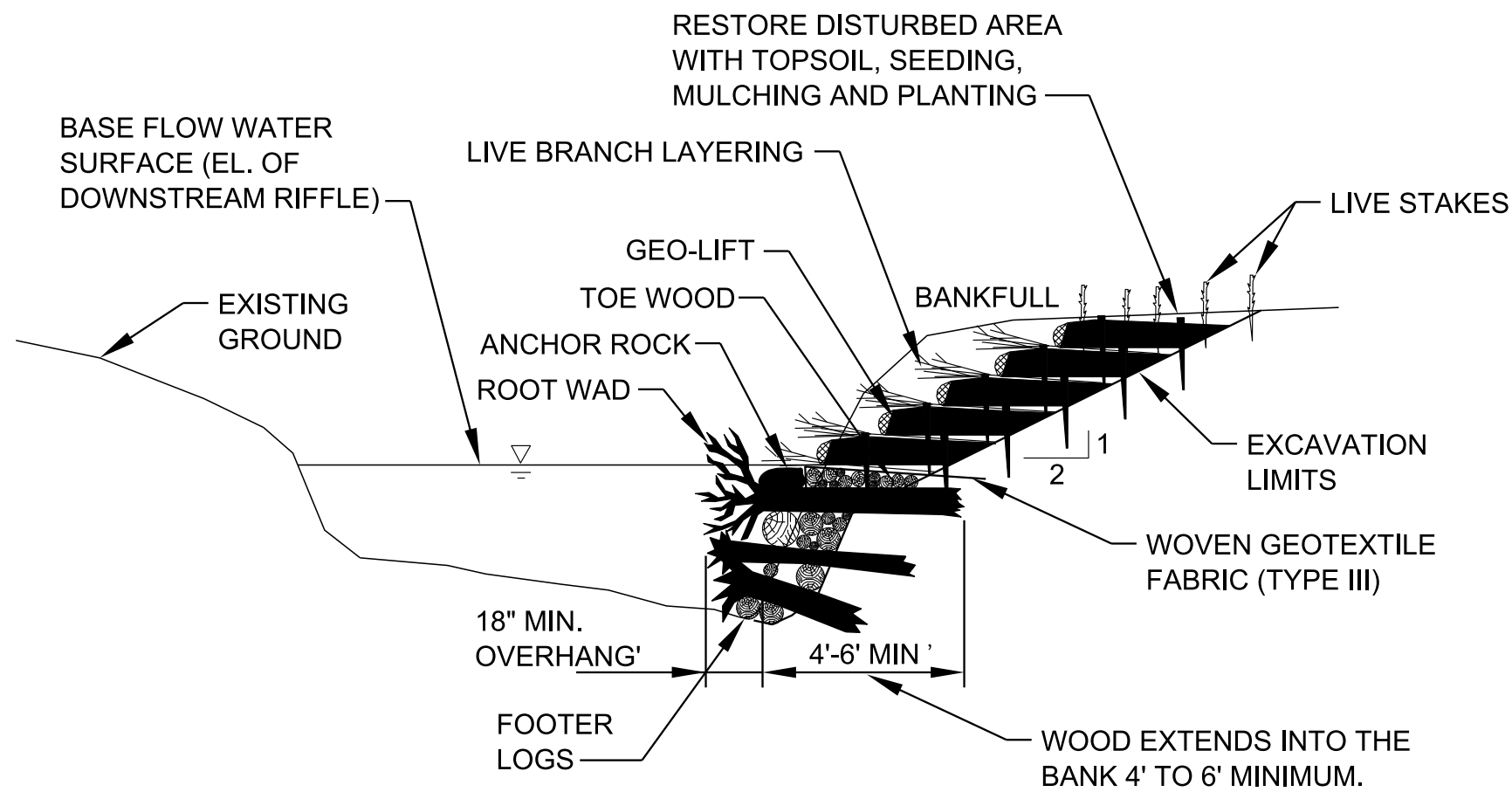
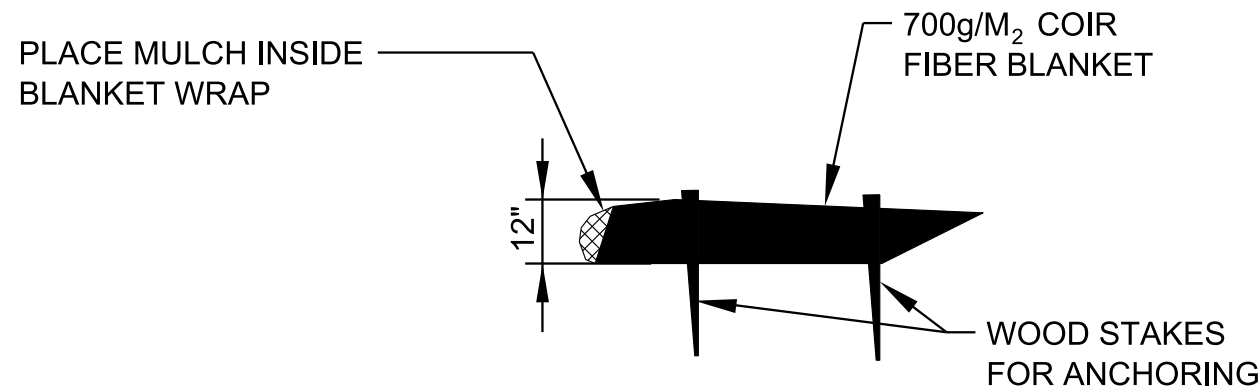


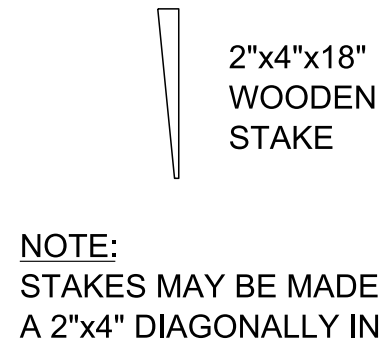
WOOD TOE
PLAN VIEW



SECTION A-A



REINFORCED EARTH
GEO-LIFTS
(AS DIRECTED BY THE ENGINEER)



WOOD STAKE

NOTE:
STAKES MAY BE MADE BY SAWING
A 2"x4" DIAGONALLY IN HALF.

WOOD TOE WITH GEO-LIFTS NOTES

- (A) WOOD AND BOULDER TOE WITH GEO-LIFTS AND LIVE BRUSH LAYERING ARE BANK STABILIZATION MEASURES THAT PROTECT THE STREAM BANK ALONG OUTSIDE MEANDER BENDS FROM EROSION AND ENHANCE THE ESTABLISHMENT AND GROWTH OF NATIVE VEGETATION USING LIVE BRANCHES AND CUTTINGS. WOOD TOE ALSO PROVIDES HABITAT FOR INVERTEBRATES AND FISH AND HELPS TO MAINTAIN POOL DEPTH BY CREATING TURBULENT FLOW AND SCOUR ALONG THE STREAM BED.
- (B) WOOD AND BOULDER TOE WITH LIVE BRUSH LAYERING SHOULD BE PLACED AT THE STATIONS, OFFSETS, ELEVATIONS, AND GEOMORPHIC POSITIONS INDICATED ON THE STREAM MITIGATION DATA TABLE IN THE PROJECT PLANS, STREAM MITIGATION PLAN, OR AS DIRECTED BY THE ENGINEER. AT A MINIMUM, THE BANKFULL WIDTH, WOOD AND BOULDER DIMENSIONS AND ELEVATIONS, NUMBER AND DIMENSIONS OF GEO-LIFTS, AND LENGTH AND NUMBER OF LIVE BRUSH AND CUTTINGS SHOULD BE SPECIFIED IN THE STREAM MITIGATION DATA TABLE.
- (C) WOOD TOE SHALL CONSIST OF A MIX OF ROOT WADS, LOGS, BRANCHES, BRUSH, AND OTHER WOODY VEGETATION INSTALLED AT VARIOUS ANGLE, BUT NOT PARALLEL TO THE FLOW.
- (D) A HYDRAULIC EXCAVATOR WITH A HYDRAULIC THUMB SHALL BE USED TO PLACE WOOD AND BOULDERS.
- (E) CONSTRUCT WOOD OR BOULDER TOE, GEO-LIFTS, AND LIVE BRUSH LAYERING BY:
- (1) SHAPE THE CHANNEL AND FLOODPLAIN TO THE SPECIFIED GRADES AND DIMENSIONS.
 - (2) EXCAVATE THE POOL AND GRADE EXISTING BANK SUBGRADE TO 2:1 (MIN).
 - (3) FOR WOOD TOE, LAYER THE WOOD WITH LARGER MATERIAL ON THE BOTTOM AND A MAT OF BRANCHES AS THE TOP LAYER. IF USED, ANGLE ROOT WADS SLIGHTLY UPSTREAM INTO THE FLOW. FILL GAPS BETWEEN LARGER MATERIAL WITH A MIX OF BRANCHES AND WOODY DEBRIS. THE TOP LAYER OF TOE WOOD SHALL BE AT THE ESTABLISHED NORMAL BASE FLOW ELEVATION (I.E., ELEVATION OF THE DOWNSTREAM RIFFLE). PLACE TYPE III WOVEN GEOTEXTILE FABRIC ON TOP OF WOOD TOE.
 - (4) FOR BOULDER TOE, EXCAVATE BANK TO KEY IN BOULDERS AND PLACE TYPE III WOVEN GEOTEXTILE FABRIC ALONG THE EXCAVATED BANK. PLACE BOULDERS IN OVERLAPPING LAYERS AND IMBRICATE EACH LAYER. BACKFILL AREA BEHIND BOULDER WITH SOIL OR ALLUVIUM AND COMPACT WITH EXCAVATOR BUCKET.
 - (5) CONSTRUCT GEO-LIFTS AND LIVE BRUSH LAYERING ABOVE WOOD OR BOULDER TOE, AS FOLLOWS:
 - (a) FOR EACH LIFT, PLACE BRUSH CUTTINGS PERPENDICULAR TO THE BANK AT A DENSITY OF 10-12 STEMS PER FOOT AND COVER WITH TWO INCHES OF SOIL.
 - (b) LAY 700G COIR BLANKETS OVER THE LIVE CUTTINGS PARALLEL TO THE BANK AND SHINGLED IN A DOWNSTREAM DIRECTION.
 - (c) PLACE SPECIFIED SOIL LIFT OVER THE BACK HALF OF THE COIR BLANKET AND COMPACT WITH THE EXCAVATOR BUCKET.
 - (d) PLACE CLEAN STRAW OR MULCH ALONG THE FACE OF THE SOIL LIFT, WRAP THE LIFT WITH THE FRONT HALF OF THE COIR BLANKET AND STAKE IN PLACE WITH A MINIMUM OF TWO ROWS OF 2"x4"x18" WOOD STAKES AT FIVE-FOOT SPACING.
 - (e) REPEAT STEPS (a) THROUGH (d) FOR EACH GEO-LIFT SPECIFIED
 - (f) PLACE LIVE STAKES OR WOODY PLANTINGS, AS SPECIFIED, ON THE TOP LIFT.
- (F) ALL MATERIALS ARE TO BE APPROVED BY ENGINEER OR ENGINEER'S ONSITE CONSTRUCTION OBSERVER.
- (G) WOOD TOE WITH REINFORCED EARTH AND LIVE BRUSH LAYERING SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:
- | | |
|-----------|--|
| 209-03.67 | STREAM MITIGATION - WOOD TOE WITH REINFORCED EARTH PER LINEAR FOOT |
| 209-03.42 | STREAM MITIGATION - LIVE BRUSH LAYERING PER LINEAR FOOT |
- PAYMENT SHALL INCLUDE ALL MATERIALS, EQUIPMENT, AND LABOR NECESSARY FOR THE CONSTRUCTION OF THE WOOD TOE WITH REINFORCED EARTH AND LIVE BRUSH LAYERING.
- (H) FOR BOULDER TOE DETAILS SEE D-NSD-32A.

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

☐ MINOR REVISION -- FHWA
APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF
TRANSPORTATION

WOOD TOE WITH
GEO-LIFTS

