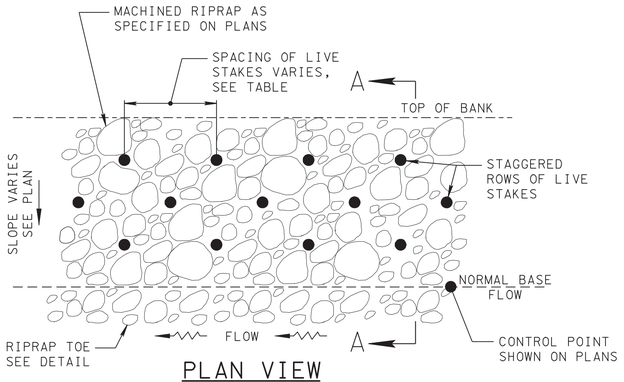
VEGETATED RIPRAP



PLAN VIEW
VEGETATED RIPRAP

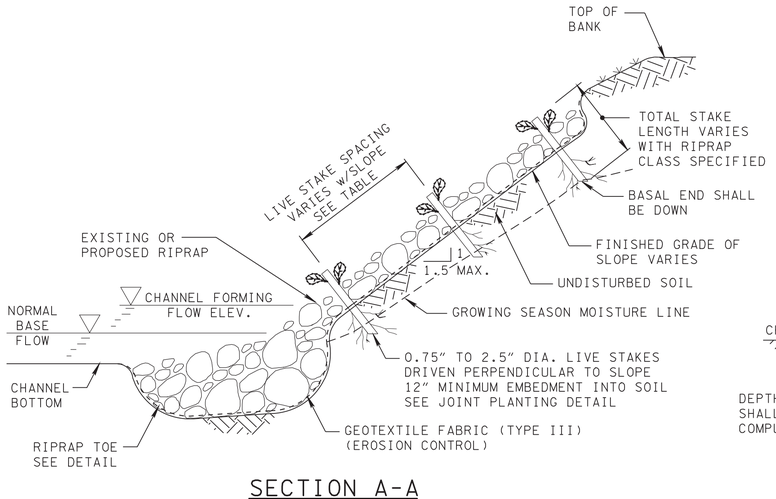
● DENOTES LIVE STAKE

LIVE STAKE SPACING TABLE

SLOPE STEEPNESS (1) H:V	SPACING IN FEET (2)	
	SOILS	
	COHESIVE	NON-COHESIVE
1.5:1	1.5 TO 2.5	1 TO 2
2:1	1.5 TO 3	1.5 TO 2
3:1	3 TO 5	2 TO 4
FLATTER	AS DIRECTED BY ENGINEER	

NOTE (1): ASSUMES SLOPE IS STABLE

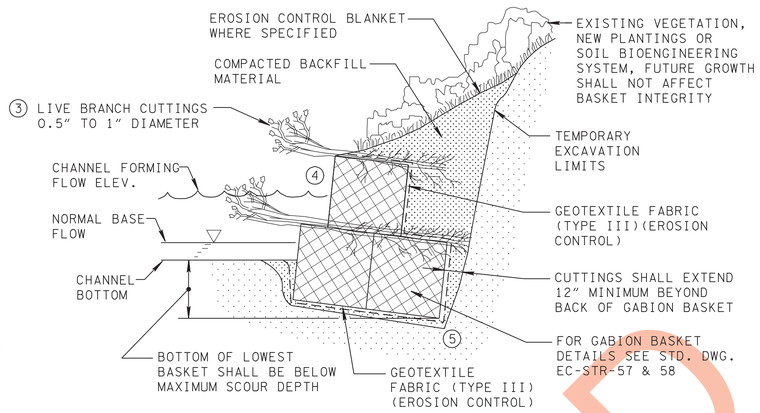
NOTE (2): ON-CENTER, EACH WAY



SECTION A-A

STREAM MITIGATION PLAN LEGEND: VEGETATED GABIONS

VEGETATED GABIONS



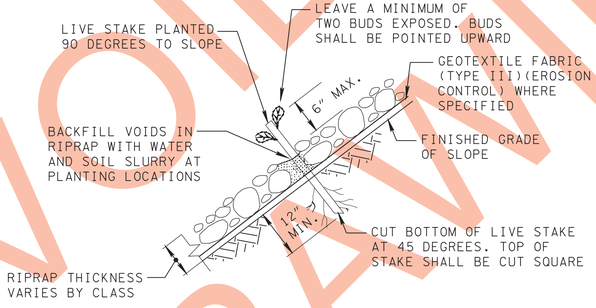
NOTE (3): BRANCHES MAY BE INSTALLED WITHIN BASKETS DURING THE FILLING OF THE GABION. ROOT SYSTEM SHALL EXTEND TO SOIL BEHIND GABION BASKET.

NOTE (4): STACKED GABIONS SHALL BE TILTED TOWARD THE SLOPE A MINIMUM OF 6 DEGREES

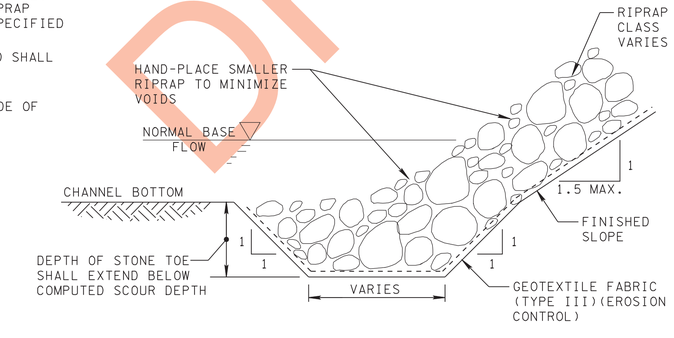
NOTE (5): GABIONS SHALL BE CONSTRUCTED ON STABLE, NON-ERODING FOUNDATION

SECTION VIEW
VEGETATED GABION

CONTROL POINT (BEGIN AND END) FOR GABIONS SHALL BE PROVIDED ON THE STREAM MITIGATION PLANS



LIVE STAKE RIPRAP JOINT PLANTING DETAIL



RIPRAP TOE DETAIL

STREAM MITIGATION PLAN LEGEND: VEGETATED RIPRAP

VEGETATED RIPRAP GENERAL NOTES

(A) VEGETATED RIPRAP IS A BANK STABILIZATION PRACTICE THAT PROTECTS A STREAMBANK FROM EROSION, REDUCES LOCAL FLOW VELOCITIES, TRAPS SEDIMENT DURING HIGH FLOWS, AND ENHANCES THE ESTABLISHMENT AND GROWTH OF NATIVE VEGETATION USING LIVE BRANCHES AND CUTTINGS ANCHORED TO THE SLOPES.

(B) VEGETATED RIPRAP FOR STREAM MITIGATION SHOULD BE LIMITED TO LOCATIONS WHERE HARD ARMORING IS REQUIRED SUCH AS THE OUTSIDE OF A STREAM BEND.

(C) RIPRAP SHALL BE KEYED INTO THE STREAM BED TO AN ELEVATION BELOW THE COMPUTED SCOUR DEPTH TO AVOID UNDERMINING AT THE TOE OF SLOPE.

(D) LIVE STAKES SHALL BE IN CONTACT WITH THE SOIL BELOW THE RIPRAP AND ANY GEOTEXTILE PRESENT BELOW THE RIPRAP A MINIMUM OF 12 INCHES. PLANTING OF CUTTINGS DURING THE DORMANT SEASON OF THE PLANT SPECIES IS PREFERRED.

(E) LIVE STAKES SHALL BE 0.75 INCHES TO 2.5 INCHES IN DIAMETER AND GENERALLY 2.5 TO 4 FEET LONG WITH SIDE BRANCHES CLEANLY REMOVED.

(F) THE BOTTOM (BASAL) END OF LIVE STAKES SHALL BE CLEANLY CUT AT A 45 DEGREE ANGLE. THE TOP OF ALL LIVE STAKES SHALL BE CUT SQUARE (FLAT). ALL PLANTINGS SHALL BE INSTALLED PERPENDICULAR TO THE SLOPE.

(G) LIVE STAKES FOR VEGETATED RIPRAP MAY BE INSTALLED THE DAY THEY ARE HARVESTED IF WATERED. SOAKING FOR A MINIMUM 24 HOURS IS REQUIRED WHEN PLANTING IS DELAYED.

(H) LIVE STAKES FOR VEGETATED RIPRAP MAY BE INSTALLED LEAVING A FEW INCHES ABOVE THE TOP OF THE RIPRAP OR CUT FLUSH WITH THE TOP OF THE RIPRAP. AT LEAST TWO BUDS OR BUD SCARS SHALL BE PRESENT ON THE STAKE WHEN INSTALLED.

(I) VOIDS IN RIPRAP WHERE LIVE STAKES ARE INSTALLED SHALL BE BACKFILLED WITH A WATER AND SOIL SLURRY MIXTURE TO A MINIMUM DEPTH OF HALF THE RIPRAP LAYER THICKNESS.

(J) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(K) VEGETATED RIPRAP SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:

209-03.43	STREAM MITIGATION - VEGETATED RIPRAP (DESCRIPTION) PER CUBIC YARD
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD

PAYMENT FOR VEGETATED RIPRAP SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR THE CONSTRUCTION OF THE RIPRAP AND VEGETATION (LIVE STAKES).

(L) OTHER VARIATIONS MAY BE USED SUCH AS RIPRAP WITH BRUSH LAYERING AND POLE PLANTING, BENT POLE (HORIZONTAL) METHOD, OR WILLOW BUNDLE METHOD.

VEGETATED GABIONS GENERAL NOTES

(A) VEGETATED GABIONS ARE RECTANGULAR WIRE BASKETS OR MATTRESSES FILLED WITH ROCK AND USED AS A BANK STABILIZATION PRACTICE TO PROTECT A STEEP STREAMBANK FROM EROSION IN LOCATIONS WHERE THE BANK IS TOO STEEP FOR RIPRAP OR OTHER MEASURES AND STRUCTURAL SUPPORT IS REQUIRED. VEGETATED GABIONS ENHANCE THE ESTABLISHMENT AND GROWTH OF NATIVE VEGETATION USING LIVE BRANCHES AND CUTTINGS COMBINED WITH THE WIRE BASKETS.

(B) VEGETATED GABIONS FOR STREAM MITIGATIONS SHOULD BE LIMITED TO LOCATIONS WHERE HARD ARMORING IS REQUIRED SUCH AS THE OUTSIDE OF A STREAM BEND AND WHERE LIMITED SPACE IS AVAILABLE AND STRUCTURAL SUPPORT IS REQUIRED.

(C) GABIONS SHALL BE KEYED INTO THE STREAM BED SO THAT THE BOTTOM ELEVATION OF THE LOWEST BASKET IS BELOW THE EXPECTED MAXIMUM COMPUTED SCOUR DEPTH OF THE STREAM.

(D) LIVE BRANCH CUTTINGS SHALL BE 0.5 INCHES TO 1.5 INCHES MAX. DIAMETER AND A MINIMUM OF 4 FEET LONG WITH SIDE BRANCHES CLEANLY REMOVED. LENGTH OF CUTTING WILL VARY BASED ON GABION WALL LAYOUT.

(E) LIVE BRANCH CUTTINGS MAY BE INSTALLED BETWEEN HORIZONTAL LAYERS OF GABIONS OR ANYWHERE WITHIN THE BASKET DURING THE FILLING OF THE BASKET WITH ROCK. WHERE INSTALLED WITHIN A BASKET, THE STONES SHALL BE HAND-PLACED TO AVOID DAMAGE TO THE LIVE BRANCH CUTTINGS.

(F) LIVE BRANCH CUTTINGS SHALL BE PLACED PERPENDICULAR TO THE SLOPE WITH GROWING TIPS SLIGHTLY PROTRUDING FROM THE FRONT OF THE GABION WALL.

(G) LIVE BRANCH CUTTINGS SHALL BE IN CONTACT WITH THE SOIL BEHIND THE GABION BASKETS OR MATTRESSES AND THROUGH THE GEOTEXTILE PRESENT BEHIND THE GABION A MINIMUM OF 12 INCHES (PREFERABLY TO THE UNDISTURBED BANK SOIL).

(H) GABION CONSTRUCTION AND ASSEMBLY SHALL BE AS PROVIDED ON STANDARD DRAWINGS EC-STR-57 AND EC-STR-58.

(I) WHERE GABION MATTRESSES ARE SPECIFIED, PLANTING OF LIVE BRANCHES OR STAKES SHALL BE SIMILAR TO VEGETATED RIPRAP.

(J) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(K) VEGETATED GABIONS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:

209-03.48	STREAM MITIGATION - VEGETATED GABIONS (DESCRIPTION) PER CUBIC YARD
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD

PAYMENT FOR VEGETATED GABIONS SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR THE CONSTRUCTION OF THE GABIONS AND VEGETATION.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

VEGETATED RIPRAP AND GABIONS

NOT TO SCALE | 8-01-11 | D-NSD-11