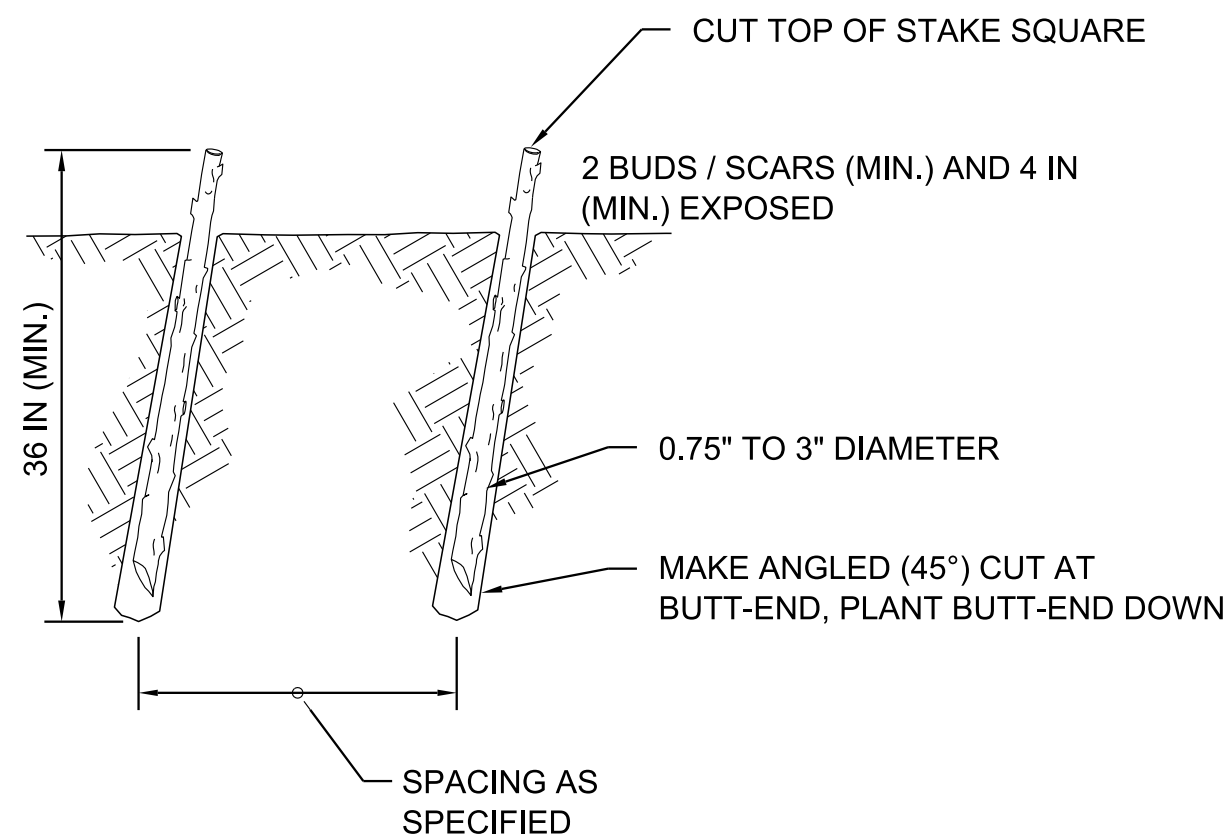
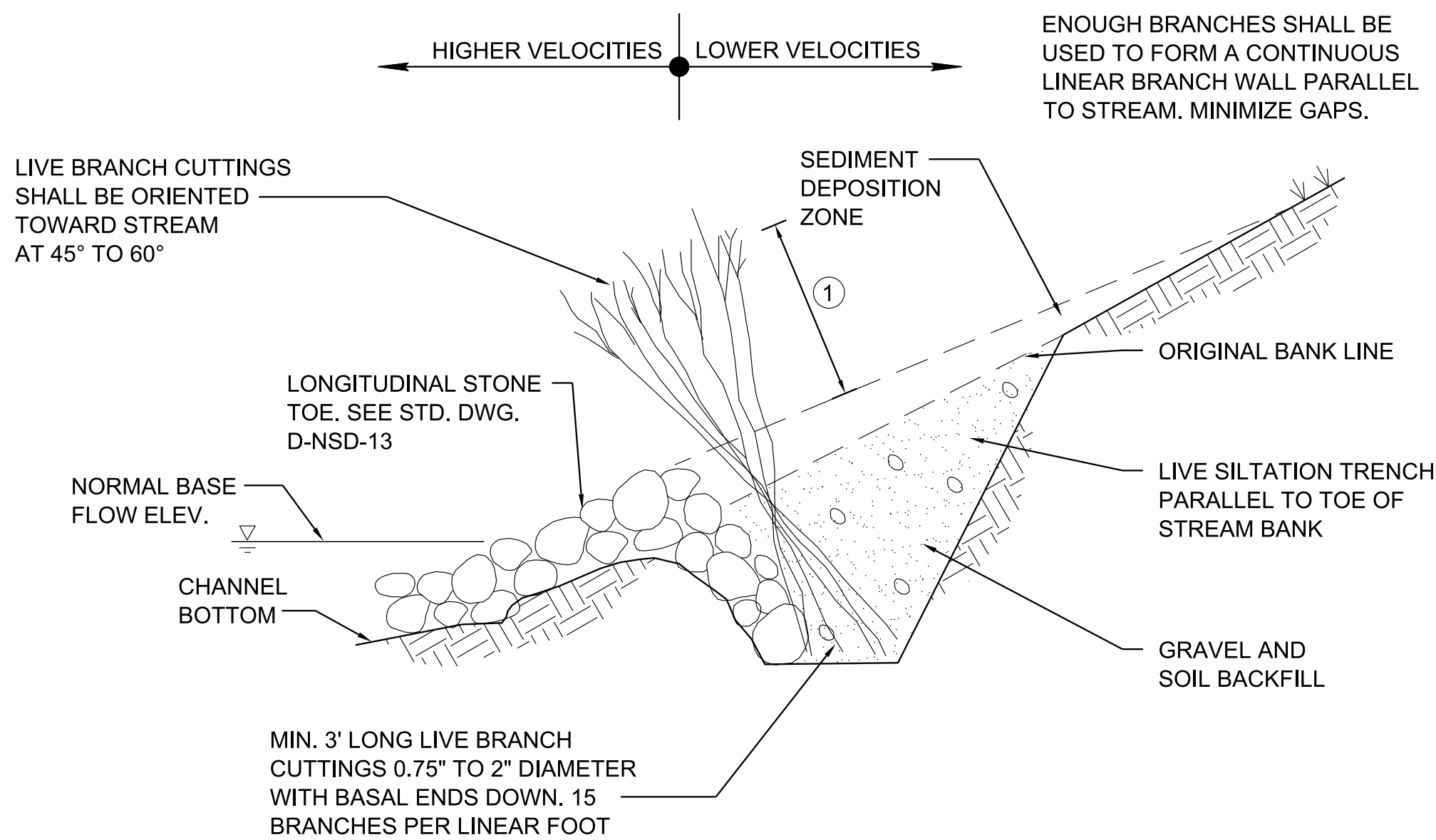


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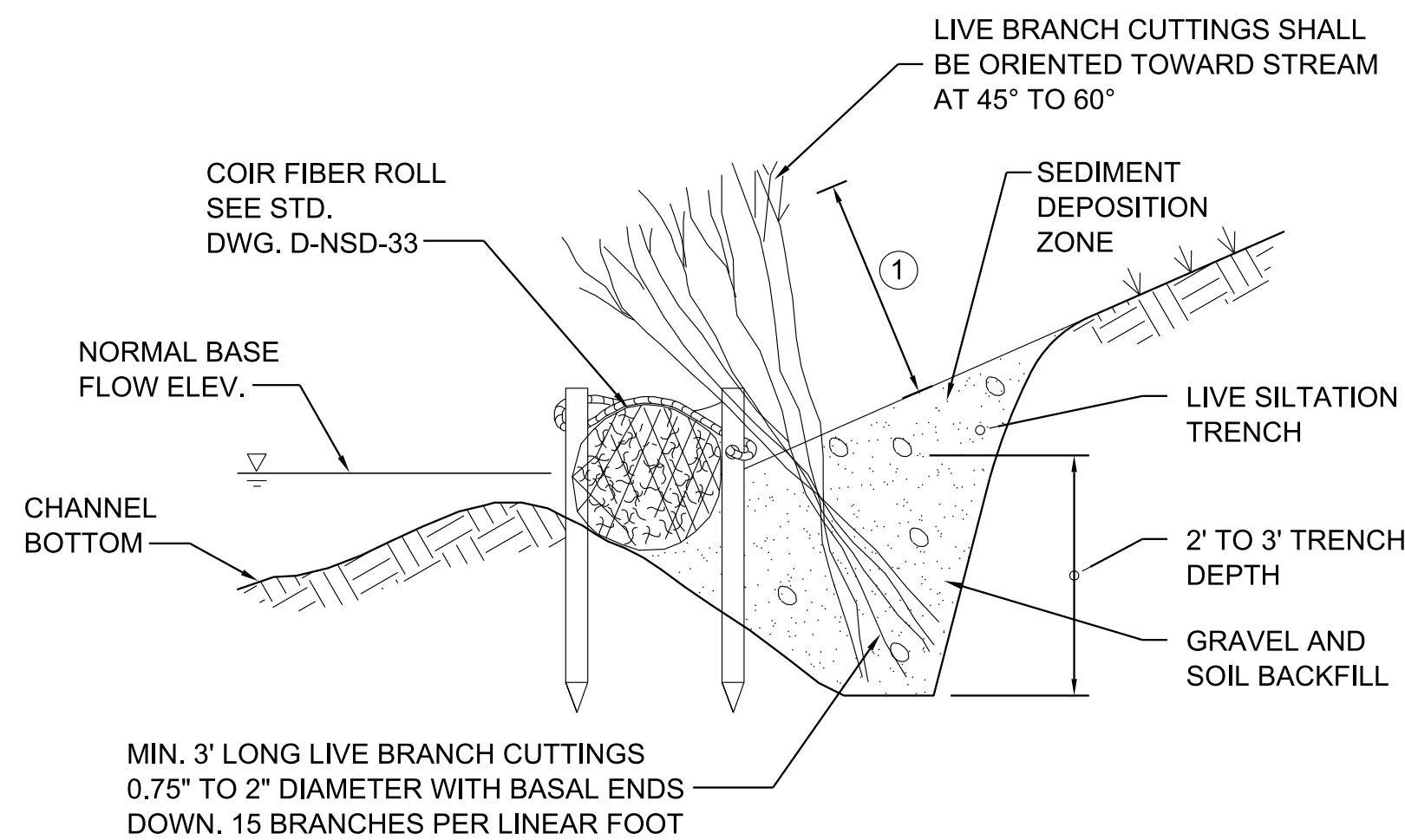


LIVE STAKE



SECTION VIEW - LIVE SILTATION WITH STONE TOE

NOTE ①: 1/3 OF THE BRANCH LENGTH SHALL BE ABOVE TRENCH



SECTION VIEW - LIVE SILTATION WITH COIR FIBER ROLL

NOTE ①: 1/3 OF THE BRANCH LENGTH SHALL BE ABOVE TRENCH

LIVE STAKES NOTES

- (A) LIVE STAKES ARE USED FOR VEGETATIVE STREAM BANK STABILIZATION AND RIPARIAN HABITAT RESTORATION.
- (B) LIVE STAKES SHOULD BE PLACED AT THE STATIONS, OFFSETS, AND ELEVATIONS INDICATED ON THE STREAM MITIGATION DATA TABLE IN THE PROJECT PLANS, STREAM MITIGATION PLAN, OR AS DIRECTED BY THE ENGINEER. AT A MINIMUM, THE TYPE (SPECIES), SIZE, SPACING, AND QUANTITY OF LIVE STAKES SHOULD BE SPECIFIED IN THE STREAM MITIGATION DATA TABLE.
- (C) LIVE STAKES SHALL CONSIST OF WOODY LIVE CUTTINGS OF FAST-GROWING SHRUBS AND TREES (SUCH AS WILLOWS, DOGWOODS, BUTTONBUSH, ETC.), WHICH ARE CAPABLE OF GENERATING ROOTS FROM CUTTINGS WHEN PLACED IN WET OR MOIST SOIL.
- (D) LIVE STAKES SHALL BE AT LEAST ONE YEAR OLD, 0.75 INCH TO 3 INCHES IN DIAMETER, AND A MINIMUM OF 3 FEET LONG, WITH MOIST, GREEN, AND HEALTHY CAMBIUM AND GROWING LEAF BUDS LESS THAN 0.25 INCH. THE MAXIMUM LENGTH OF LIVE STAKES DEPENDS ON THE APPLICATION, AND SHALL BE AS SPECIFIED. WHEN LIVE STAKES ARE INSERTED IN RIP RAP OR STONE FILL, THEY SHALL BE LONG ENOUGH TO EXTEND THROUGH THE SURFACE OF THE RIP RAP OR STONE FILL AND AT LEAST HALF THE LENGTH SHALL BE INSERTED INTO THE SOIL, BELOW THE RIP RAP OR STONE FILL.
- (E) INSTALLING LIVE STAKES:
- (1) LIVE STAKES HARVESTED DURING DORMANCY SHALL BE MAINTAINED IN COLD STORAGE UNDER MOIST CONDITONS. SOAK THE BASE OF DORMANT-HARVESTED LIVE STAKES IN WATER AT LEAST 24 HOURS BEFORE PLANTING.
 - (2) LIVE STAKES HARVESTED ON SITE SHOULD BE INSTALLED THE SAME DAY THEY ARE PREPARED.
 - (3) PRIOR TO PLANTING, LIVE STAKES SHALL BE MAINTAINED IN A CONTINUOUSLY COOL, COVERED, AND MOIST STATE, WITH THE BASES SOAKING IN WATER.
 - (4) CARE SHALL BE TAKEN NOT TO DAMAGE LIVE STAKES DURING INSTALLATION. THOSE DAMAGED SHALL BE LEFT IN PLACE AND SUPPLEMENTED WITH AN INTACT LIVE CUTTING/LIVE STAKE.
 - (5) USE A DIGGING BAR, DIBBLE, OR SIMILAR TOOL TO MAKE A PILOT HOLE IN THE BANK 15 TO 18 INCHES DEEP.
 - (6) PLACE THE LIVE STAKE IN THE PILOT HOLE, SO THAT A MINIMUM OF 4 INCHES AND TWO LIVE BUDS OF THE LIVE STAKE ARE EXPOSED.
 - (7) TAMP THE SOIL AROUND LIVE STAKES.
- (F) ALL MATERIALS ARE TO BE APPROVED BY ENGINEER OR ENGINEER'S ON-SITE CONSTRUCTION OBSERVER.
- (G) LIVE STAKES SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:
- | | |
|-----------|--|
| 802-02.40 | CUTTINGS: SALIX NIGRA (24-48IN LENGTH) PER EACH |
| 802-02.41 | CUTTINGS: SALIX SERICEA (24-48IN) PER EACH |
| 802-02.42 | CUTTINGS: CORNUS AMOMUM (24-48IN) PER EACH |
| 802-02.43 | CUTTINGS: SAMBUCUS CANADENSIS (24-48IN) PER EACH |
| 802-02.44 | CUTTINGS: SALIX INTERIOR (24-48IN) PER EACH |
| 802-02.45 | CUTTINGS: CEPHALANTHUS OCCIDENTALIS (24-48IN) PER EACH |
| 802-02.46 | CUTTINGS: CORNUS SERICEA (24-48IN) PER EACH |
| 802-02.47 | CUTTINGS: ALNUS SERRULATA (24-48IN) PER EACH |
- PAYMENT SHALL INCLUDE ALL MATERIALS, EQUIPMENT, AND LABOR TO INSTALL THE LIVE STAKES.

LIVE SILTATION NOTES

- (A) LIVE SILTATION IS A BANK STABILIZATION MEASURE THAT NATURALLY REBUILDS A STREAM BANK THAT HAS ERODED BY SLOWING THE FLOW VELOCITY RESULTING IN THE DEPOSITION OF SEDIMENT DURING HIGH FLOWS. LIVE SILTATION ALSO ENHANCES THE ESTABLISHMENT AND GROWTH OF NATIVE VEGETATION ALONG THE STREAM BANK BY TRAPPING SEED AND ORGANIC MATERIAL ALONG THE SHORE LINE.
- (B) LIVE SILTATION SHOULD BE CONSTRUCTED AT THE TOE OF A STREAM BANK BEHIND ANY OTHER TOE OF SLOPE PROTECTION AND AT THE NORMAL BASE FLOW ELEVATION.
- (C) LIVE SILTATION SHOULD BE USED IN COMBINATION WITH LONGITUDINAL STONE TOE, ROOT WADS, OR COIR FIBER ROLLS.
- (D) ALLOWABLE VELOCITY OF FLOW FOR USING LIVE SILTATION SHALL BE 0.8 FT/SEC TO A MAXIMUM OF 6.6 FT/SEC WHEN USED WITH OTHER TOE STABILIZATION MEASURES, LIVE SILTATION MAY BE USED FOR FLOWS UP TO 12 FT/SEC MAXIMUM.
- (E) LIVE SILTATION MAY BE USED AT THE INSIDE OF A MEANDER BEND, WITHIN A SIDE CHANNEL, IN AREAS WHERE BANK SCOUR HAS OCCURRED, OR AT LOCATIONS WHERE THE FORMATION OF A NEW BANK IS DESIRED.
- (F) MULTIPLE ROWS OF LIVE SILTATION MAY BE USED PARALLEL TO THE STREAM BANK AND TO EACH OTHER. SPACING OF ROWS SHALL BE 5 TO 10 FEET.
- (G) CONSTRUCTION OF LIVE SILTATION SHOULD BE PERFORMED DURING THE DORMANT SEASON AND DURING LOW FLOW CONDITIONS.
- LIVE SILTATION SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:
- | | |
|-----------|---|
| 209-03.46 | STREAM MITIGATION - LIVE SILTATION (SPECIES) PER CUBIC YARD |
|-----------|---|
- (H) LONGITUDINAL STONE TOE AND COIR FIBER ROLLS SHALL BE PAID FOR ACCORDING TO THEIR RESPECTIVE STANDARD DRAWING.
- PAYMENT FOR LIVE SILTATION SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR THE CONSTRUCTION OF THE LIVE SILTATION SYSTEM.

MATERIAL SHOWN ARE ONLY A GRAPHICAL REPRESENTATION AND DO NOT DEPICT THE ACTUAL DEPTH OR QUANTITY OF MATERIALS TO APPROPRIATELY CONSTRUCT OR STABILIZE THE CHANNEL.

NOT TO SCALE

STATE OF TENNESSEE
DEPARTMENT OF
TRANSPORTATION

LIVE STAKES AND
LIVE SILTATION

11-01-16

D-NSD-34

STREAM MITIGATION PLAN LEGEND: ↓ ↓ LS ↓ ↓ LS ↓ ↓ LS ↓ ↓ LIVE SILTATION