUCTION SEQUENCE & NOTES

1. SITE ACCESS SHALL BE ALONG THE EXISTING PAVED TRAIL WITH ENTRANCES FROM STONEWALL STREET AND/OR HOLLINS MILL ROAD. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL NOTIFY PARKS AND RECREATION STAFF WITH REGARD TO PLANNED ACCESS AND ENTRANCES IN ADDITION TO FULLY PHOTO-DOCUMENTING THE EXISTING CONDITIONS OF THE ENTRANCE ROAD AND ACCESS AREAS. ANY DAMAGE TO ACCESS AREAS (INCLUDING TRAIL PAVEMENT) SHALL BE RETURNED TO PRE-EXISTING OR BETTER CONDITIONS FOLLOWING IMPLEMENTATION OF THE MEASURES SPECIFIED IN THIS PLAN.
2. NO IN-STREAM WORK SHALL BEGIN UNTIL ALL E&S CONTROLS HAVE BEEN PROPERLY INSTALLED AND THE SPECIFIED STABILIZATION SEED MIXES AND NATURAL FIBER EROSION CONTROL MATTING ARE ON SITE.
3. THE CONTRACTOR SHALL DISTURB ONLY ACTIVE WORK AREAS, STABILIZING SUCH AREAS (I.E. REMOVING THE BASEFLOW DIVERSION, DECK MATS, ETC.) AT THE END OF EACH WORK DAY OR PRIOR TO ANY RUNOFF PRODUCING RAIN EVENT.
4. THE CONTRACTOR SHALL FIRST GRADE A BASEFLOW DIVERSION USING ROCK, PLASTIC SHEETING (6-MIL POLY), AND IN-SITU STREAM BED MATERIAL (FROM WITHIN THE PROJECT AREA) TO DIVERT WATER AWAY FROM THE TOE OF THE ERODING BANK.
5. WHILE THE DIVERSION IS IN PLACE THE CONTRACTOR SHALL INSTALL THE LOWER LAYERS OF TOE ROCK PER THE TOE ROCK DETAIL AND CROSS SECTION (UP TO ELEVATION 518); DEWATERING THE WORK AREA AS NECESSARY, WITH DISCHARGE GENERATED FROM DEWATERING ACTIVITIES PUMPED TO A "SILT SACK" IN ACCORDANCE WITH THE VIRGINIA E&S HANDBOOK.
6. FOLLOWING INSTALLATION OF THE LOWER TOE ROCK THE CONTRACTOR SHALL PLACE AND TRACK IN COHESIVE FILL MATERIAL (CLASSIFIED AS CH, CM, MH, OR ML PER THE UNIFIED SOIL CLASSIFICATION SYSTEM) IN ORDER TO CREATE STABLE ACCESS DOWN THE BANK AND ALSO AS THE FOUNDATION FOR INSTALLATION OF UPPER TOE ROCK. THE CONTRACTOR SHALL THEN REMOVE THE ADJACENT SEDIMENT BAR - REROUTING FLOW, UTILIZING DECK MATS TO BRIDGE ACROSS TO AND WORK FROM THE EXISTING SEDIMENT BAR, AND/OR USING A LONG BOOM EXCAVATOR TO ELIMINATE/REDUCE THE NEED TO WORK IN THE WET. MATERIAL EXCAVATED FROM THE BAR SHALL BE STOCKPILED FOR USE IN TOP DRESSING AND FILLING THE VOIDS IN TOE ROCK.
7. THE REMAINDER OF CLASS III RIPRAP (ABOVE ELEV. 518) SHALL BE PLACED MAKING SURE TO "KEY IN" ROCK TO THE EXISTING GRADE AT THE UPSTREAM AND DOWNSTREAM ENDS OF THE PROJECT AREA, AS SHOWN IN PLANVIEW.
8. ALL TOE ROCK SHALL THEN BE TOP DRESSED (FILLED) WITH A MIXTURE OF 80% SALVAGED BED MATERIAL AND 20% TOPSOIL, TO BE MIXED ON SITE.
9. WORK AREAS SHALL THEN BE SEEDED/PLANTED PER THE PLANTING PLAN.
10. ONCE ALL PROPOSED GRADING IS COMPLETE THE CONTRACTOR SHALL RESTORE ALL STAGING/STOCKPILE AND ACCESS AREAS TO PREEXISTING CONDITIONS USING THE APPROPRIATE SEED MIX WHERE INDICATED AS WELL AS STRAW MULCH PER THE VIRGINIA E&S HANDBOOK.
11. UPON COMPLETION OF GRADING WORK THE CONTRACTOR SHALL ASSESS THE POST-CONSTRUCTION CONDITIONS OF ACCESS AREAS WITH PARKS AND RECREATION STAFF. IF CONSTRUCTION ACTIVITIES HAVE RESULTED IN ANY DAMAGE, DAMAGED AREAS SHALL BE RESTORED/REPAVED TO PRE-EXISTING CONDITIONS OR BETTER.

CONSTRUCTION TOLERANCE

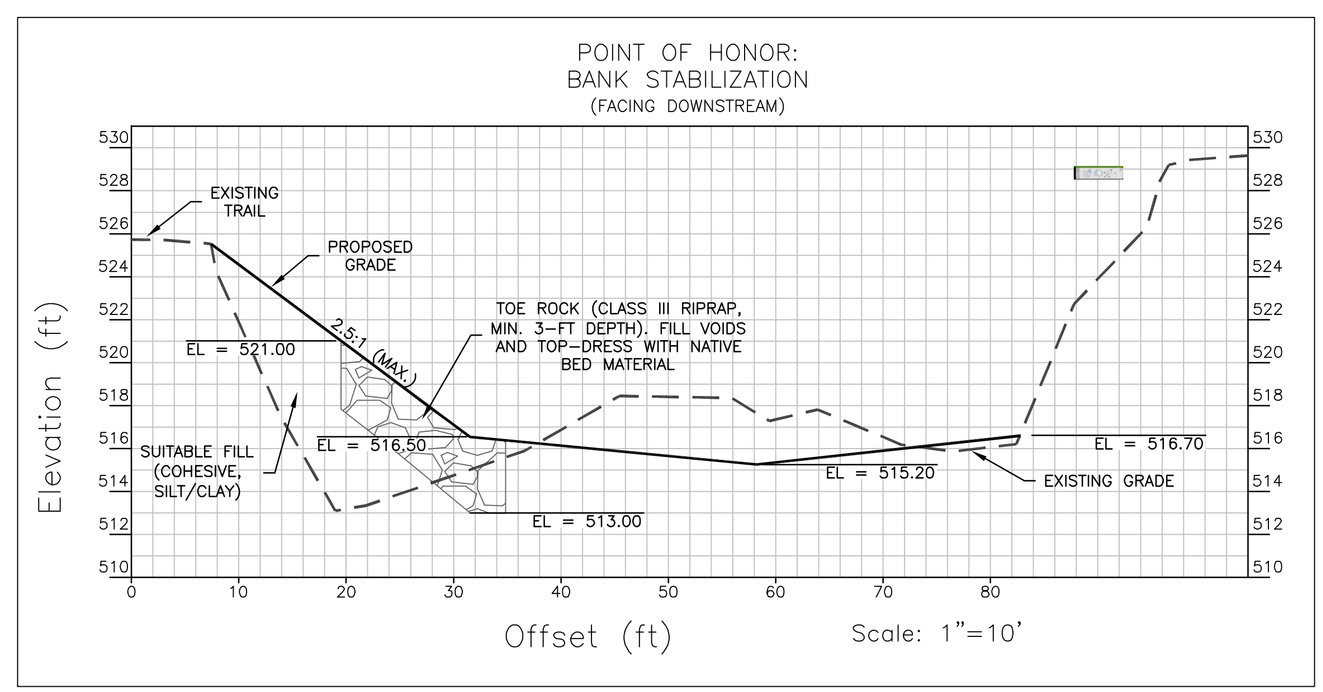
ALL PROPOSED GRADING SHALL BE PER THE GRADING PLAN, CROSS SECTION, AND TOE PROTECTION DETAIL. **GRADED AREAS SHALL BE WITHIN ±0.25' OF PLAN-SPECIFIED GRADES.**

TOE PROTECTION



GENERAL TOE PROTECTION NOTES:

1. ROCKS SHALL CONSIST OF CLASS III RIPRAP WITH AN INTERMEDIATE AXIS DIMENSION OF 2 FEET (MIN.).
2. CONTRACTOR TO PLACE LARGE ROCKS FOR TOE PROTECTION AND USE SMALLER ROCKS AND SALVAGED BED MATERIAL TO FILL VOIDS.
3. FINES TO BE WORKED IN FOLLOWING PLACEMENT OF ROCK LAYERS.



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Point Of Honor
Stream Stabilization
City Of Lynchburg, Virginia

Grading Plan, Design & Floodplain Narrative, Toe Rock Detail, & Cross Section

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COMMONWEALTH OF VIRGINIA
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REVISIONS				
No.	Date	Description	Rev. By:	App. By:

SCALE: 1" = 20'

DATE: FEB 2016

Horizontal Datum: VCS NAD 83
Vertical Datum: NGVD 29
Boundary and Topo Source: WSSI and Lynchburg Digital Data

Design	Draft	Approved
NAS	NAS	FRG

Sheet # 2 of 7

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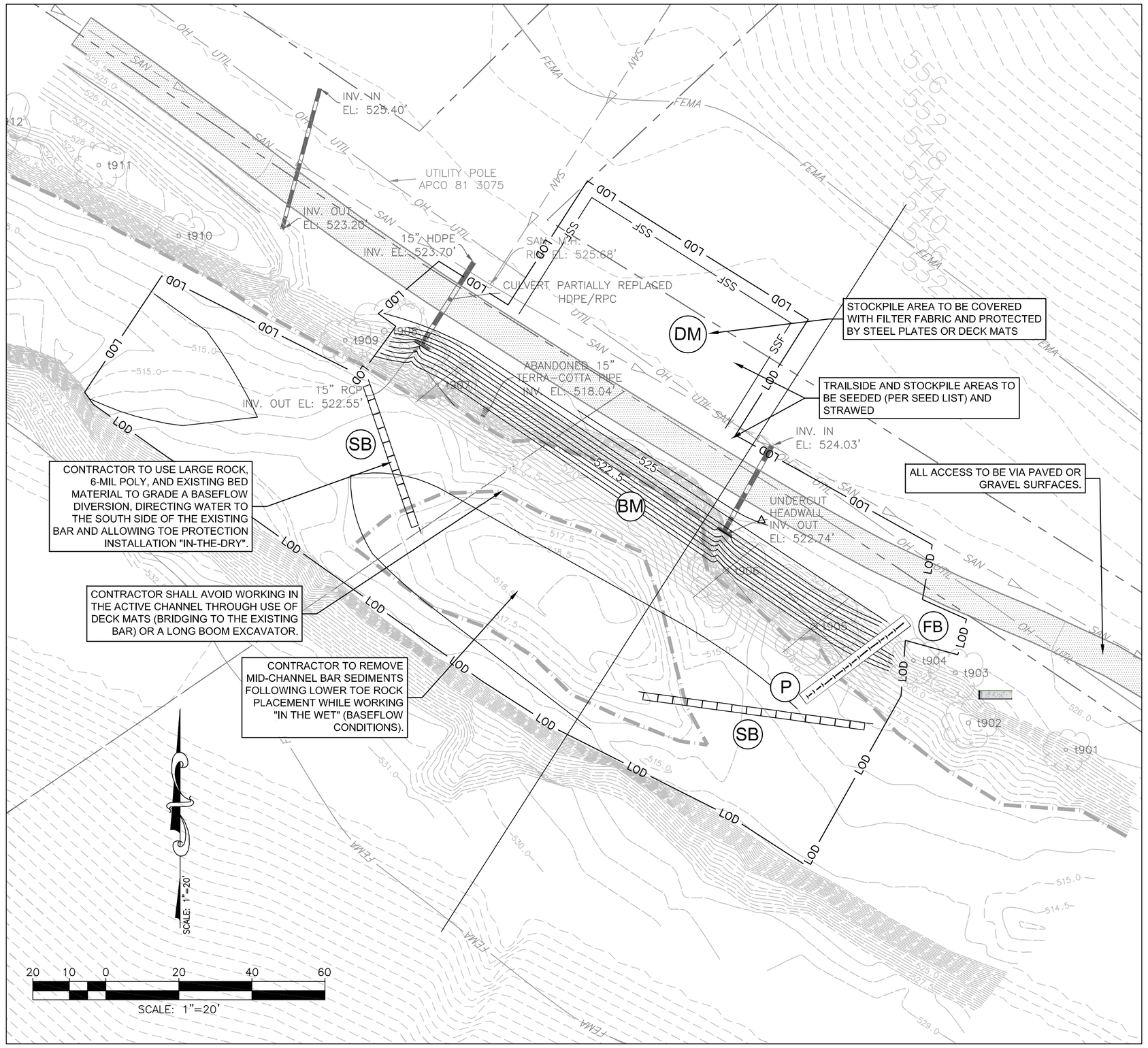
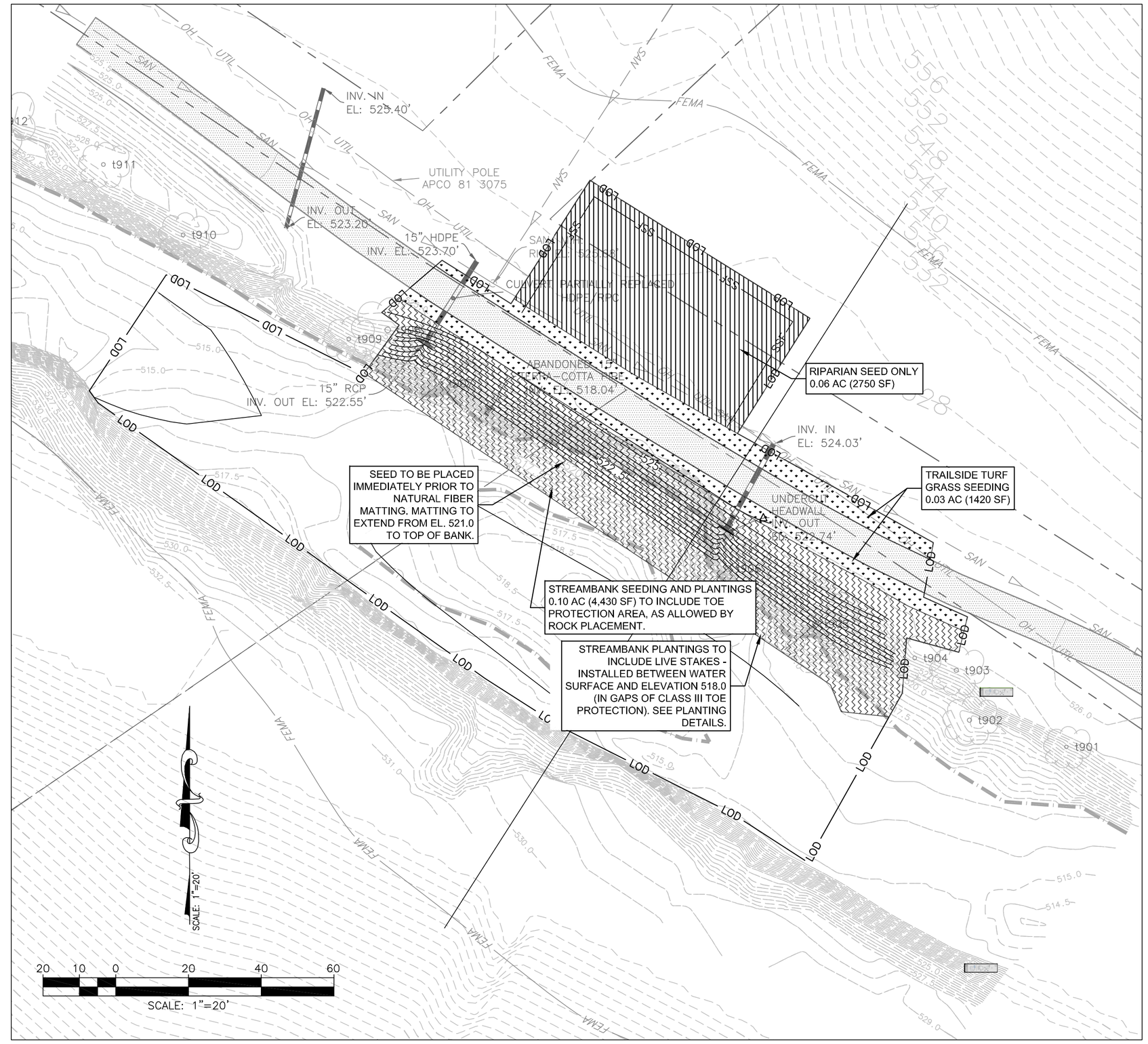
EROSION AND SEDIMENT CONTROL PLAN



PLANTING PLAN



EROSION/SEDIMENT CONTROL LEGEND

NO.	TITLE	KEY	SYMBOL	UNITS	QUANTITY
MGWC 1.2	DEWATERING PUMP	P	P	EA	1
MGWC 1.2	SANDBAG/ROCK DIKE	SB	SB	EA	2
3.05	SILT FENCE WITH WIRE SUPPORT (SUPER SILT FENCE)	SSF	SSF	LF	150
3.38	TREE PROTECTION FENCE	TP	LOD–TP	LF	AS NEEDED
N/A	FILTER BAG	FB	FB	EA	1
3.05	SILT FENCE	SF	SF	LF	AS NEEDED
N/A	ACCESS ROAD DECK MAT	DM	DM	SF	3,500
3.36	BLANKMET MATTING	BM	BM	SF	4,500

SURVEYED TREES

TAG NUMBER	NORTHING	EASTING	DIAMETER (INCHES)	COMMON NAME
t901	3678040.657	11293089.93	12	green ash
t902	3678048.003	11293063.28	14	boxelder
t903	3678061.709	11293059.69	14	boxelder
t904	3678065.097	11293048.24	13	boxelder
t905	3678074.438	11293021.01	22	American scyamore
t906	3678089.678	11292996.89	20	green ash
t907	3678140.557	11292917.8	12	boxelder
t908	3678155.266	11292903.37	19	American scyamore
t909	3678152.789	11292892.68	13	green ash
t910	3678181.401	11292847.14	13	black walnut
t911	3678200.707	11292825.22	13	boxelder
t912	3678212.646	11292795.36	20	black walnut

PLANTING/SEEDING AREAS

STREAMBANK*
4,430 SF = 0.10 AC

RIPARIAN SEED MIX ONLY*
2,750 SF = 0.06 AC

TURFGRASS SEED MIX*
1,420 SF = 0.03 AC

*SEED MIX SHALL BE DISTRIBUTED EVENLY THROUGHOUT ALL DISTURBED AREAS IN THE AMOUNT SPECIFIED ON THE VEGETATION SCHEDULE SHEET.

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Point Of Honor
Stream Stabilization
City Of Lynchburg, Virginia

Erosion & Sediment Control Plan, Planting Plan, & Tree Data

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PROFESSIONAL ENGINEER

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Sheet #
3 of 7

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EROSION AND SEDIMENT CONTROL NARRATIVE

A. PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE STABILIZATION OF APPROXIMATELY 160 LF OF BLACKWATER CREEK IN LYNCHBURG VIRGINIA. THE SUBJECT AREA LIES ALONG THE POINT OF HONOR TRAIL BETWEEN HOLLINS MILL ROAD AND THE CONFLUENCE WITH THE JAMES RIVER, ADJACENT TO BLACKFORD STREET. THE PROPOSED STABILIZATION DESIGN SEEKS TO PROTECT THE EXISTING PAVED TRAIL AND PRESERVE THE INTEGRITY OF THE NEARBY SANITARY SEWER MAIN BY REDUCING BANK ANGLE, INSTALLING TOE ROCK, AND REVEGETATING THE CURRENTLY ERODED BANK.

B. EXISTING SITE CONDITIONS

THE EXISTING BLACKWATER CREEK STREAM CHANNEL FLOWS SOUTHEAST FROM HOLLINS MILL ROAD ALONG THE POINT OF HONOR TRAIL TOWARD THE CONFLUENCE WITH THE JAMES RIVER. THE CHANNEL IS IN MODERATE TO POOR CONDITION AND DEEPLY INCISED WITH BANK HEIGHTS OF APPROXIMATELY 12 FT AND CHANNEL WIDTHS RANGING FROM 65 TO 80 FEET. THE CORRIDOR IS MAINLY VEGETATED WITH STEEP TOPOGRAPHY LIMITING FLOODPLAIN WIDTH. IN THE IMMEDIATE VICINITY OF THE PROJECT AREA THE NORTH, OR LEFT (FACING DOWNSTREAM) BANK IS SEVERELY ERODED AND THREATENS TO DESTABILIZE THE EXISTING PAVED TRAIL. LOCAL HYDRAULICS AND THE HIGH SEDIMENT LOAD EMANATING FROM THE WATERSHED HAVE RESULTED IN THE FORMATION OF A LARGE MID-CHANNEL BAR. THIS FEATURE IS FURTHER INCREASING SHEAR STRESSES ON THE RAW ERODED BANK. IF LEFT UNCHECKED THE EROSION COULD EVENTUALLY POSE A THREAT TO THE STABILITY OF THE EXISTING SANITYAR SEWER MAIN WHICH PARALLELS THE CHANNEL AND RUNS ALONG THE EXISTING TRAIL.

C. ADJACENT AREAS

THE SUBJECT SITE IS BOUNDED BY CITY-OWNED LAND, CONSISTING OF A LARGELY VEGETATED FLOODPLAIN. SINGLE FAMILY HOMES SURROUND THE PROJECT SITE, BUT ARE MORE THAN 300 FT (HORIZONTALLY) AND MORE THAN 50 FT (VERTICALLY) REMOVED FROM THE PROJECT AREA. ACCESS IS PROPOSED TO OCCUR THROUGH THE EXISTING GRAVEL ENTRANCE AT THE END OF STONEWALL STREET AND/OR FROM HOLLINS MILL ROAD ALONG THE PAVED TRAIL.

D. OFF-SITE AREAS

NO OFF-SITE LAND DISTURBING ACTIVITIES ARE PROPOSED.

E. CRITICAL AREAS

THIS PROJECT IS LOCATED ENTIRELY WITHIN A STREAM CHANNEL; HOWEVER, THE DESIGN PRESENTED HEREIN PROPOSES TO STABILIZE THE CHANNEL AND ENHANCE ECOLOGICAL FUNCTION TO THE MAXIMUM EXTENT PRACTICABLE, THUS IMPROVING WATER QUALITY WHILE ALSO PROTECTING THE EXISTING TRAIL AND SANITARY INFRASTRUCTURE.

F. SOILS

THE SOIL LOCATED ON THE PROJECT SITE IS A MIXED CHEWACLA-TOCCOA (CT) COMPLEX. THE CHEWACLA SERIES IS A HYDRIC SOIL WITH THE WATER TABLE TYPICALLY 0.5 TO 1.5 FEET FROM THE SURFACE. THIS SOIL IS SOMEWHAT POORLY DRAINED AND HAS MODERATE EROSION POTENTIAL. THE TOCCOA SERIES IS NON-HYDRIC, WELL DRAINED, WITH A DEPTH TO WATER TABLE OF 3 - 5 FT AND A MODERATE EROSION POTENTIAL.

G. EROSION AND SEDIMENT CONTROL MEASURES

1. BEFORE ANY WORK IN THE STREAM AREA COMMENCES, AN ON-SITE PRE-CONSTRUCTION MEETING SHALL BE HELD TO ENSURE THAT ALL AFFECTED PARTIES (DESIGN ENGINEER, CONTRACTOR, STATE OFFICIALS, OWNER, AND PROJECT MANAGER) FULLY UNDERSTAND THE CONSTRUCTION SEQUENCING.
2. MATERIALS AND METHODS USED IN CONSTRUCTION AND MAINTENANCE OF THE EROSION AND SEDIMENT CONTROL MEASURES REQUIRED SHALL CONFORM TO THE CONSTRUCTION STANDARDS AND SPECIFICATIONS IN CHAPTER 3 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH), THIRD EDITION, 1992, AS WELL AS ANY OTHER APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY ADDITIONAL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES THAT MAY BE REQUIRED BY THE CITY INSPECTOR, OR COMMENSURATE WITH THEIR SEQUENCE OF CONSTRUCTION, TO PREVENT EROSION AND SEDIMENT CONTROL RELATED DAMAGE TO PROPERTY OF OTHERS, ADJACENT AND/OR DOWNSTREAM WATERWAYS, OR TO THE PROJECT, DURING CONSTRUCTION AND PRIOR TO PERMANENT STABILIZATION OF ALL DISTURBED AREAS.
4. PRIOR TO ANY OTHER CONSTRUCTION ACTIVITIES, PERIMETER EROSION CONTROL MEASURES ARE TO BE INSTALLED (I.E. TREE PROTECTION FENCE AND STOCKPILE STABILIZATION MEASURES) AROUND THE LIMITS OF CLEARING.
5. WORK WITHIN THE STREAM AREA SHALL NOT COMMENCE UNTIL AFTER PERIMETER EROSION CONTROL MEASURES ARE APPROVED BY THE CITY INSPECTOR.
6. FOR ANY CLEARING OR GRADING ON THE SITE, THE LIMITS OF CLEARING AND GRADING (LOC) SHALL BE MARKED WITH FLAGGING.
7. THE LOC SHALL BE REVIEWED ON-SITE WITH THE CONTRACTOR, THE OWNER OR OWNER'S REPRESENTATIVE(S), AND A CITY URBAN FORESTER, AND A DETERMINATION MADE AT THAT TIME REGARDING WHICH TREES WILL BE REMOVED BASED ON THE APPROVED GRADING AND STREAM RESTORATION ACTIVITIES.
8. ADJUSTMENTS WILL BE MADE TO FLAGGING MARKING THE LOC TO ADEQUATELY PROTECT TREES TO BE PRESERVED AND ALLOW REMOVAL OF TREES TO BE REMOVED TREE PROTECTION FENCING SHALL BE ERECTED ALONG THESE ADJUSTED LIMITS OF CLEARING AND GRADING PRIOR TO THE COMMENCEMENT OF ANY OTHER CONSTRUCTION ACTIVITIES.
9. TREES TO BE REMOVED THAT ARE LOCATED ON THE LOC OR IMMEDIATELY ADJACENT TO THE LOC WITHIN THE PROTECTED AREA SHALL BE REMOVED USING CHAIN SAWS TO MINIMIZE ROOT ZONE DISTURBANCE OR TREES TO BE PRESERVED. (PFM 12-0603.1B(1))
10. THE CONTRACTOR SHALL AVOID WETLAND AREAS WHEN POSSIBLE DURING CONSTRUCTION. ALL ACCESS AND STOCKPILE AREAS TO BE RETURNED TO PRE-CONSTRUCTION CONDITIONS AT THE COMPLETION OF CONSTRUCTION.
11. STOCKPILE AREAS HAVE BEEN DESIGNATED PRIMARILY FOR STOCKPILING SOIL AND ROCK. SILT FENCE SHALL BE PLACED ALONG THE DOWNSTREAM SIDE OF ANY STOCKPILE OF SOIL THAT WILL REMAIN STOCKPILED AT THE END OF ANY WORK DAY. ADDITIONAL AREAS MAY BE UTILIZED AS STOCKPILE AREAS IF APPROVED BY THE ENGINEER AND SITE INSPECTOR.
12. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES, AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
13. ONLY DISTURB AS MUCH AREA AS CAN BE STABILIZED IN ONE DAY.
14. STABILIZE ALL DISTURBED AREAS, INCLUDING ACCESS AREAS AT THE END OF EACH DAY.
15. ALL TOE ROCK INSTALLATION SHALL BE CONDUCTED IN THE DRY, AND NO WORK SHALL BE PERFORMED IN THE RAIN. IF THERE IS A THREAT OF RAIN, WORK IS TO STOP AND WORK AREA SHALL BE STABILIZED.
16. LARGE ROCK, PLASTIC AND EXISTING BED MATERIAL SHALL BE USED TO DIVERT STREAM BASEFLOW DURING CONSTRUCTION. SANDBAG/ROCK DIKES SHALL BE INSTALLED WITHIN THE STREAM, EXTENDING FROM THE ERODED BANK OUT TO THE EXISTING BAR - ONE AT THE UPSTREAM LIMIT OF DISTURBANCE AND ONE AT THE DOWNSTREAM LIMIT OF DISTURBANCE - IN ORDER TO ISOLATE THE TOE PROTECTION INSTALLATION AREA FROM FLOWING WATER . AN ADEQUATELY SIZED PUMP SYSTEM SHALL BE USED TO DEWATER THE TOE PROTECTION WORK AREA, DISCHARGING INTO A FILTER BAG PRIOR TO BEING RELEASED BACK INTO THE STREAM.
17. ACCESS IN THE STREAM SHALL BE ALLOWED ONLY FOR REMOVAL OF THE MID-CHANNEL BAR SEDIMENTS AND SHOULD BE THE MINIMUM NECESSARY TO REMOVE THE SEDIMENT DEPOSIT.
18. SITE WORK ACTIVITIES SHALL BE COMPLETED, IF POSSIBLE, AT LEAST EIGHT WEEKS EARLIER THAN THE RECOMMENDED PLANTING WINDOW (I.E. AUGUST 30). DURING THIS TIME, THE EROSION CONTROL COVER CROP SHALL BE PERMITTED TO MATURE. SEE PLANTING NOTES AND DETAILS FOR ADDITIONAL INFORMATION ON PLANTING DATES.
19. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE INSPECTOR. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREA RESULTING FROM THE DEPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.

H. PERMANENT STABILIZATION

1. PLANTING OF ALL SPECIFIED CONTAINERIZED STREAMSIDE AND RIPARIAN VEGETATION SHALL BE LIMITED TO THE PERIOD BETWEEN NOVEMBER 30 AND MARCH 30, UNLESS APPROVED BY THE CITY WITH SPECIAL WARRANTY CONDITIONS. NO PLANTING SHALL OCCUR WHEN THE SOIL IS FROZEN.
2. PLANT ALL SPECIFIED PLANT MATERIAL ON THE NEW STREAM BANKS AND RIPARIAN AREAS - SUBJECT TO TIME OF YEAR RESTRICTIONS IN PLANTING SPECIFICATIONS, CUTTING HOLES AS REQUIRED IN THE EROSION CONTROL FABRIC. SEE VEGETATION NOTES AND THE SCHEDULE FOR SPECIFICATIONS REGARDING PLANTS AND PLANTING MATERIAL. PLANTING CONTRACTOR SHALL USE SAME ACCESS POINTS TO MINIMIZE DISTURBANCE.
3. FOR ALL PLANTING TYPES, QUANTITIES, SPECIFICATIONS AND DETAILS PLEASE REFER TO THE PLANTING PLAN.

I. GENERAL LAND CONSERVATION NOTES

1. PERMANENT OR TEMPORARY STABILIZATION MUST BE APPLIED TO DENUDED AREAS WITHIN 7 DAYS AFTER FINAL GRADE IS REACHED OR WITHIN 7 DAYS TO DENUDED AREAS TO REMAIN DORMANT FOR LONGER THAN 14 DAYS.
2. ANY DISTURBED AREA NOT COVERED BY GENERAL CONSERVATION NOTE 1 AND NOT PAVED, SODDED OR BUILT UPON BY NOVEMBER 1, OR DISTURBED AFTER THAT DATE, SHALL BE MULCHED IMMEDIATELY WITH HAY OR STRAW MULCH AT THE RATE OF 2 TONS/ACRE (4483 KG/HA) AND OVERSEEDED BY APRIL 15.
3. AT THE COMPLETION OF THE PROJECT CONSTRUCTION AND PRIOR TO BOND RELEASE ALL TEMPORARY SEDIMENT CONTROLS SHALL BE REMOVED AND ALL DENUDED AREAS SHALL BE STABILIZED.

J. MAINTENANCE PROGRAM.

THE CONTRACTOR SHALL INSPECT ALL EROSION AND SEDIMENT CONTROL MEASURES IMMEDIATELY (WITHIN 24 HOURS) AFTER EACH RUNOFF PRODUCING RAINFALL EVENT, AT LEAST DAILY DURING PROLONGED RAINFALL, AND AT LEAST ONCE EVERY FOURTEEN DAYS. DAMAGED OR DEFICIENT MEASURES SHALL BE REPAIRED BY THE CLOSE OF EACH DAY AND ANY ADDITIONAL MEASURES REQUIRED SHALL BE IMMEDIATELY INSTALLED. FURTHER, THE CONTRACTOR SHALL MAKE A DAILY REVIEW OF AREAS OF CONSTRUCTION ACTIVITY TO INSURE THAT EROSION AND SEDIMENT CONTROL DEVICES ARE PROPERLY LOCATED FOR EFFECTIVENESS. WHERE DEFICIENCIES EXIST, ADDITIONAL MEASURES SHALL BE PROMPTLY INSTALLED. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR PROVIDING ANY ADDITIONAL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES THAT MAY BE REQUIRED, COMMENSURATE WITH HIS SCHEDULING SEQUENCE OF CONSTRUCTION, TO PREVENT EROSION AND SEDIMENT RELATED DAMAGE TO THE PROPERTY OF OTHERS, TO ADJACENT AND/OR DOWNSTREAM WATERWAYS, OR TO THE PROJECT, DURING CONSTRUCTION AND PRIOR TO PERMANENT STABILIZATION OF ALL DISTURBED AREAS.

THE CONTRACTOR SHALL INSTALL ANY AND ALL EROSION AND SEDIMENT CONTROLS DEEMED NECESSARY TO ACCOUNT FOR SITE AND ACTIVITY SPECIFIC ISSUES DETERMINED BY EITHER THE INSPECTOR OR THE ENGINEER'S REPRESENTATIVE.

K. TWO-PHASE E&S CONTROLS

DUE TO THE NATURE OF THIS PROJECT ONLY A PHASE I EROSION AND SEDIMENT CONTROL PLAN IS REQUIRED. NO STORMWATER INFRASTRUCTURE WILL BE CONSTRUCTED (I.E. CURB, GUTTER, INLETS, ETC.), MAKING INCLUSION OF A PHASE II EROSION AND SEDIMENT CONTROL PLAN UNNECESSARY. SITE DISTURBANCE SHALL BE LIMITED TO THE SECTION OF STREAM CHANNEL THAT IS BEING RESTORED THAT DAY, AS WELL AS THE AREA IMMEDIATELY ADJACENT. NO SECTION OF STREAM WILL BE LEFT UNSTABILIZED OVERNIGHT. THIS WORK AREA WILL BE ISOLATED FROM THE ACTIVE STREAM CHANNEL THROUGH THE USE OF A BASEFLOW DIVERSION. THIS DIVERSION WILL REMAIN IN PLACE ONLY UNTIL THE LOWER LAYERS OF TOE ROCK ARE INSTALLED.

MINIMUM STANDARDS NARRATIVE

MS-1 (SOIL STABILIZATION) : SOIL SHALL BE STABILIZED PURSUANT TO THE EROSION AND SEDIMENT CONTROL NARRATIVE, SECTIONS H AND I.

MS-2 (SOIL STOCKPILE STABILIZATION) : PURSUANT TO THE EROSION AND SEDIMENT CONTROL NARRATIVE, SECTION G, NOTE 11 (THIS SHEET); SILT FENCE WILL BE PLACED AROUND ANY SOIL THAT WILL BE STOCKPILED FOR LONGER THAN ONE DAY.

MS-3 (PERMANENT STABILIZATION) : PERMANENT STABILIZATION SHALL BE APPLIED PURSUANT TO THE EROSION AND SEDIMENT CONTROL NARRATIVE, SECTION G, NOTE 11 (THIS SHEET). SPECIFICS REGARDING THE PLANTINGS ARE PROVIDED ON THE PLANTING PLAN, VEGETATION SCHEDULE, AND PLANTING NOTES & DETAILS SHEETS.

MS-4 (SEDIMENT BASINS & TRAPS) : NOT APPLICABLE, NO SEDIMENT BASINS OR TRAPS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS PROJECT.

MS-5 (STABILIZATION OF EARTHEN STRUCTURES) : PURSUANT TO THE EROSION AND SEDIMENT CONTROL NARRATIVE, SECTION G, NOTE 12 (THIS SHEET); ALL EARTHEN STRUCTURES SHALL BE STABILIZED IMMEDIATELY AFTER INSTALLATION.

MS-6 (SEDIMENT TRAPS & SEDIMENT BASINS) : NOT APPLICABLE, NO SEDIMENT BASINS OR TRAPS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS PROJECT.

MS-7 (CUT/FILL SLOPES DESIGN & CONSTRUCTION) : NOT APPLICABLE, NO CUT OR FILL SLOPES ARE ASSOCIATED WITH THIS PROJECT.

MS-8 (CONCENTRATED RUNOFF DOWN SLOPES) : NOT APPLICABLE, NO CUT OR FILL SLOPES ARE ASSOCIATED WITH THIS PROJECT.

MS-9 (SLOPE MAINTENANCE) : NOT APPLICABLE, NO SLOPES ARE PROPOSED TO BE DISTURBED AS PART OF THIS PROJECT.

MS-10 (STORM SEWER INLET PROTECTION) : NOT APPLICABLE, NO STORMWATER INLETS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS PROJECT.

MS-11 (STORMWATER CONVEYANCE PROTECTION) : NOT APPLICABLE, NO STORMWATER CONVEYANCES ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS PROJECT.

MS-12 (WORK IN LIVE WATERCOURSE) : PURSUANT TO THE EROSION AND SEDIMENT CONTROL NARRATIVE, SECTION G, NOTE 17 (THIS SHEET); A "BASEFLOW DIVERSION" SYSTEM WILL BE USED TO ISOLATE THE WORK AREA AND PROTECT DOWNSTREAM RECEIVING WATERS.

MS-13 (CROSSING LIVE WATERCOURSE) : PURSUANT TO THE EROSION AND SEDIMENT CONTROL NARRATIVE, SECTION G, NOTE 17 (THIS SHEET); ACCESS TO THE LIVE WATERCOURSE SHALL BE LIMITED TO THE MINIMUM NECESSARY FOR INSTALLATION OF THE SPECIFIED DIVERSION AND REMOVAL OF MID-CHANNEL BAR SEDIMENTS.

MS-14 (REGULATION OF WATERCOURSE CROSSING) : THE PROPOSED PROJECT IS BEING REGULATED BY NATIONWIDE PERMIT 13.

MS-15 (STABILIZATION OF WATERCOURSE) : THIS MINIMUM STANDARD IS ADDRESSED IN THE EROSION AND SEDIMENT CONTROL NARRATIVE, SECTION G, NOTES 13, 14, & 15 (THIS SHEET).

MS-16 (UNDERGROUND UTILITY LINE CONSTRUCTION) : NOT APPLICABLE, NO UNDERGROUND UTILITIES ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS PROJECT.

MS-17 (VEHICULAR SEDIMENT TRAPPING) : NOT APPLICABLE. ALL CONSTRUCTION TRAFFIC SHALL BE VIA PAVED OR GRAVEL SURFACES.

MS-18 (REMOVAL OF TEMPORARY MEASURES) : THIS MINIMUM STANDARD IS ADDRESSED IN THE EROSION AND SEDIMENT CONTROL NARRATIVE, SECTION G, NOTE 19 (THIS SHEET).

MS-19 (STORMWATER MANAGEMENT) : THE PROPOSED STREAM STABILIZATION DESIGN SEEKS TO IMPROVE CHANNEL STABILITY, AND DOES NOT INCLUDE ANY DEVELOPMENT OR OTHER FACTOR WHICH WOULD AFFECT STREAM FLOW. THEREFORE, THIS STANDARD IS NOT APPLICABLE.

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COMMONWEALTH OF VIRGINIA
FRANK R. GRAZIANO
Lic. No. 032099
PROFESSIONAL ENGINEER

REVISIONS

No.	Date	Description	Rev. By	App. By

DATE: FEB 2016 SCALE: N/A

Horizontal Datum: VCS NAD 83
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Boundary and Topo Source:
WSSI and Lynchburg Digital Data

Design	Draft	Approved
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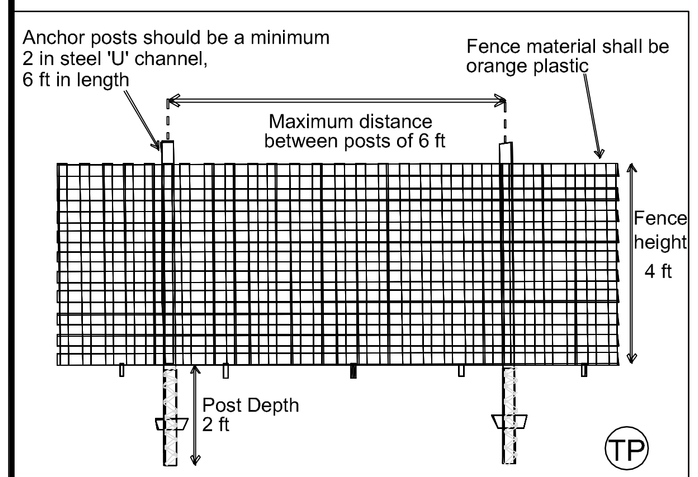
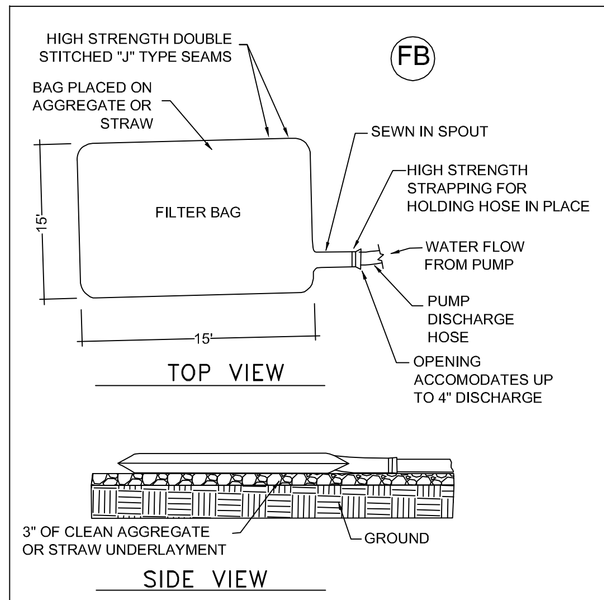


Note: Tree protection fencing should be maintained throughout construction

TREE PROTECTION FENCE INSTALLATION



FILTER BAG

SPECIFICATIONS

1. FILTER BAG SHALL BE MADE OF NON-WOVEN GEOTEXTILE WITH A MINIMUM SURFACE AREA OF 225 SQUARE FEET PER SIDE.

2. ALL STRUCTURAL SEAMS SHALL BE SEWN WITH A DOUBLE STITCH USING A DOUBLE NEEDLE MACHINE WITH HIGH STRENGTH THREAD. SEAM STRENGTH SHALL WITHSTAND 100 LB/IN USING ASTM D-4884 TEST METHOD.

3. FILTER BAG SHALL HAVE A NOZZLE LARGE ENOUGH TO ACCOMMODATE A FOUR (4) INCH DIAMETER PUMP DISCHARGE HOSE.

4. NOZZLE SHALL BE SEALED TIGHTLY AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE TO PREVENT UNFILTERED WATER FROM ESCAPING.

5. FILTER BAG SHALL BE PLACED ON A LEVEL OR GENTLY SLOPING (5% MAXIMUM) VEGETATED AREA.

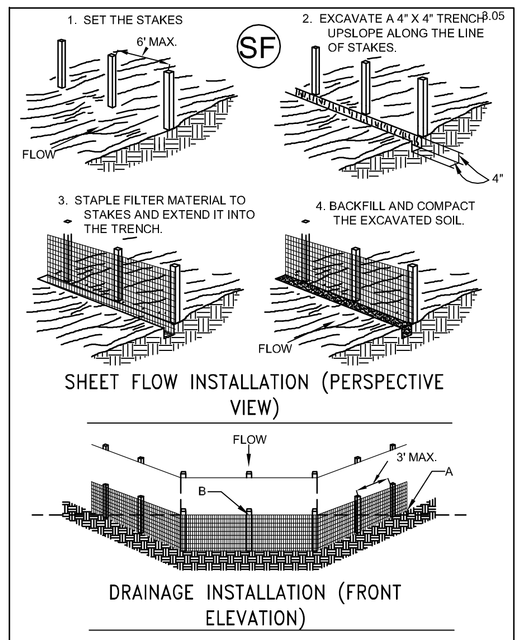
6. FILTER BAG SHALL BE PLACED UPON A BASE OF STRAW BALES OR THREE (3) INCHES OF CLEAN STONE TO PROMOTE DEWATERING THROUGH BOTTOM SURFACE OF THE FILTER BAG.

7. PUMPING RATE SHALL BE CONTROLLED TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG. AS THE BAG BECOMES FILLED WITH SEDIMENT THE PUMPING RATE SHALL BE REDUCED.

8. THE FILTER BAG SHALL BE REMOVED AND DISPOSED OF AFTER IT IS FILLED WITH SEDIMENT AND HAS DEWATERED. THE DEWATERED SEDIMENT FROM THE BAG SHALL BE SPREAD IN AN UPLAND AREA AND STABILIZED WITHIN 24 HOURS.

THE GEOTEXTILE FABRIC SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS WITH PROPERTIES DETERMINED IN ACCORDANCE WITH THE FOLLOWING PROCEDURES:

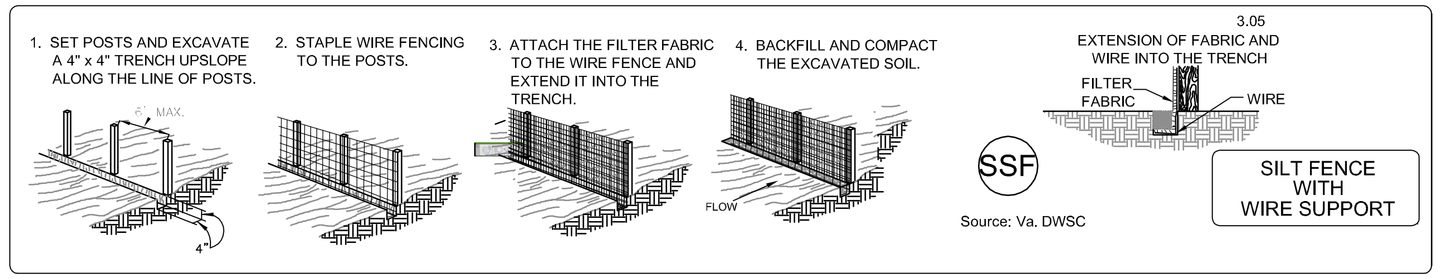
PROPERTIES	TEST METHOD	UNITS	MDE REQUIREMENTS
WEIGHT	ASTM D - 3776	Oz/yd	10
GRAB TENSILE	ASTM D - 4632	Lbs	210
PUNCTURE	ASTM D - 4833	Lbs	150
FLOW RATE	ASTM D - 4491	Gpm/ft^2	70
PERMITTIVITY	ASTM D - 4491	Sec^{-1}	1.3
MULLEN BURST	ASTM D - 3786	Psi	—
UVRESISTANT	ASTM D - 4355	%	70
AOS% RETAINED	ASTM D - 4751	%	40 - 80



POINT A SHOULD BE HIGHER THAN POINT B.

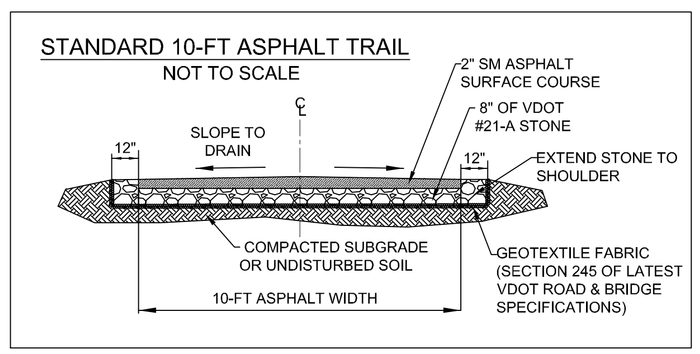
Source: Va. DWSC

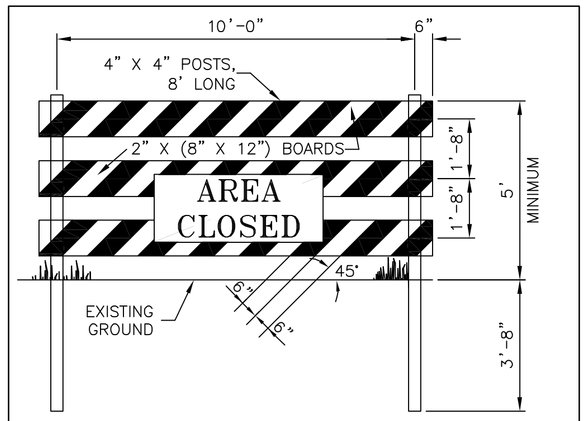
SILT FENCE WITHOUT WIRE SUPPORT



Source: Va. DWSC

SILT FENCE WITH WIRE SUPPORT





LUMBER DIMENSIONS ARE NOMINAL SIZES.

THE REFLECTORIZED AREA SHALL HAVE A SMOOTH, SEALED ENCAPSULATED LENS MATERIAL OUTER SURFACE. THE PREDOMINANT COLOR FOR OTHER BARRICADE COMPONENTS SHALL BE WHITE, EXCEPT THAT UNPAINTED GALVANIZED METAL OR ALUMINUM COMPONENTS MAY BE USED. BECAUSE OF THEIR VULNERABLE POSITION AND POSSIBLE HAZARD THEY COULD CREATE, BARRICADES SHOULD BE CONSTRUCTED OF LIGHTWEIGHT MATERIALS AND HAVE NO RIGID STAY BRACING.

PLANKS ARE TO FASTENED TO POSTS WITH 2 $\frac{3}{8}$" X 6$\frac{1}{2}$" CARRIAGE BOLTS AND WASHERS OR 2 $\frac{5}{16}$" X 4" LAG SCREWS AND WASHERS. BOLTS AND SCREWS ARE NOT TO BE PLACED CLOSER THAN 2" FROM THE EDGE OF PLANKS.

CHARACTERISTICS

COLOR OF STRIPES	REFLECTORIZED RED AND REFLECTORIZED WHITE
WIDTH OF RAIL	8" MIN. - 12" MAX.
NUMBER OF REFLECTORAIZED RAIL FACES	3 IF FACING TRAFFIC IN 1 DIRECTION 6 IF FACING TRAFFIC IN 2 DIRECTIONS

THIS BARRICADE AND OTHER TRAFFIC BARRICADES ARE DESCRIBED IN THE LATEST EDITION OF VDOT'S WORK AREA PROTECTION MANUAL STANDARDS AND GUIDELINES AND MUTCD.

ADAPTED FROM FAIRFAX COUNTY (VA) PUBLIC FACILITIES MANUAL SEC. 7-0406.10, PLATE NO. 20-7, STD NO. TB-1 (STANDARD TRAFFIC BARRIER).

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City Of Lynchburg, Virginia

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COMMONWEALTH OF VIRGINIA
FRANK R. GRAZIANO
Lic. No. 032099
PROFESSIONAL ENGINEER

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NAS	NAS	FRG

Sheet #
5 of 7

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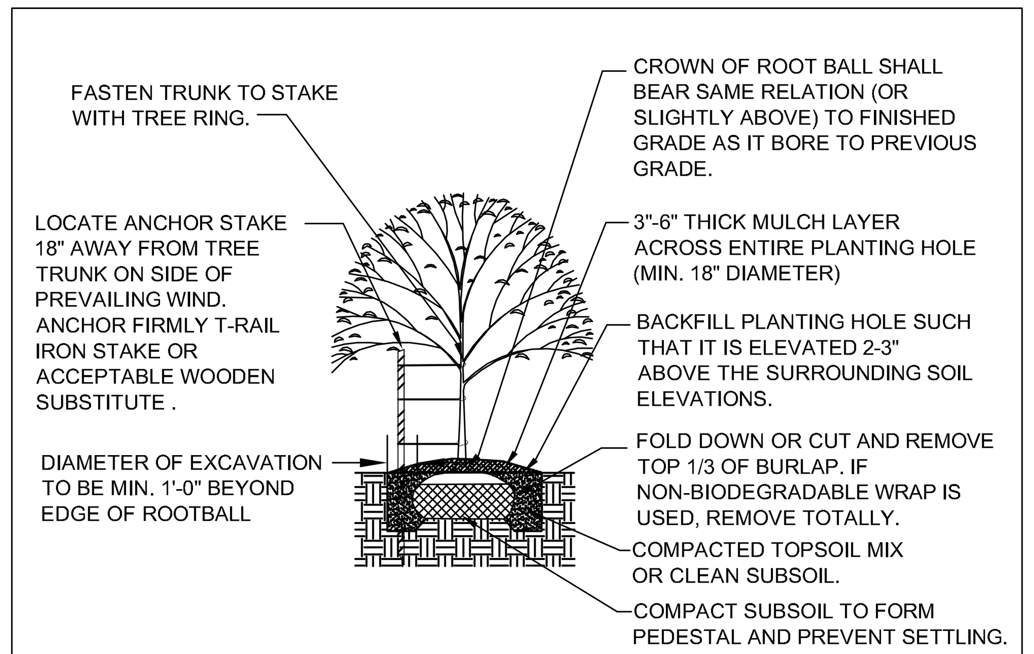
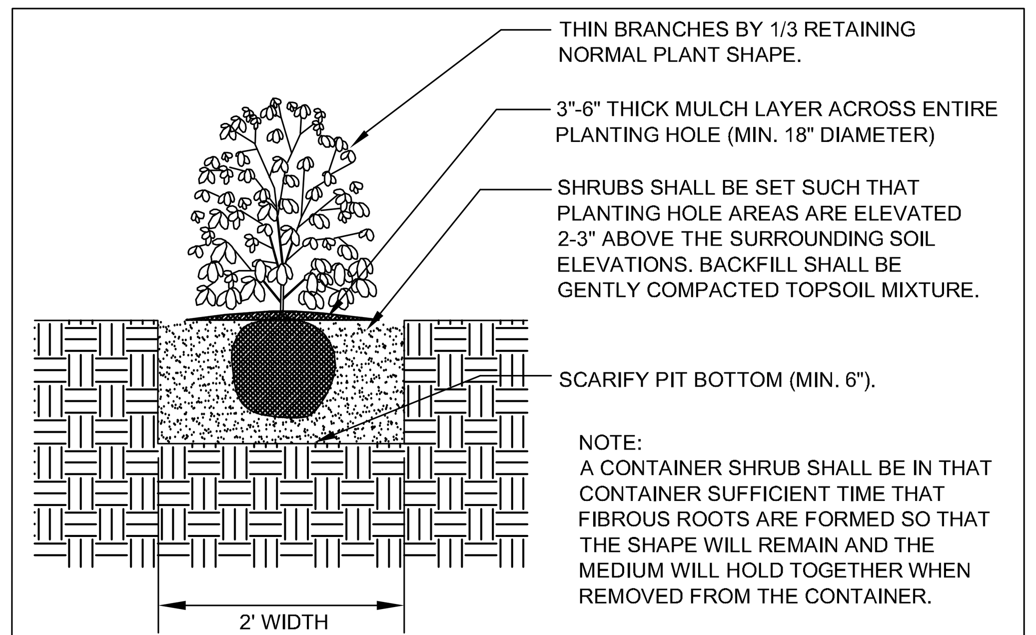


NOTES:
1. DO NOT DAMAGE MAIN ROOTS OR DESTROY ROOT BALL WHEN INSTALLING TREE STAKE.
2. WATER THOROUGHLY SUBSEQUENT TO INSTALLATION.
3. REMOVE HOSE AND STAKE AT END OF GUARANTEE PERIOD.

B&B DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

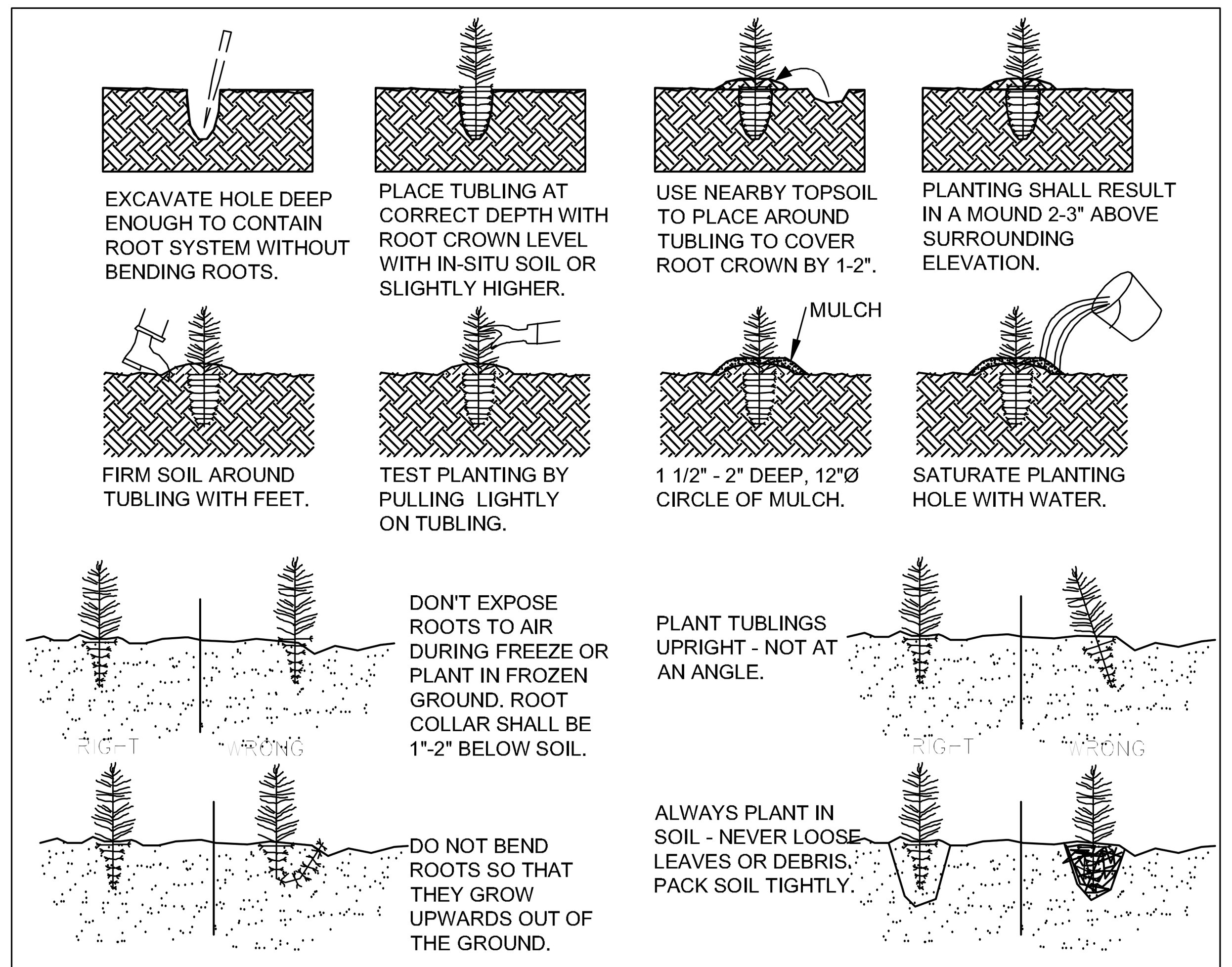


NOTE:
A CONTAINER SHRUB SHALL BE IN THAT CONTAINER SUFFICIENT TIME THAT FIBROUS ROOTS ARE FORMED SO THAT THE SHAPE WILL REMAIN AND THE MEDIUM WILL HOLD TOGETHER WHEN REMOVED FROM THE CONTAINER.

CONTAINER SHRUB PLANTING DETAIL

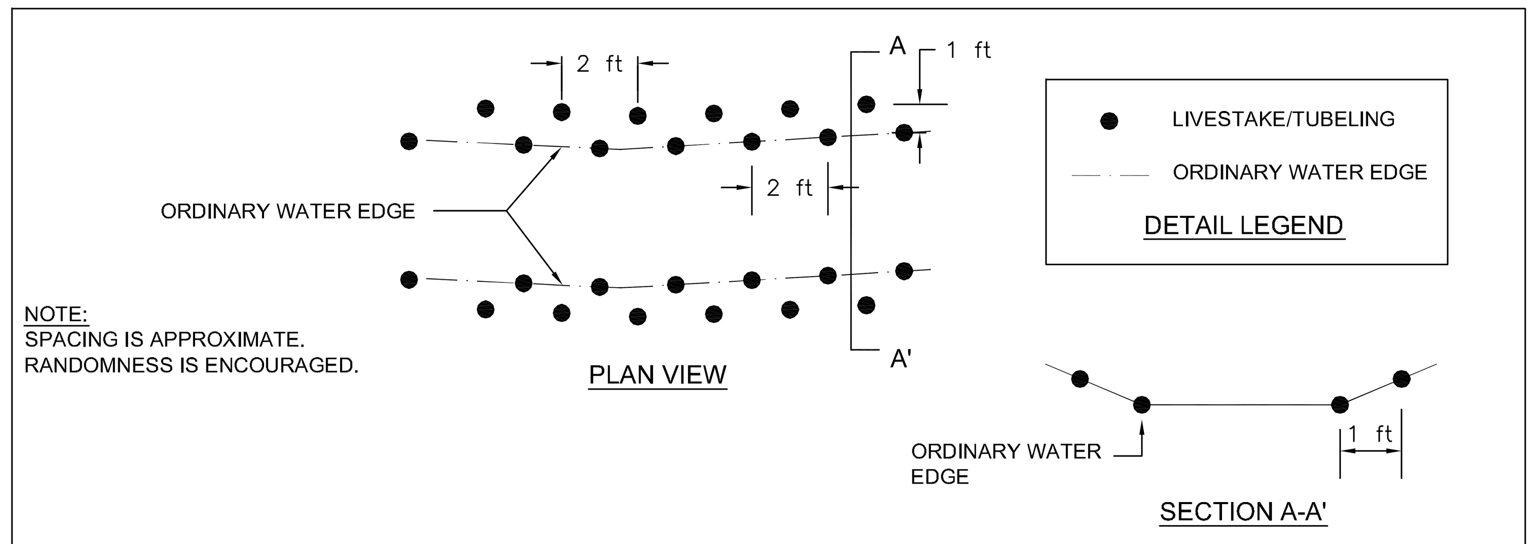
NOT TO SCALE

THIS PLAN IS FOR PLANTING PURPOSES ONLY.



PLANTING TUBLINGS

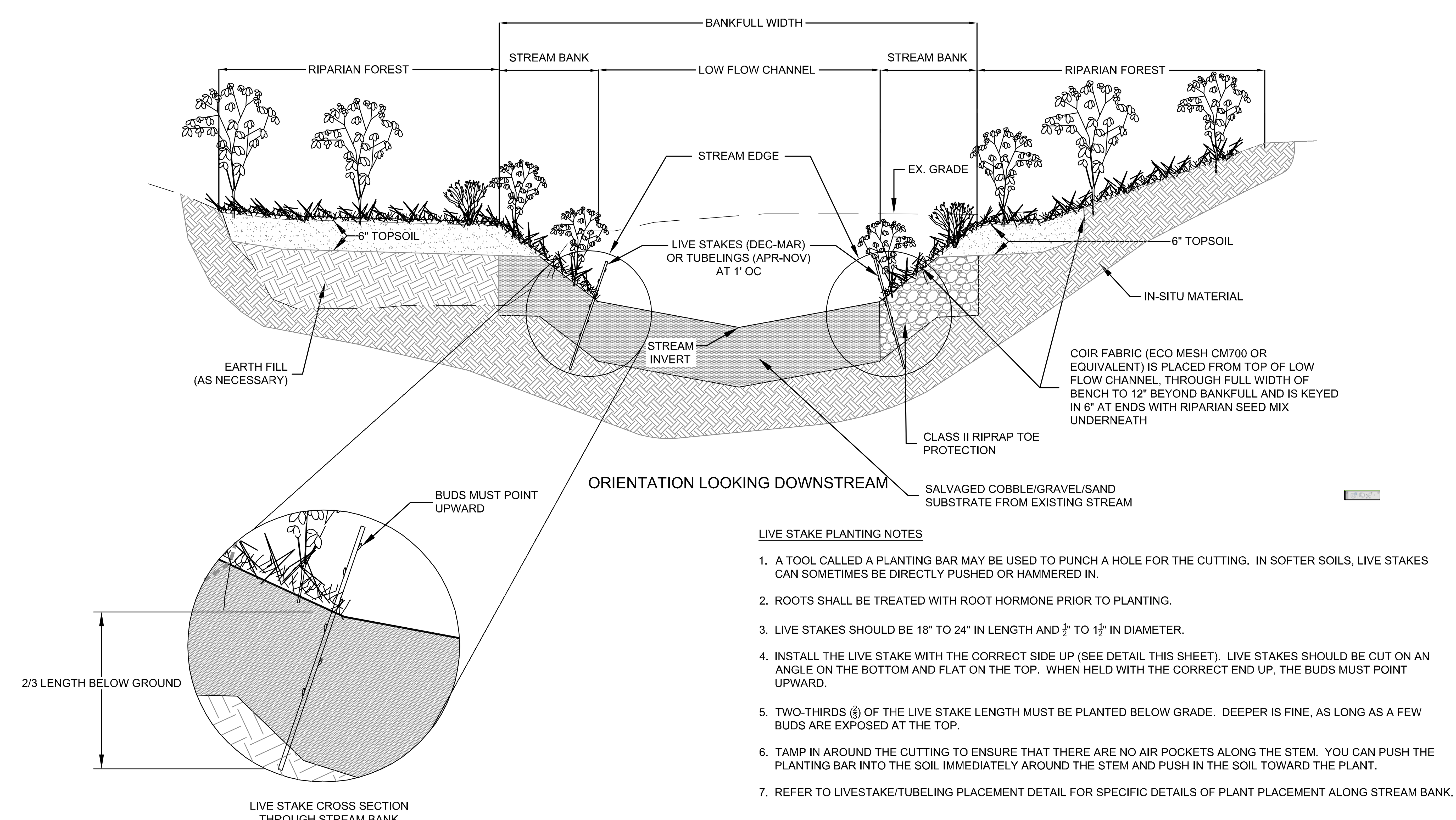
NOT TO SCALE



NOTE:
SPACING IS APPROXIMATE.
RANDOMNESS IS ENCOURAGED.

STREAM EDGE PLACEMENT DETAIL

NOT TO SCALE



LIVE STAKE PLANTING NOTES

1. A TOOL CALLED A PLANTING BAR MAY BE USED TO PUNCH A HOLE FOR THE CUTTING. IN SOFTER SOILS, LIVE STAKES CAN SOMETIMES BE DIRECTLY PUSHED OR HAMMERED IN.
2. ROOTS SHALL BE TREATED WITH ROOT HORMONE PRIOR TO PLANTING.
3. LIVE STAKES SHOULD BE 18" TO 24" IN LENGTH AND $\frac{3}{4}$" TO $1\frac{1}{2}$" IN DIAMETER.
4. INSTALL THE LIVE STAKE WITH THE CORRECT SIDE UP (SEE DETAIL THIS SHEET). LIVE STAKES SHOULD BE CUT ON AN ANGLE ON THE BOTTOM AND FLAT ON THE TOP. WHEN HELD WITH THE CORRECT END UP, THE BUDS MUST POINT UPWARD.
5. TWO-THIRDS ($\frac{2}{3}$) OF THE LIVE STAKE LENGTH MUST BE PLANTED BELOW GRADE. DEEPER IS FINE, AS LONG AS A FEW BUDS ARE EXPOSED AT THE TOP.
6. TAMP IN AROUND THE CUTTING TO ENSURE THAT THERE ARE NO AIR POCKETS ALONG THE STEM. YOU CAN PUSH THE PLANTING BAR INTO THE SOIL IMMEDIATELY AROUND THE STEM AND PUSH IN THE SOIL TOWARD THE PLANT.
7. REFER TO LIVESTAKE/TUBELING PLACEMENT DETAIL FOR SPECIFIC DETAILS OF PLANT PLACEMENT ALONG STREAM BANK.

RESTORED STREAM PLANTING DETAIL

NOT TO SCALE

k:\Cadd Files\Stream Restoration\Details\-D-LiveStake.dwg

PLANTING SPECIFICATIONS

1. PLAN DETAILS ARE INCORPORATED INTO THIS SPECIFICATION BY REFERENCE.
2. THE SUPPLIER OF ALL SEEDS AND/OR VEGETATION SHALL CERTIFY THAT THE ORIGIN OF THE SEEDS FROM WHICH THE PLANTS OR SEEDS WERE PRODUCED IS FROM HARDINESS ZONES 6 AND 7, FROM THE EASTERN OR CENTRAL PORTIONS OF THE U.S., PRIOR TO PLANTING.
3. ANY NURSERY SUPPLYING THE STOCK SHALL PROVIDE A CURRENT NURSERY INSPECTION CERTIFICATE FROM THE STATE DEPARTMENT OF AGRICULTURE, OR PROVIDE AT LEAST THIRTY DAYS ADVANCE NOTICE FOR WETLAND STUDIES AND SOLUTIONS, INC. (WSSI) TO INSPECT THE PLANT SOURCE AREAS AT WSSI'S DISCRETION. ANY SUCH INSPECTION IS NOT DEEMED APPROVAL OF THE PLANT MATERIALS.
4. ALL PLANTS SHALL BE SET STRAIGHT, OR PLUMB.
5. PLANTING SHALL ONLY BE PERMITTED BETWEEN SEPTEMBER 30 AND MARCH 30. NO PLANTING SHALL OCCUR WHEN THE SOIL IS FROZEN. SEEDING SHALL BE COMPLETED DURING MARCH THROUGH MAY OR SEPTEMBER THROUGH NOVEMBER. THESE TIME LIMITS MAY NOT BE MODIFIED UNLESS APPROVED BY WETLAND STUDIES AND SOLUTIONS, INC., IN ADVANCE WITH THE RISK OF SURVIVAL BORNE SOLELY BY THE CONTRACTOR.
6. PLANTING HOLES FOR BARE ROOT TREES SHALL BE 1-2" DEEPER THAN THE ROOT COLLAR (I.E. 1-2" DEEPER THAN THEY WERE GROWING IN THE NURSERY). BARE ROOT SEEDLINGS SHALL BE INSTALLED WITH THE USE OF A "SHARPSHOOTER SHOVEL", AS DEPICTED WITHIN THESE PLANS. THE PLANTING HOLE SHALL BE LARGE ENOUGH TO AVOID THE NEED FOR ROOT TRIMMING WHERE EVER POSSIBLE. NO J-ROOTS (SEE PLANTING DETAILS) SHALL BE ALLOWED; IT IS EXTREMELY CRITICAL THIS BE ADHERED TO FOR EVERGREENS. BARE ROOT STOCK SHALL BE PLANTED WITH THEIR ROOT-COLLAR 1 TO 2 INCHES DEEPER THAN THE ADJACENT SOIL ELEVATION, USING ADJACENT SOIL TO CREATE A HUMMOCK OR MOUND THAT THE SEEDLING IS SET WITHIN.
7. PLANTING HOLES FOR CONTAINER GROWN PLANTS SHALL BE ONE FOOT (1') DEEP PLUS THE CONTAINER DEPTH IN WHICH THE PLANT HAS BEEN GROWN AND TWO FEET (2') WIDER THAN CONTAINER.
8. BACKFILL THE PLANTING HOLES WITH THE IN-SITU SOIL MATERIALS REMOVED FOR PLANTING AFTER REMOVING ALL STONES, ROOTS, AND OTHER DEBRIS GREATER THAN 1-1/2" IN DIAMETER.
9. FOLLOWING THE BACKFILLING, WATER TO THE POINT OF SOIL SATURATION (IF NOT PLANTED IN THE "WET") AND TAMP TO COMPACT THE BACKFILL MIXTURE. ADD EXISTING SOIL TO BRING THE FINAL GRADE IN THE PLANTING HOLE TO THE SURROUNDING SOIL SURFACE. RAKE THE UNUSED EXISTING SOIL OUTSIDE THE PLANTING HOLES, TAKING CARE NOT TO MOUND THE SOIL OR TO SIGNIFICANTLY ALTER THE EXISTING GRADES AND THEN PLACE MULCH (MIN. 2" THICK) ATOP ENTIRE PLANTING HOLE (EXCEPT THAT NO MULCH IS REQUIRED FOR EMERGENT PLANTINGS). THE PLANTING HOLE AREAS MUST NOT BE DEPRESSED BELOW THE SURROUNDING SOIL SURFACE ELEVATIONS. SAID AREAS SHALL BE SLIGHTLY RAISED (2-3"), RELATIVE TO THE SOIL SURFACE.
10. AS INDICATED IN THE PLANT LIST, THE SHRUBS THAT ARE SPECIFIED AS CONTAINER GROWN SPECIMENS SHALL BE BETWEEN 15" AND 18" IN HEIGHT. THEY SHALL BE HEALTHY, VIGOROUS, WELL ROOTED AND ESTABLISHED IN THE PLANTING CONTAINER IN WHICH THEY ARE GROWING. A CONTAINER SHRUB SHALL BE IN THAT CONTAINER A SUFFICIENT TIME SUCH THAT FIBROUS ROOTS ARE FORMED SO THE SHAPE WILL REMAIN AND THE MEDIUM WILL HOLD TOGETHER WHEN REMOVED FROM THE CONTAINER (REFER TO AMERICAN STANDARD FOR NURSERY STOCK).
11. DO NOT REMOVE PLANTS FROM CONTAINERS UNTIL IMMEDIATELY BEFORE PLANTING. EXAMINE THE ROOTS TO SEE IF THEY ARE POT BOUND. CAREFULLY SEPARATE ANY POT BOUND OR CRAMPED ROOTS AND SPREAD THEM OUT WHEN PLACING THE PLANT SO THAT THE ROOTS CAN GROW WITHOUT FURTHER CONSTRUCTION OF THE ROOT BALL.
12. FERTILIZE EACH BARE ROOT, PLUG, TUBER, AND PINT CONTAINER PLANT WITH A 5 GRAM TABLET OF CONTROLLED RELEASE FERTILIZER. FERTILIZE EACH QUART CONTAINER WITH A 10 GRAM TABLET. USE A 20 GRAM TABLET OF FERTILIZER WITH EACH 1 GALLON AND 2 GALLON CONTAINER. GENERALLY, FOR EACH 12 TO 18 INCHES OF PLANT HEIGHT OR FOR EACH 1/2" OF TREE DIAMETER AT THE BASE, USE 20 GRAMS FOR SLOW GROWING PLANTS OR 40 GRAMS FOR FAST GROWING PLANTS OR POOR SOIL SITUATIONS. SAID FERTILIZER TABLETS SHALL BE AGRIFORM 20-10-5 OR APPROVED EQUIVALENT, APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
13. AS RECOMMENDED BY THE CONTRACTOR AND APPROVED BY ENGINEER, THE CONTRACTOR SHALL WATER THE PLANTS AS NEEDED DURING THE CARE AND REPLACEMENT PERIOD OR UNTIL FINAL ACCEPTANCE, WHICHEVER IS THE SHORTEST.
14. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING NON- SURVIVING TREES AND SHRUBS DURING THE CARE AND REPLACEMENT PERIOD (12 MONTHS, UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS) OR UNTIL FINAL ACCEPTANCE, WHICHEVER IS THE SHORTEST, AS REQUIRED BY THE TERMS OF THE SURVIVAL WARRANTY SPECIFIED HEREIN AND/OR IN CONTRACT DOCUMENTS. THE SPECIFICATIONS FOR THE REPLACED PLANTS SHALL BE THOSE PROVIDED IN THE PLANT LIST.
15. REFER TO APPLICABLE SKETCHES WITHIN THIS PLAN SET FOR ADDITIONAL GUIDANCE ON PLANTING REQUIREMENTS.
16. INVASIVE AND NOXIOUS WEEDS SHALL BE REMOVED BY HAND WITH LOCALIZED APPLICATIONS OF ROUND-UP WHERE NECESSARY.
17. ALL BARE ROOT SEEDLINGS SHALL BE TREATED WITH ROOT DIP ABSORBENT POLYMERS AND MYCORRHIZAL ROOT DIP INOCULATES IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. SAID ROOT DIP SHALL BE MYCORTREE ™ ROOT DIP OR APPROVED EQUAL .

SEEDING SPECIFICATIONS

1. SEED SHALL HAVE BEEN COLLECTED THE SAME YEAR OF SEEDING. A SEED GERMINATION AND PURITY RATE OF 75% IS REQUIRED. EVIDENCE OF SUCH SHALL BE PROVIDED TO OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
2. THE SPECIFIED SEED SHALL BE BROADCAST IN AREAS SPECIFIED ON THE PLANTING PLAN. FOLLOWING SEEDING, MECHANICALLY SOW SEED TO A DEPTH OF 1/8TH OF AN INCH BY THE USE OF A HAND RAKE.
3. THE LANDSCAPE CONTRACTOR SHALL INSPECT THE AREAS AND CONDITIONS UNDER WHICH THE SEEDING WORK IS TO BE PERFORMED PRIOR TO COMMENCING WORK. IF CONDITIONS ARE DETRIMENTAL TO THE PROPER AND TIMELY COMPLETION OF THE WORK, HE/SHE SHALL NOTIFY THE OWNER'S REPRESENTATIVE VERBALLY AND IN WRITING AND POSTPONE COMMENCING WORK UNTIL THE UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
4. PRIOR TO SEEDING, THE TOP SOIL SHALL BE RAKED SMOOTH AND CLEARED OF ALL STONES LARGER THAN 5" AND TRASH, DEBRIS, BRANCHES AND OTHER MATTER DETRIMENTAL TO THE SUCCESS OF SEEDING.
5. MULCH SHALL BE STRAW CAN BE SUBSTITUTED IF APPLIED AT A RATE SPECIFIED BY THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 3RD EDITION, 1992.
6. CARE SHOULD BE EXERCISED TO INSURE UNIFORM SEED COVERAGE IS OBTAINED. SEED SHALL BE APPLIED AT THE RATE SPECIFIED ON THE PLANTING SCHEDULE.
7. FOLLOWING SEEDING, MECHANICALLY SOW SEED TO A DEPTH OF 1/8 OF AN INCH BY THE USE OF A CULTIPACTOR, YORK RAKE, OR HAND RAKE.

PLANTING AND SEEDING SURVIVAL WARRANTY

1. LANDSCAPE CONTRACTOR SHALL GUARANTEE A MINIMUM SURVIVAL RATE OF EACH VEGETATION SPECIES AFTER TWELVE MONTHS OF 85% FOR B&B, CONTAINER GROWN, AND TUBLINGS, AND 60% FOR BARE ROOT AND TUBER STOCK.
2. IF SURVIVAL RATES ARE LESS THAN THE ABOVE WARRANTY RATES, THEN LANDSCAPE CONTRACTOR SHALL REPLACE THE QUANTITY OF DEAD PLANTS WITHIN THE NEXT PLANTING WINDOW (NOVEMBER 4 THROUGH APRIL 4, EXCLUDING FROZEN GROUND PERIODS) FOLLOWING THE END OF THE APPLICABLE WARRANTY PERIOD.

PRODUCT HANDLING, STORAGE, AND DELIVERY

1. HANDLE PLANTS AT ALL TIMES SO THAT ROOTS OR BALLS ARE ADEQUATELY PROTECTED FROM BREAKAGE OF BALLS, FROM SUN AND DRYING WINDS. PLANTS WITH DRIED OUT TOPS OR ROOTS SHALL BE REJECTED.
2. ALL PLANT MATERIALS SHALL BE STORED AND DELIVERED IN SUCH A FASHION AND FOR TIME INTERVALS CONSISTENT WITH SOUND SILVICULTURAL PRACTICES.
3. PLANT MATERIAL WILL BE TRANSPORTED FROM THE NURSERY TO THE PLANTING AREAS BY SUCH MEANS AS TO AVOID WIND DAMAGE, OVER-CROWDING, OR OTHER MECHANISMS BY WHICH PHYSICAL DAMAGE MAY RESULT TO THE PLANTS.
4. PLANT MATERIAL MAY BE RANDOMLY INSPECTED BY THE DESIGN ENGINEER UPON ARRIVAL AT EACH PLANTING AREA AND DURING PLANTING ACTIVITIES. MATERIAL FOUND TO BE UNACCEPTABLE WILL BE REJECTED AND THE CONTRACTOR WILL BE REQUIRED TO SUPPLY REPLACEMENT MATERIAL WITHIN A REASONABLE TIME FRAME (I.E. 1-WEEK). UNACCEPTABLE MATERIAL IS TO BE DEFINED AS THE FOLLOWING:
   (A) PLANTS WITH BENT TRUNKS OR MULTIPLE LEADERS, UNLESS CHARACTERISTICS FOR THE SPECIES;
   (B) PLANTS WITH DISEASED TRUNKS, STEMS, OR LEAVES;
   (C) PLANTS WITH PEST-INFESTED TRUNKS, STEMS, OR LEAVES;
   (D) PLANTS OF INSUFFICIENT SIZE (LESS THAN A SPECIFIED HEIGHT);
   (E) PLANTS OF THE WRONG SPECIES/SUB-SPECIES;
   (F) PLANTS HAVING ROOT GIRDLING IN THE CONTAINER;
   UNLESS OTHERWISE APPROVED BY THE DESIGN ENGINEER. JUSTIFICATION FOR USE OF TENTATIVELY REJECTED MATERIAL MAY BE PRESENTED TO THE DESIGN ENGINEER.

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Point Of Honor
Stream Stabilization
City Of Lynchburg, Virginia

Planting Notes & Details

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COMMONWEALTH OF VIRGINIA
FRANK R. GRAZIANO
Lic. No. 032099
PROFESSIONAL ENGINEER

REVISIONS

No.	Date	Description	Rev. By	App. By

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POINT OF HONOR STABILIZATION - VEGETATION AND SEEDING SCHEDULES

PLANTING SCHEDULE

CONTAINER PLANTING ZONE		SPECIES GROUP[1,2]	SPECIES[2]	INDICATOR STATUS	WILDLIFE VALUE: FUNCTIONS	WILDLIFE VALUE: PRIMARY SPECIES	WILDLIFE VALUE: PLANT PART	WILDLIFE VALUE: SEASON	PLANT SPACING[3]	CONTAINER SIZE, RATE, AND QUANTITY[4]: PLANTS PER ACRE	CONTAINER SIZE, RATE, AND QUANTITY[4]: # OF PLANTS	PLANTING QUANTITIES (BASED ON ONE-GALLON SIZE)[4]: AREA (SF): / AREA (AC): / LENGTH (LF):	PLANTING AND SEEDING	SEED ONLY
													4,430	2,750
													0.10	0.06
													170	-
RIPARIAN FOREST (VARIABLE)	TREE LAYER	1	QUERCUS BICOLOR (SWAMP WHITE OAK)	FACW	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter	12' O.C. SEE NOTE #3	300 ONE GAL -- or -- 600 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)	30 (BASED ON ONE-GALLON)		30	
			QUERCUS ALBA (WHITE OAK)	FACW	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter						
			QUERCUS PALUSTRIS (PIN OAK)	FACW	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter						
			QUERCUS PHELLOS (WILLOW OAK)	FAC	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter						
			QUERCUS RUBRA (NORTHERN RED OAK)	FACU	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter						
		2	ACER NEGUNDO (BOX ELDER)[8]	FAC	Food	Finches, chickadees, squirrels, robins, goldfinches, other birds	Seeds, buds, flowers, plant	Spring, summer	17' O.C. SEE NOTE #3	150 ONE-GALLON -- or -- 300 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)	15 (BASED ON ONE-GALLON)		15	
			ACER RUBRUM (RED MAPLE)[8]	FAC	Food	Finches, chickadees, squirrels, robins, goldfinches, other birds	Seeds, buds, flowers, plant	Spring, summer						
			BETULA NIGRA (RIVER BIRCH)	FACW	Food, cover	Song birds	Seeds, plant	All						
			DIOSPYROS VIRGINIANA (COMMON PERSIMMON)	FAC	Food	Bees, large and small mammals, song birds including cedar waxwing, game birds	Fruits, flowers, leaves, twigs	All						
			LIQUIDAMBAR STYRACIFULA (SWEET GUM)	FAC	Food	Finches, cardinals, chickadees, sparrows, squirrels	Seed	Summer, fall, winter						
			NYSSA SYLVATICA (BLACK GUM)	FACW	Food, cover	Song birds, waterfowl, small mammals	Fruit, plant	All						
			PLATANUS OCCIDENTALIS (AMERICAN SYCAMORE)	FACW	Food	Raccoons, opossum, wood duck, pleated and other woodpeckers	Hollow trunks	All						
		3	SALIX NIGRA (BLACK WILLOW)	OBL	Food, cover, reproductive areas Cover crop for oak seedlings	Beaver, porcupine, deer, muskrat, ducks, fish	Buds, foliage, bark	All	21' O.C. SEE NOTE #3	100 ONE-GALLON -- or -- 200 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)	10 (BASED ON ONE-GALLON)		10	
	SHRUB LAYER	4	AMELANCHIER CANADENSIS (CANADIAN SERVICEBERRY)	FAC	Food, cover	Song birds, small mammals	Fruit, plant	All	17' O.C. SEE NOTE #3	150 ONE-GALLON -- or -- 300 TUBELINGS (SEE NOTE #4)	15 (BASED ON ONE-GALLON)		15	
			ASIMINA TRILOBA (PAWPAW)	FAC	Food	Catbird, thrasher, thrushes, woodpeckers, zebra swallowtail butterfly larval food	Fruit, leaves	Spring, summer, fall						
			CERCIS CANADENSIS (EASTERN REDBUD)	FACU	Food	Honeybees, butterfly caterpillars	Flowers, leaves	Spring, summer						
			CHIONANTHUS VIRGNICUS (WHITE FRINGE TREE)	FAC	Food, reproduction	Birds, moths, small mammals	Fruit, leaves, twigs	Spring, summer, fall						
			CORNUS FLORIDA (FLOWERING DOGWOOD)	FACU	Food	Wild turkey, cardinal, cedar waxwing, robin, brown thrasher, wood thrush, rabbits	Flower, fruit	Spring, fall						
			CORYLUS AMERICANA (AMERICAN HAZELNUT)	FACU	Food, cover	Songbirds, small mammals	Fruit	Summer, fall						
			LINDERA BENZOIN (NORTHERN SPICEBUSH)	FAC	Food	Thrushes vireos, catbird, bluebird, butterfly caterpillars	Fruit, leaves	Spring, summer, fall						
			VIBURNUM DENTATUM (SOUTHERN ARROWWOOD)	FAC	Food	Robins, bluebirds, other thrushes, thrashers, catbirds, vireos	Fruit	Fall						
			VIBURNUM PRUNIFOLIUM (BLACK-HAW)	FACU	Food, cover	Catbirds, thrashers, thrushes, cover and nest sites for songbirds	Fruit, plant	Spring, fall						
RIPARIAN FOREST QUANTITY SUBTOTALS										700	70		70	-
STREAM BANK	TREE AND SHRUB LAYER	5	CORNUS AMOMUM (SILKY DOGWOOD)	FACW	Food	Catbird, thrasher, thrushes, woodpeckers	Fruit	Summer, fall	SEE NOTE #3 (AVERAGES 3' O.C. FOR ONE-GALLON)	N/A	57 (BASED ON ONE-GALLON)		57	
			ILEX VERTICILLATA (COMMON WINTERBERRY)	FACW	Food, cover, reproductive areas	Bluebird, catbird, brown thrasher, robin, yellow bellied sapsucker, mockingbird	Flower, seed, leaves	All						
			SAMBUCUS NIGRA ssp. CANADENSIS (ELDERBERRY)	FACW	Food, cover	Brown thrasher, catbird, woodpeckers, thrushers	Seed	Spring, fall, winter						
			VIBURNUM DENTATUM (SOUTHERN ARROWWOOD)	FAC	Food, cover, reproductive areas	Purple finch, goldfinch, robin, junco, bluebird, hermit thrush	Flower, fruit	Spring, summer, fall						
STREAM BANK QUANTITY SUBTOTALS										—	57		57	-
STREAM EDGE	TREE AND SHRUB LAYER	6	ALNUS SERRULATA (BROOKSIDE ALDER)	OBL	Food, reproductive areas	Finches, sparrows, doves, yellow warbler, song sparrow, other songbirds	Seeds, buds, stems	Summer, fall, winter	1' O.C. (SEE NOTES #5, #6)	N/A	170 (TUBELINGS OR LIVESTAKES ONLY -- SEE NOTE #5)		170	
			CORNUS AMOMUM (SILKY DOGWOOD)	FACW	Food, cover, reproductive areas	Catbird, thrasher, thrushes, cedar waxwings, rabbits	Flower, fruit	Summer, fall, winter						
			SALIX NIGRA (BLACK WILLOW)	OBL	Food, cover	Beaver, porcupine, deer, muskrat, ducks, fish	Seeds, plant, leaves	Spring, summer, fall						
			VIBURNUM DENTATUM (SOUTHERN ARROWWOOD)	FAC	Food	Robins, bluebirds, other thrushes, thrashers, catbirds, vireos	Fruit	Fall						
STREAM EDGE QUANTITY SUBTOTALS										—	170		170	-

SEEDING SCHEDULE

SEED PLANTING ZONE	SPECIES GROUP[1,2]	SPECIES[2]	INDICATOR STATUS	WILDLIFE VALUE: FUNCTIONS	WILDLIFE VALUE: PRIMARY SPECIES	WILDLIFE VALUE: PLANT PART	WILDLIFE VALUE: SEASON	SEEDING RATE[7] (LBS/AC)	AREA PER PLANT (AC)	QUANTITY (LBS)	SEEDING QUANTITIES: AREA (SF): / AREA (AC):	PLANTING AND SEEDING	SEED ONLY
												4.50	2.70
												0.10	0.06
RIPARIAN FOREST (VARIABLE) SEED MIX	7	LOLIUM PERENNE spp. MULTIFLORUM (ANNUAL RYEGRASS)	FACU	Erosion control, food	Sparrows, finches, small mammals.	Seeds	Summer, fall	45.00	0.16	7.20		4.50	2.70
		SETARIA ITALICA (ITALIAN BRISTLE GRASS)	UPL	Erosion control, food	Sparrows, finches, small mammals.	Seeds	Fall, winter	45.00	0.16	7.20		4.50	2.70
	8	ELYMUS RIPARIUS (RIVERBANK WILD RYE)	FACW	Food	Song birds, small mammals	Seeds, leaves	All	10.00	0.16	1.60		1.00	0.60
		ELYMUS VIRGINICUS (VIRGINIA WILD RYE)	FACW	Food	Deer, sparrows, small mammals	Seeds, leaves	All	10.00	0.16	1.60		1.00	0.60
		DICHANTHELIUM CLANDESTINUM (DEER TONGUE GRASS)	FAC	Food	Song birds, waterfowl, small mammals	Seeds	Summer, fall	10.00	0.16	1.60		1.00	0.60
		PANICUM DICHOTOMIFLORUM (SMOOTH PANIC GRASS)	FACW	Food	Song birds, waterfowl, small mammals	Seeds	Summer, fall	10.00	0.16	1.60		1.00	0.60
	9	CAREX SCOPARIA (BLUNT BROOM SEDGE)	FACW	Food, cover	Songs birds (esp. sparrows), small mammals	Seeds, plant	Summer, fall	0.20	0.16	0.03		0.02	0.01
		CAREX SQUARROSA (SQUARROSE SEDGE)	FACW	Food	Song birds, waterfowl	Seeds	Summer, fall	0.20	0.16	0.03		0.02	0.01
		CAREX VULPINOIDEA (FOX SEDGE)	OBL	Food	Song birds, waterfowl	Seeds	Summer, fall	0.20	0.16	0.03		0.02	0.01
		JUNCUS TENUIS (PATH RUSH)	FAC	Food	Songbirds, small mammals	Seeds	Summer, fall	0.20	0.16	0.03		0.02	0.01
	10	ANEMONE VIRGINIANA (THIMBLEWEED)	FACW	Food	Pollinators, butterflies, beneficial insects	Flowers	Spring, summer	0.10	0.16	0.02		0.01	0.01
		DICENTRA CUCULLARIA (DUTCHMAN'S BREECHES)	NI	Food	Pollinators, particularly bees	Flowers	Spring	0.10	0.16	0.02		0.01	0.01
		SYMPHYOTRICHUM NOVAE-ANGLIAE (NEW ENGLAND ASTER)	FACW	Food	Butterflies	Flowers	Summer, fall	0.10	0.16	0.02		0.01	0.01
		SYMPHYOTRICHUM PILOSUM (WHITE OATFIELD AMERICAN ASTER)	FAC	Food	Butterflies	Flowers	Summer, fall	0.10	0.16	0.02		0.01	0.01
		EUTROCHIUM FISTULOSUM (JOE PYE WEED)	FACW	Food	Pollinators, butterflies, beneficial insects	Flowers, seeds	Summer, fall	0.10	0.16	0.02		0.01	0.01
		SOLIDAGO SPECIOSA (SHOWY GOLDENROD)	UPL	Food	Butterflies, song birds, small mammals	Flowers	Summer, fall	0.10	0.16	0.02		0.01	0.01
		VERNONIA NOVEBORACENSIS (NEW YORK IRONWEED)	FACW	Food	Butterflies	Flowers	Fall	0.10	0.16	0.02		0.01	0.01
	11	BIDENS FRONDOSA (BEGGAR TICKS)	FACW	Food	Pollinators, butterflies, beneficial insects	Seeds	Summer, fall, winter	0.20	0.16	0.03		0.02	0.01
		GERANIUM MACULATUM (GERANIUM)	FACU	Food	Mourning doves, bobwhite quail, deer, song birds	Seeds, flowers	Spring, summer	0.20	0.16	0.03		0.02	0.01
		HELIANTHUS ANGUSTIFOLIUS (NARROW-LEAF SUNFLOWER)	FACW	Food	Butterflies, song birds	Flowers, seeds	Summer, fall	0.20	0.16	0.03		0.02	0.01
		ONOCLEA SENSIBILIS (SENSITIVE FERN)	FACW	Food	Songbirds, small mammals	Fronds	Spring, summer, fall	0.20	0.16	0.03		0.02	0.01
		PENSTEMON DIGITALIS (PENSTEMON)	FAC	Food	Pollinators, butterflies, beneficial insects	Leaves, seeds	All	0.20	0.16	0.03		0.02	0.01
		VERBENA HASTATA (BLUE VERVAIN)	FACW	Food	Pollinators, butterflies, beneficial insects	Flowers, seeds	Spring, summer, fall	0.20	0.16	0.03		0.02	0.01
		VERBESINA ALTERNIFOLIA (WINGSTEM)	FAC	Food	Butterflies, other insects	Flowers	Summer, fall	0.20	0.16	0.03		0.02	0.01
	12	HAMAMELIS VIRGINIANA (WITCH HAZEL)	FACU	Food, cover, reproductive areas	Ruffed grouse, wild turkey, rabbit, deer, beaver	Flowers, fruit	Spring, fall, winter	0.20	0.16	0.03		0.02	0.01
		ILEX VERTICILLATA (WINTERBERRY)	FACW	Food, cover, reproductive areas	Song birds, upland game birds	Flower, seed, leaves	All	0.20	0.16	0.03		0.02	0.01
		LINDERA BENZOIN (NORTHERN SPICEBUSH)	FAC	Food	Thrushes vireos, catbird, bluebird, butterfly caterpillars	Fruit, leaves	Spring, summer, fall	0.20	0.16	0.03		0.02	0.01
		VIBURNUM DENTATUM (SOUTHERN ARROW WOOD)	FAC	Food	Robins, bluebirds, other thrushes, thrashers, catbirds, vireos	Fruit	Fall	0.20	0.16	0.03		0.02	0.01
		VIBURNUM PRUNIFOLIUM (BLACK-HAW)	FACU	Food, cover	Catbirds, thrashers, thrushes, cover and nest sites for songbirds	Fruit, plant	Spring, fall	0.20	0.16	0.03		0.02	0.01
	13	ACER RUBRUM (RED MAPLE)[8]	FAC	Food	Finches, chickadees, squirrels, robins, goldfinches, other birds	Seeds, buds, flowers, plant	Spring, summer	0.20	0.16	0.03		0.02	0.01
		CARPINUS CAROLINIANA (MUSCLEWOOD)	FAC	Food	Ruffed grouse, bobwhite, pheasant, wild turkey, squirrel, rabbit, deer	Fruit	Summer, fall	0.20	0.16	0.03		0.02	0.01
		CERCIS CANADENSIS (EASTERN REDBUD)	FACU	Food	Honeybees, butterfly caterpillars	Flowers, leaves	Spring, summer	0.20	0.16	0.03		0.02	0.01
		CORNUS FLORIDA (FLOWERING DOGWOOD)	FACU	Food	Wild turkey, cardinal, cedar waxwing, robin, brown thrasher, wood thrush, rabbits	Flower, fruit	Spring, fall	0.20	0.16	0.03		0.02	0.01
		NYSSA SYLVATICA (BLACK GUM)	FAC	Food, cover	Song birds, waterfowl, small mammals	Fruit, plant	All	0.20	0.16	0.03		0.02	0.01
		PLATANUS OCCIDENTALIS (AMERICAN SYCAMORE)	FAC	Food, cover	Raccoons, opossum, wood duck, pleated and other woodpeckers	Fruit, Hollow trunks	All	0.20	0.16	0.03		0.02	0.01
SEEDING TOTALS								135.10		21.60		13.51	8.09

PLANTING AND SEEDING NOTES:

1. It is expected and preferred that all species in each of the Species Groups are planted. The tolerances listed in this note are intended to incorporate flexibility according to species availability. At a minimum, Contractor to provide at least:
   a) 3 of the 4 species in Group 1,
   b) 3 of the 4 species in Group 2,
   c) all of Group 3,
   d) 6 of the 7 species in Group 4,
   e) 3 of the 4 species in Group 5,
   f) 3 of the 4 species in Group 6 (with Salix nigra a required species),
   g) all of Group 7,
   h) 4 of the 6 species in Group 8,
   i) 3 of the 4 species in Group 9,
   j) 5 of 6 species in Group 10,
   k) 5 of 7 in Group 11,
   l) 6 of 8 in Group 12
   m) 4 of 5 in Group 13,
   n) 5 of 8 in Group 14, and
   o) 5 of 6 in Group 15.
2. Substitutions for selected species based upon availability shall be requested in writing to engineer documenting the lack of availability if the flexibility inherent in the above schedule is still not sufficient. Engineer is under no obligation to approve substitutions.
3. The planted trees and shrubs shall be randomly spaced and species mixed throughout the planting areas.
4. Container rates and quantities shown for one gallon size. For purposes of substitution, two tubelings are the equivalent of one 1-gallon container plant in this schedule. Contractor may provide a mix of container and tubeling sizes for each species requirement, provided the ratio of tubelings to containers is not less than 2:1. Exception – Group 6 (Stream Edge) shall be planted in accordance with Note #5.
5. Group 6 (Stream Edge) zone shall be planted with tubelings, or as livestakes (Salix nigra only, and only between February 1 and March 31). No one gallons are required to be used for any of this Group's species.
6. Stream Bank and Stream Edge zones shall be planted such that the combined mix of species is spaced approx 3' O.C. and 1' O.C, respectively. These zones shall not be planted such that each individual species in these zones is planted at these rates, resulting in tighter spacing.
7. All seeding rates are expressed in pounds of pure live seed (PLS).

TURFGRASS AREA SEEDING SCHEDULE

SEED PLANTING ZONE	SPECIES[3]	SEEDING RATE[2] (LBS/AC)	AREA (AC)	QUANTITY (LBS)
TURF GRASS AREA	KENTUCKY 31 OR TURF-TYPE TALL FESCUE	190.00	0.06	11.40
	IMPROVED PERENNIAL RYEGRASS	5.00	0.06	0.30
	KENTUCKY BLUEGRASS	5.00	0.06	0.30
SEEDING TOTALS		**200.00**		**12.00**

SEEDING NOTES:

1. **Substitutions for selected species based upon availability shall be requested in writing to engineer documenting the lack of availability if the flexibility inherent in the above schedule is still not sufficient. Engineer is under no obligation to approve substitutions.**
2. **All seeding rates are expressed in pounds of pure live seed (PLS).**
3. **Grassland Area to be seeded according to the Minimum Care Lawn specifications included in Table 3.32-D of the Virginia Erosion and Sediment Control Handbook, Third Edition.**

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Vegetation Schedule

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COMMONWEALTH OF VIRGINIA
FRANK R. GRAZIANO
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PROFESSIONAL ENGINEER

No.	Date	Description	Rev. By:	App. By:

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SCALE: N/A

DATE: FEB 2016

Horizontal Datum: VCS NAD 83
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Boundary and Topo Source: WSSI and Lynchburg Digital Data

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NAS	NAS	FRG

Sheet # 7 of 7

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