

# CITY OF LYNCHBURG DEPARTMENT OF WATER RESOURCES

525 TAYLOR STREET  
LYNCHBURG, VA 24501

## BURTON CREEK STREAM STABILIZATION PROJECT (BCSS)

VICINITY MAP



DATA SOURCE: ESRI SCALE: 1" = 500'

FEBRUARY 2014 NATURAL COLOR  
AERIAL IMAGE



DATA SOURCE: PICTOMETRY SCALE: 1" = 500'

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APPROVALS

UTILITY ENGINEER	<i>[Signature]</i>	DATE	1/24/15
ESC/SWM	<i>[Signature]</i>	DATE	1/24/15



Burton Creek Tributary  
Stream Stabilization

CITY PLAN IDENTIFIER  
BCSS

SHEET 1 OF 8

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PLAN REVIEWER





**EROSION AND SEDIMENT CONTROL NARRATIVE**

**A. PROJECT DESCRIPTION**

THIS PROJECT INVOLVES THE STABILIZATION OF APPROXIMATELY 145 LF OF BURTON CREEK IN LYNCHBURG VIRGINIA. THE SUBJECT AREA LIES NORTH OF WARDS FERRY ROAD AND SOUTH OF THE LYNCHBURG EXPRESSWAY (US ROUTE 501), JUST EAST OF THE TERMINUS OF WATER GATE DRIVE. THE PROPOSED STABILIZATION DESIGN SEEKS TO PROTECT AN EXISTING SANITARY SEWER WHICH HAS BEEN EXPOSED BY EXCESSIVE EROSION ALONG THE EAST BANK OF THE STREAM. NATURAL CHANNEL STREAM DESIGN PRINCIPLES HAVE BEEN UTILIZED TO THE MAXIMUM EXTENT PRACTICABLE IN ORDER TO DEVELOP THE MOST ENVIRONMENTALLY SENSITIVE LONG-TERM STABILIZATION APPROACH.

**B. EXISTING SITE CONDITIONS**

THE EXISTING BURTON CREEK STREAM CHANNEL FLOWS NORTH FROM WARDS FERRY ROAD THROUGH A NEIGHBORHOOD OF LARGE-LOT SINGLE FAMILY HOMES, ROUGHLY PARALLELING A PRIVATE DRIVE. THE CHANNEL IS IN MODERATE TO POOR CONDITION WITH MOST OF THE CHANNEL CHARACTERIZED BY RAW VERTICAL BANKS RANGING FROM 2 TO 6 FEET IN HEIGHT. APPROXIMATELY 200 LINEAR FEET UPSTREAM (SOUTH) OF THE LYNCHBURG EXPRESSWAY CULVERTS THE CHANNEL CARVES A SHARP MEANDER. IT IS IN THIS MEANDER, ALONG THE EAST BANK (RIGHT WHEN FACING DOWNSTREAM) THAT SEVERE CHANNEL EROSION HAS RESULTED IN PARTIAL EXPOSURE OF THE EXISTING SANITARY SEWER.

**C. ADJACENT AREAS**

THE SUBJECT SITE IS BOUNDED BY SINGLE FAMILY HOMES. ACCESS IS PROPOSED TO OCCUR THROUGH THE MOWED AREA ON THE PROPERTY LYING ALONG THE EAST SIDE OF THE STREAM. THE PROPOSED CHANNEL CROSS SECTION IS EQUAL TO THAT OF THE EXISTING CHANNEL AND WILL BE SHIFTED WEST, AWAY FROM THE NEAREST PROPERTY OWNER.

**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 USING NATURAL CHANNEL DESIGN PRINCIPLES, THUS IMPROVING THE WATER QUALITY OF THE DOWNSTREAM RECEIVING WATERS WHILE ALSO PROTECTING THE EXISTING 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**

- 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.
- 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.
- 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.
- PRIOR TO ANY OTHER CONSTRUCTION ACTIVITIES, PERIMETER EROSION CONTROL MEASURES ARE TO BE INSTALLED (I.E. TREE PROTECTION FENCE AND STONE CONSTRUCTION ENTRANCE) AROUND THE LIMITS OF CLEARING.
- WORK WITHIN THE STREAM AREA SHALL NOT COMMENCE UNTIL AFTER PERIMETER EROSION CONTROL MEASURES ARE APPROVED BY THE CITY INSPECTOR.
- FOR ANY CLEARING OR GRADING ON THE SITE, THE LIMITS OF CLEARING AND GRADING (LOC) SHALL BE MARKED WITH FLAGGING.
- 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.
- 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.
- 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))
- 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.
- 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.
- STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES, AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
- ONLY DISTURB AS MUCH AREA AS CAN BE STABILIZED IN ONE DAY.
- STABILIZE ALL DISTURBED AREAS, INCLUDING ACCESS AREAS AT THE END OF EACH DAY.
- ALL STREAM WORK 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.
- A "PUMP AROUND" SYSTEM SHALL BE USED TO DIVERT THE STREAM DURING CONSTRUCTION. SANDBAG DIKES SHALL BE INSTALLED WITHIN THE STREAM AROUND THE AREA TO BE DISTURBED THAT DAY (LARGER REACHES ARE ALLOWED IF APPROVED BY THE SITE ENGINEER); ONE AT THE UPSTREAM LIMIT OF DISTURBANCE AND ONE AT THE DOWNSTREAM LIMIT OF DISTURBANCE. IF BASEFLOW IS PRESENT, AN ADEQUATELY SIZED PUMP SYSTEM SHALL BE USED TO PUMP BASEFLOW AROUND THE AREA OF CONSTRUCTION AND BACK INTO THE STREAM AT A POINT DOWNSTREAM OF THE SECOND SANDBAG DIKE. WORK SHALL NOT PROCEED DURING RAIN EVENTS. IF SEDIMENT LAIDEN WATER ACCUMULATES AT THE DOWNSTREAM SANDBAG DIKE, SUCH WATER SHALL BE PUMPED INTO A FILTER BAG PRIOR TO BEING RELEASED BACK INTO THE STREAM.
- ACCESS ACROSS AND IN THE STREAM SHALL BE ALLOWED WITHIN THE STREAM REACH PROTECTED BY THE "PUMP AROUND" SYSTEM AS DESCRIBED ABOVE.
- 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.
- 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**

- PLANTING OF ALL SPECIFIED CONTAINERIZED STREAMSIDE AND RIPARIAN VEGETATION SHALL BE LIMITED TO THE PERIOD BETWEEN NOVEMBER 30 AND MARCH 30, UNLESS APPROVED BY WSSI WITH SPECIAL WARRANTY CONDITIONS. NO PLANTING SHALL OCCUR WHEN THE SOIL IS FROZEN.
- 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.
- FOR ALL PLANTING TYPES, QUANTITIES, SPECIFICATIONS AND DETAILS PLEASE REFER TO THE PLANTING PLAN.

**I. GENERAL LAND CONSERVATION NOTES**

- 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.
- 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 TONSIACRE (4483 KG/HA) AND OVERSEED BY APRIL 15.
- 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 PUMP AROUND DIVERSION. IN ADDITION, THIS DIVERSION WILL NOT BE REMOVED UNTIL THE STREAM CHANNEL IS STABILIZED AND THE ADJACENT AREA IS COVERED WITH STRAW.

**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 "PUMP AROUND" 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 ACROSS AND IN THE STREAM SHALL BE ALLOWED WITHIN THE STREAM REACH PROTECTED BY THE "PUMP AROUND" SYSTEM DESCRIBED ABOVE"

**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):** A STONE CONSTRUCTION ENTRANCE WITH A WASH RACK AND TEMPORARY SEDIMENT TRAP SHALL BE PLACED AT THE ENTRANCE TO THE PROJECT SITE. DETAILS ARE PROVIDED ON THIS SHEET AND THE LOCATION OF THE CONSTRUCTION ENTRANCE WITH APPURTENCES ARE SHOWN ON THE ACCESS PLAN.

**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 RESTORATION DESIGN EMPLOYS NATURAL CHANNEL DESIGN TECHNIQUES. THEREFORE PURSUANT TO §10.1-561.A OF THE VIRGINIA LEGISLATIVE CODE; " *STREAM RESTORATION AND RELOCATION PROJECTS THAT INCORPORATE NATURAL CHANNEL DESIGN CONCEPTS ARE NOT MAN-MADE CHANNELS AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS AS DEFINED IN ANY REGULATIONS PROMULGATED PURSUANT TO THIS SECTION, § 10.1-562, OR 10.1-570.*"



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

Horizontal Datum: N/A

Vertical Datum: N/A

Boundary and Topo Source: N/A

Design	Draft	Approved
NAS	NAS	FRG

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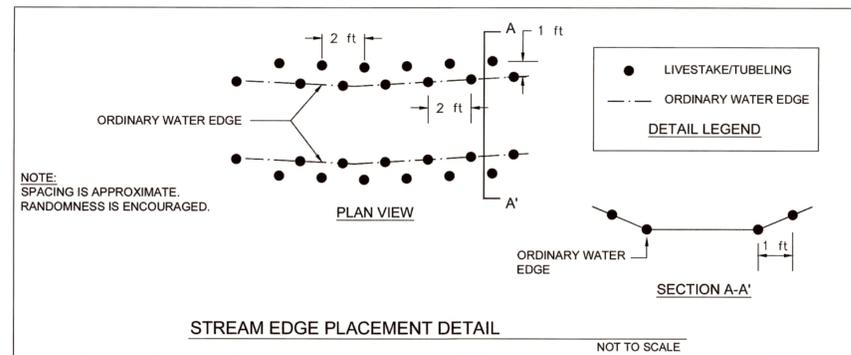
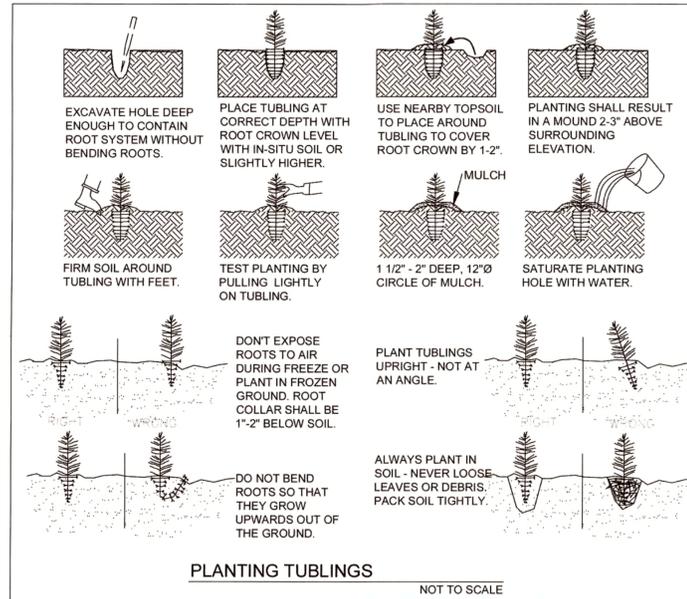
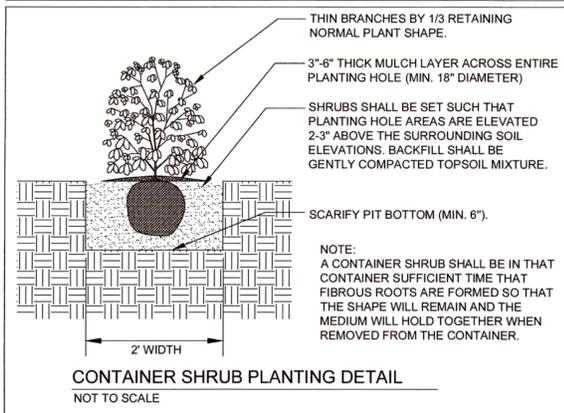
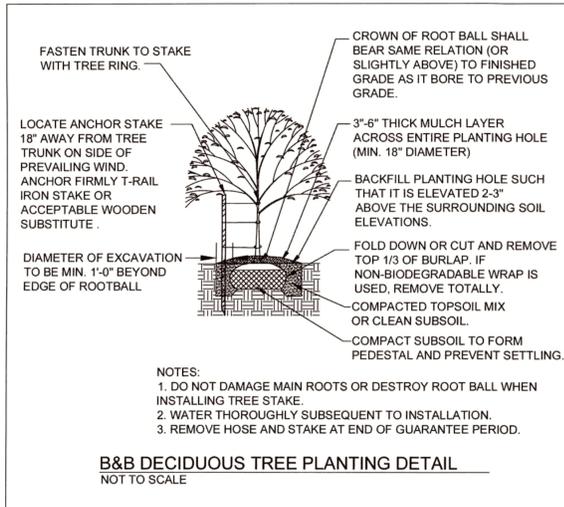
Burton Creek Tributary Stream Stabilization  
City Of Lynchburg, Virginia

Erosion and Sediment Control Narrative and Minimum Standards Narrative  
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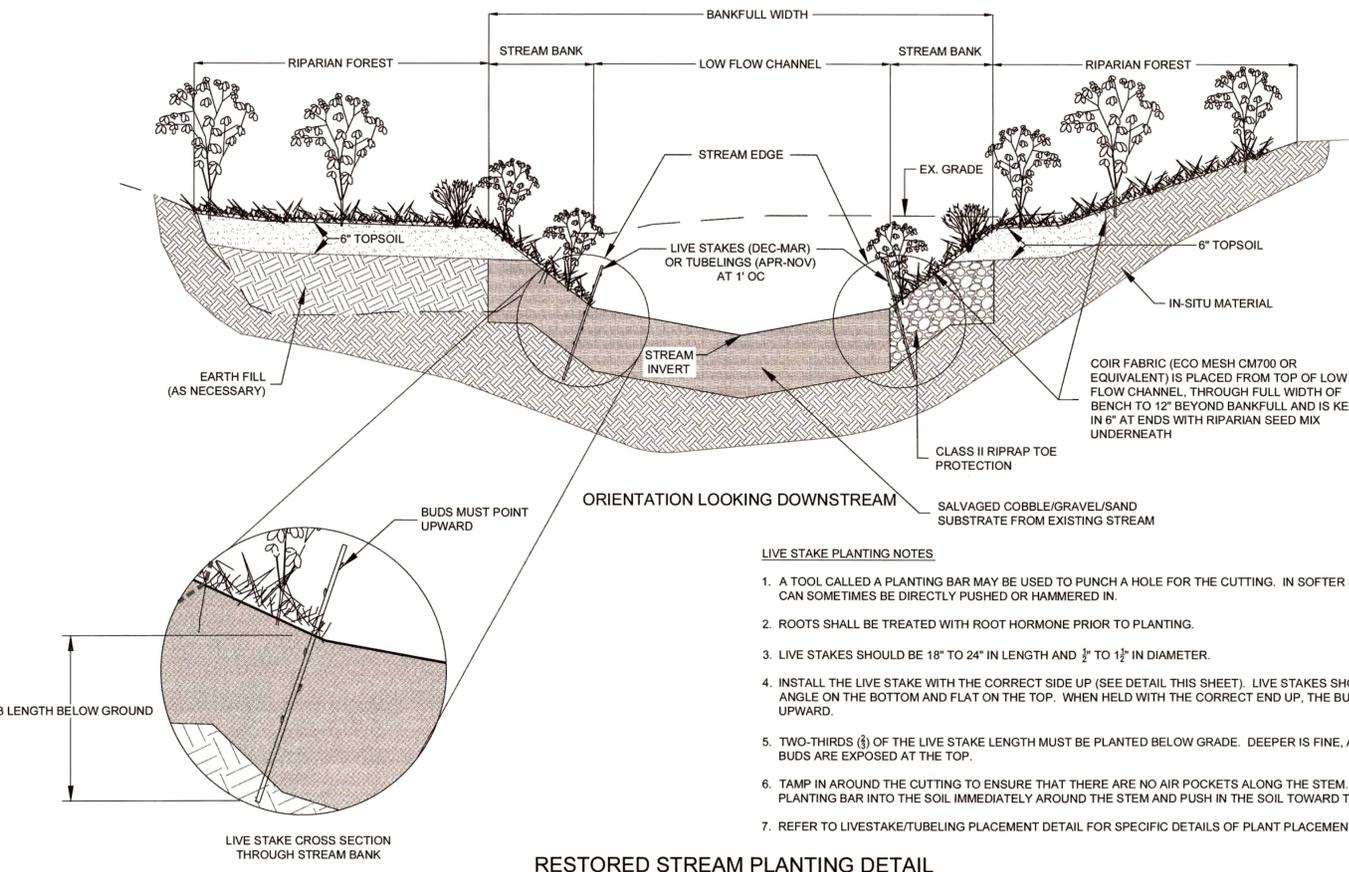






**THIS PLAN IS FOR PLANTING PURPOSES ONLY.**

**PLEASE REFER TO PLANTING PLAN SHEETS FOR LEGEND**



- LIVE STAKE PLANTING NOTES**
- 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.
  - ROOTS SHALL BE TREATED WITH ROOT HORMONE PRIOR TO PLANTING.
  - LIVE STAKES SHOULD BE 18" TO 24" IN LENGTH AND 3/8" TO 1 1/2" IN DIAMETER.
  - 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.
  - TWO-THIRDS (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.
  - 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.
  - REFER TO LIVESTAKE/TUBLING PLACEMENT DETAIL FOR SPECIFIC DETAILS OF PLANT PLACEMENT ALONG STREAM BANK.

- PLANTING SPECIFICATIONS**
- PLAN DETAILS ARE INCORPORATED INTO THIS SPECIFICATION BY REFERENCE.
  - 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.
  - 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.
  - ALL PLANTS SHALL BE SET STRAIGHT, OR PLUMB.
  - 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.
  - 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.
  - 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.
  - 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.
  - 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.
  - 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).
  - 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.
  - 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.
  - 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.
  - 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.
  - REFER TO APPLICABLE SKETCHES WITHIN THIS PLAN SET FOR ADDITIONAL GUIDANCE ON PLANTING REQUIREMENTS.
  - INVASIVE AND NOXIOUS WEEDS SHALL BE REMOVED BY HAND WITH LOCALIZED APPLICATIONS OF ROUND-UP WHERE NECESSARY.
  - ALL BARE ROOT SEEDLINGS SHALL BE TREATED WITH ROOT DIP ABSORBENT POLYMERS AND MYCORRHIZAL ROOT DIP INOCULATES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. SAID ROOT DIP SHALL BE MYCORTREE™ ROOT DIP OR APPROVED EQUAL SEEDING SPECIFICATIONS

- 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.
- 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.
- 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.
- 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.
- MULCH SHALL BE STRAW CAN BE SUBSTITUTED IF APPLIED AT A RATE SPECIFIED BY THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 3RD EDITION, 1992.
- CARE SHOULD BE EXERCISED TO INSURE UNIFORM SEED COVERAGE IS OBTAINED. SEED SHALL BE APPLIED AT THE RATE SPECIFIED ON THE PLANTING SCHEDULE.
- FOLLOWING SEEDING, MECHANICALLY SOW SEED TO A DEPTH OF 1/8 OF AN INCH BY THE USE OF A CULTIFACTOR, YORK RAKE, OR HAND RAKE.

- PLANTING AND SEEDING SURVIVAL WARRANTY**
- 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.
  - 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**
- 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.
  - ALL PLANT MATERIALS SHALL BE STORED AND DELIVERED IN SUCH A FASHION AND FOR TIME INTERVALS CONSISTENT WITH SOUND SILVICULTURAL PRACTICES.
  - 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.
  - 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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**Burton Creek Tributary Stream Stabilization**  
City Of Lynchburg, Virginia

**Planting Notes and Details**

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