**TOE WOOD**

*This figure is only meant to define the minimum information required by the City of Charlotte to be included in a detail for this type of technique. This figure is not meant to represent a standard design method for this type of technique and shall not be used as such.*

**Plan View**

**Cross Section A - A’**

**Photo:** Toe Wood with Sod Mats

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**Legend:**
- **TOP OF BANK (BANKFULL)**
- **FLOW**
- **SOD MAT/TRANSPLANTS/OTHER, TYPICAL (SEE NOTES 1 & 4)**
- **COARSE WOOD MATERIAL (SEE NOTE 3)**
- **SMALL BRANCHES/DEBRIS, TYPICAL (SEE NOTE 3)**
- **LIVE STAKES, TYPICAL IF SPECIFIED (SEE NOTE 5)**
- **EXISTING GROUND**
- **EXISTING TOP OF SLOPE**
- **PROPOSED TOP OF SLOPE**
- **TWINE TIES, TYPICAL (SEE NOTE 6)**
- **BANKFULL**
- **EXISTING BANKFULL**
- **X1 - BANKFULL CONTROL POINT (SEE NOTE 2)**
- **X16 - SOD MATS w/LIVE STAKES SHOWN (SEE NOTES 1 & 4)**
- **X3 - TOE WOOD**
- **STABILIZATION STRENGTH 0 - 1**
- **BANKFULL**
- **APPROXIMATE BASE FLOW WATER LEVEL**
- **TOE OF BANK, TYPICAL**
- **FOOTER LOG (SEE NOTE 3)**
- **SMALL BRANCHES/DEBRIS, TYPICAL**
- **GRASSES, TYPICAL**
- **COARSE WOODY MATERIAL**
- *** X4: SOD MATS w/LIVE STAKES SHOWN (SEE NOTES 1 & 4)**

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**Notes:**
1. SOD MAT/TRANSPLANTS/OTHER, TYPICAL (SEE NOTES 1 & 4)
2. BANKFULL
3. END OF BANK (BANKFULL)
4. FOOTER LOG (SEE NOTE 3)
5. LIVING STAKES, TYPICAL IF SPECIFIED (SEE NOTE 5)
6. SMALL BRANCHES/DEBRIS, TYPICAL (SEE NOTE 3)
7. GRASSES, TYPICAL
8. TOE WOOD
9. TOE OF BANK, TYPICAL
10. BANKFULL
11. PROPOSED TOP OF SLOPE
12. EXISTING TOP OF SLOPE
13. TWINE TIES, TYPICAL (SEE NOTE 6)
14. X1 - BANKFULL CONTROL POINT (SEE NOTE 2)
15. X16 - SOD MATS w/LIVE STAKES SHOWN (SEE NOTES 1 & 4)
16. X3 - TOE WOOD
17. BANKFULL
18. APPROXIMATE BASE FLOW WATER LEVEL
19. TOE OF BANK, TYPICAL
20. FOOTER LOG (SEE NOTE 3)
21. SMALL BRANCHES/DEBRIS, TYPICAL
22. GRASSES, TYPICAL
23. COARSE WOODY MATERIAL
24. * X4: SOD MATS w/LIVE STAKES SHOWN (SEE NOTES 1 & 4)
NOT TO SCALE

TOE WOOD

NOTES:

1. TOE WOOD IS A STREAM BANK REPAIR/REVETMENT COMPRISED OF:
   A. LOGS AND OTHER WOODY BRANCH MATERIALS USED TO FORM THE TOE OF BANK.
   B. STACKED SOD MATS, TRANSPLANTS, AND/OR OTHER SOIL BIOENGINEERING STABILIZATION METHOD USED TO FORM THE STREAM BANK.

2. AN ELEVATION CONTROL POINT SHALL BE DESIGNATED AT BANKFULL STAGE. SURVEY OF CONTROL POINTS SHALL BE REQUIRED TO ESTABLISH THAT TOE WOOD INSTALLATION IS ACCURATE TO WITHIN THE TOLERANCE SPECIFIED BY THE DESIGNER.

3. THE CONTRACTOR SHALL USE COARSE WOODY MATERIAL SUCH AS LOGS, TRUNKS WITH ROOTS, BRANCHES, AND WOODY DEBRIS, IDEALLY COLLECTED FROM ON-SITE SOURCES (SUCH AS MATERIAL CUT FOR PROJECT ACCESS), TO FORM THE TOE OF THE STREAM BANK. THE DESIGNER SHALL SPECIFY ALL DIMENSIONS OF WOODY MATERIAL.

4. THE STREAM BANK ABOVE THE TOE WOOD SHALL BE FORMED FROM STACKED SOD MATS, TRANSPLANTS COLLECTED FROM HEALTHY ON-SITE SOURCES, AND/OR OTHER SOIL BIOENGINEERING STABILIZATION METHODS. PLANT SPECIES SHALL BE DESIGNATED BY THE DESIGNER. SPECIFIC INFORMATION REGARDING THE STREAM BANK REPAIR METHOD ABOVE TOE WOOD SHALL BE ADDED TO THIS DETAIL OR DETAILED SEPARATELY AND REFERENCED HEREIN.

5. LIVE STAKES IF SPECIFIED, SHALL BE OF THE SIZE SPECIFIED BY THE DESIGNER AND PLACED IN ACCORDANCE WITH THE PATTERN AND SPACING DESIGNATED BY THE DESIGNER. ADDITIONAL INFORMATION REGARDING LIVE STAKING SHALL BE ADDED TO THIS DETAIL OR DETAILED SEPARATELY AND REFERENCED HEREIN. LIVE STAKES MAY BE INSTALLED AFTER CONSTRUCTION ACTIVITIES ARE COMPLETE.

6. IF SOD MATS ARE USED TO FORM THE STREAM BANKS ABOVE THE TOE WOOD, TWINE, AS SPECIFIED BY THE DESIGNER, MAY BE USED TO SECURE SOD MATS TO THE LIVE STAKES TO PREVENT FLOTATION OF SOD MATS DURING HIGH FLOWS PRIOR TO ROOT RE-ESTABLISHMENT. IF LIVE STAKES ARE NOT SPECIFIED, OTHER STAKES MAY BE USED TO SECURE SOD MATS. THE DESIGNER SHALL SPECIFY THE MATERIALS, SIZE AND SPACING OF SUCH STAKES AND INCLUDE THEM IN THIS DETAIL.

7. IF THE EXISTING TOP OF SLOPE IS HIGHER THAN BANKFULL STAGE, ADDITIONAL STABILIZATION ACTIVITIES ABOVE INSTALLATION OF THE STACKED SOD MATS AND/OR TRANSPLANTS SHALL BE ADDED TO THIS DETAIL OR DETAILED SEPARATELY AND REFERENCED HEREIN.

### VARIABLES AND UNIT DESCRIPTIONS

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<th>DESCRIPTION</th>
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<td>X1</td>
<td>FT. (NAVD)</td>
<td>BANKFULL CONTROL POINT ELEVATION</td>
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<td>FT.</td>
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<td>X3</td>
<td>IN. OR FT.</td>
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<td>X4</td>
<td>IN. OR FT.</td>
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<td>IN. OR FT.</td>
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<td>IN. OR FT.</td>
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<td>IN. OR FT.</td>
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*NOT TO SCALE*