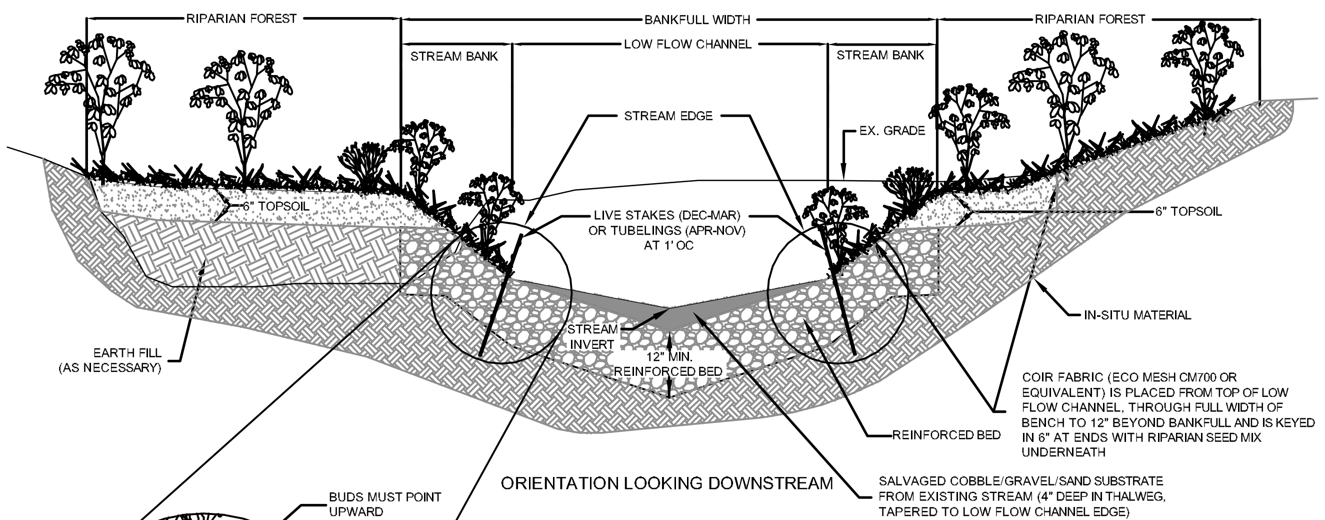
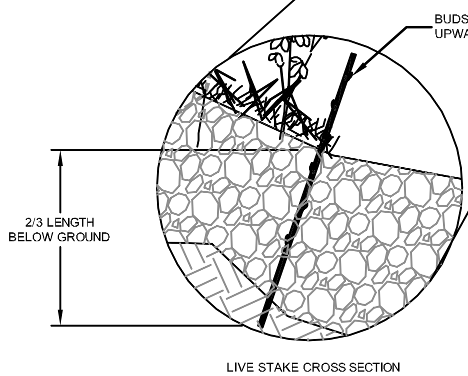




LIVE STAKE CROSS SECTION
THROUGH STREAM BANK

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 $\frac{1}{2}$" 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

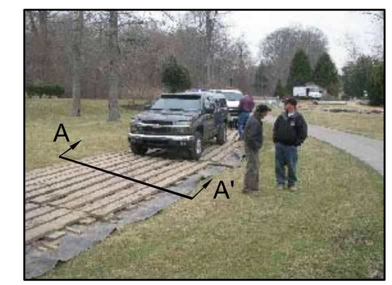
k:\Cadd Files\Stream Restoration\Details\-D-LiveStake.dwg

SNAKEDEN REACH 13 - STEP POOLS

GLADE REACH 1 - MODIFIED CROSS VANE

ACCESS PATH DECK MAT

NOT TO SCALE

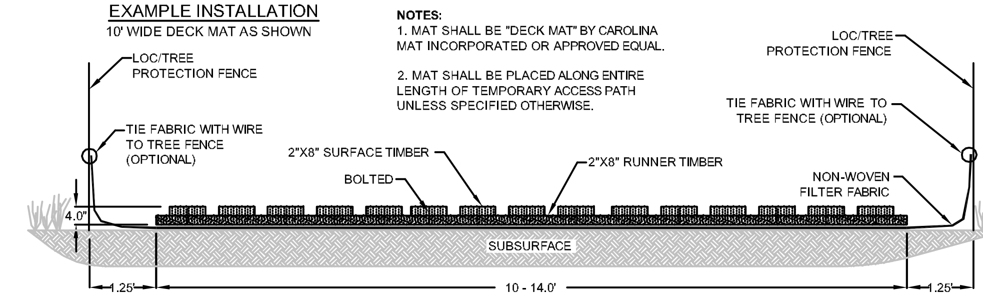


EXAMPLE INSTALLATION

10' WIDE DECK MAT AS SHOWN

NOTES:
1. MAT SHALL BE "DECK MAT" BY CAROLINA MAT INCORPORATED OR APPROVED EQUAL.

2. MAT SHALL BE PLACED ALONG ENTIRE LENGTH OF TEMPORARY ACCESS PATH UNLESS SPECIFIED OTHERWISE.



SECTION A-A'

NOT TO SCALE

#N/A

PLANTING SCHEDULE

CONTAINER PLANTING ZONE		SPECIES GROUP[1,2]	SPECIES[2]	INDICATOR STATUS	PLANT SPACING[3]	CONTAINER SIZE, RATE, AND QUANTITY[4] PLANTS PER ACRE
RIPARIAN FOREST	TREE LAYER	1	QUERCUS ALBA (WHITE OAK)	FACU-	SEE NOTE #3	300 ONE-GALLON TUBELINGS -- or -- 600 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)
			QUERCUS BICOLOR (SWAMP WHITE OAK)	FACW+		
			QUERCUS PALUSTRIS (PIN OAK)	FACW		
			QUERCUS PHELLOS (WILLOW OAK)	FAC+		
			QUERCUS RUBRA (NORTHERN RED OAK)	FACU-		
		2	ACER NEGUNDO (BOX ELDER)	FAC+	SEE NOTE #3	150 ONE-GALLON -- or -- 300 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)
			ACER RUBRUM (RED MAPLE)	FAC		
			BETULA NIGRA (RIVER BIRCH)	FACW		
			LIQUIDAMBAR STYRACIFULA (SWEET GUM)	FAC		
			NYSSA SYLVATICA (BLACK GUM)	FACW+		
			PLATANUS OCCIDENTALIS (AMERICAN SYCAMORE)	FACW-		
		3	ILEX OPACA (AMERICAN HOLLY)	FACU+	SEE NOTE #3	100 ONE-GALLON -- or -- 200 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)
	SHRUB LAYER	4	AMELANCHIER CANADENSIS (CANADIAN SERVICEBERRY)	FAC	SEE NOTE #3	150 ONE-GALLON -- or -- 300 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)
			CERCIS CANADENSIS (EASTERN REDBUD)	FACU-		
			CORNUS FLORIDA (FLOWERING DOGWOOD)	FACU-		
			CORYLUS AMERICANA (AMERICAN HAZELNUT)	FACU-		
			LINDERA BENZOIN (NORTHERN SPICEBUSH)	FACW-		
			VIBURNUM DENTATUM (SOUTHERN ARROWWOOD)	FAC		
			VIBURNUM PRUNIFOLIUM (BLACK-HAW)	FACU		
RIPARIAN FOREST QUANTITY SUBTOTALS						700
STREAM BANK	TREE AND SHRUB LAYER	5	ILEX VERTICILLATA (COMMON WINTERBERRY)	FACW+	SEE NOTE #3 (AVERAGES 3' O.C. FOR ONE-GALLON)	APPROX. 4865 ONE-GALLON -- or -- 9730 TUBELING
			LINDERA BENZOIN (NORTHERN SPICEBUSH)	FACW-		
			SAMBUCUS CANADENSIS (ELDERBERRY)	FACW-		
			VIBURNUM DENTATUM (SOUTHERN ARROWWOOD)	FAC		
			VIBURNUM PRUNIFOLIUM (BLACK-HAW)	FACU		
STREAM BANK QUANTITY SUBTOTALS						---
STREAM EDGE	TREE AND SHRUB LAYER	6	ALNUS SERRULATA (BROOKSIDE ALDER)	OBL	1' O.C. (SEE NOTES #5, #6)	N/A
			CORNUS AMOMUM (SILKY DOGWOOD)	FACW		
			SALIX NIGRA (BLACK WILLOW)	FACW+		
			VIBURNUM DENTATUM (SOUTHERN ARROWWOOD)	FAC		
STREAM EDGE QUANTITY SUBTOTALS						---

SEEDING SCHEDULE

SEED PLANTING ZONE	SPECIES GROUP[1,2]	SPECIES[2]	INDICATOR STATUS	SEEDING RATE[7] (LBS/AC)
RIPARIAN BUFFER SEED MIX	7	LOLIUM MULTIFLORUM (ANNUAL RYEGRASS)	NI	45.00
		SETARIA ITALICA (FOXTAIL MILLET) (OR ECHINOCHLOA CRUSGALII VAR. FRUMENTACEA)	UPL	45.00
	8	CAREX SCOPARIA (BLUNT BROOM SEDGE)	FACW	0.20
		CAREX SQUARROSA (SQUARROSE SEDGE)	NI	0.20
		CAREX VULPINOIDEA (FOX SEDGE)	OBL	0.20
		CYPERUS ESCULENTUS (CHUFA)	FACW	0.20
		JUNCUS EFFUSUS (SOFT RUSH)	FACW+	0.20
		JUNCUS TENUIS (PATH RUSH)	FAC-	0.20
	9	ELYMUS RIPARIUS (RIVERBANK WILD RYE)	FACW	10.00
		ELYMUS VIRGINICUS (VIRGINIA WILD RYE)	FACW-	10.00
		PANICUM CLANDESTINUM (DEER TONGUE GRASS)	FAC+	10.00
		PANICUM DICHOTOMIFLORUM (SMOOTH PANIC GRASS)	FACW-	10.00
	10	ANEMONE VIRGINIANA (THIMBLEWEED)	NI	0.10
		ASTER NOVAE-ANGLIAE (NEW ENGLAND ASTER)	FACW-	0.10
		ASTER PILOSUS (HEATH ASTER)	UPL	0.10
		ASTER PRENANTHOIDES (ZIG ZAG ASTER)	FAC	0.10
		LILIUM SUPERBUM (TURKSCAP LILY)	FACW+	0.10
		SOLIDAGO JUNCEA (EARLY GOLDENROD)	UPL	0.10
	11	EUPATORIUM FISTULOSUS (JOE PYE WEED)	FACW	0.10
		EUPATORIUM PERFOLIATUM (BONESET)	FACW+	0.10
		EUTHAMIA GRAMINIFOLIA (GRASS LEAVED GOLDENROD)	FAC	0.10
		SOLIDAGO CANADENSIS (CANADIAN GOLDENROD)	FACU	0.10
		SOLIDAGO SPECIOSA (SHOWY GOLDENROD)	UPL	0.10
		VERNONIA NOVEBORACENSIS (NEW YORK IRONWEED)	FACW+	0.10
		ZIZIA AUREA (GOLDEN ALEXANDERS)	FAC	0.10
	12	ASCLEPIAS SYRIACA (COMMON MILKWEED)	UPL	0.20
		BIDENS FRONDOSA (BEGGAR TICKS)	FACW	0.20
		HELENIUM AUTUMNALE (COMMON SNEEZEWEED)	FACW+	0.20
		HELIANTHUS ANGUSTIFOLIUS (NARROW-LEAF SUNFLOWER)	FACW	0.20
		ONOCLEA SENSIBILIS (SENSITIVE FERN)	FACW	0.20
		PENSTEMON DIGITALIS (PENSTEMON)	FAC	0.20
		VERBENA HASTATA (BLUE VERVAIN)	FACW+	0.20
		VERBESINA ALTERNIFOLIA (WINGSTEM)	FAC	0.20
	13	COREOPSIS LANCEOLATA (LANCE LEAVED COREOPSIS)	FACU	0.20
		HELIOPSIS HELIANTHOIDES (OXEYE SUNFLOWER)	UPL	0.20
		POLYGONUM PENSYLVANICUM (PA SMARTWEED)	FACW	0.20
		RUDBECKIA HIRTA (BLACK EYED SUSAN)	FACU-	0.20
		SENNA HEBECARPA (WILD SENNA)	FAC	0.20
	14	AMELANCHIER CANADENSIS (CANADIAN SERVICEBERRY)	FAC	0.20
		ARONIA MELANOCARPA (BLACK CHOKEBERRY)	UPL	0.20
		HAMAMELIS VIRGINIANA (WITCH HAZEL)	FAC-	0.20
		ILEX VERTICILLATA (WINTERBERRY)	FACW+	0.20
		LINDERA BENZOIN (NORTHERN SPICEBUSH)	FACW-	0.20
		PHYSOCARPUS OPULIFOLIUS (COMMON NINEBARK)	FACW-	0.20
		VIBURNUM DENTATUM (SOUTHERN ARROW WOOD)	FAC	0.20
		VIBURNUM PRUNIFOLIUM (BLACK-HAW)	FACU	0.20
	15	ACER RUBRUM (RED MAPLE)	FAC	0.20
		CARPINUS CAROLINIANA (MUSCLEWOOD)	FAC	0.20
		CERCIS CANADENSIS (EASTERN REDBUD)	FACU-	0.20
		CORNUS FLORIDA (FLOWERING DOGWOOD)	FACU-	0.20
		NYSSA SYLVATICA (BLACK GUM)	FAC	0.20
		PLATANUS OCCIDENTALIS (AMERICAN SYCAMORE)	FAC	0.20
SEEDING TOTALS				137.90

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 5 SPECIES IN GROUP 1,
   - B) 4 OF THE 6 SPECIES IN GROUP 2,
   - C) ALL OF GROUP 3,
   - D) 5 OF THE 7 SPECIES IN GROUP 4,
   - E) 3 OF THE 5 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 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).

Northern Virginia Stream Restoration Bank
Hickory Cluster

Fairfax County, Virginia

Preliminary Plan

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REVISIONS

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

H. D.: VCS NAD 83 V. D.: NGVD 29

Boundary and Topo Source: WSSI and Fairfax Digital Data

Design	Draft	Approved
KLP	KLP	FRG

Sheet # 3 of 3

DATE: MAY 18, 2010 | SCALE: 1" = 30' | C.I. = 0.5'

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PRELIMINARY PLAN 04.dwg