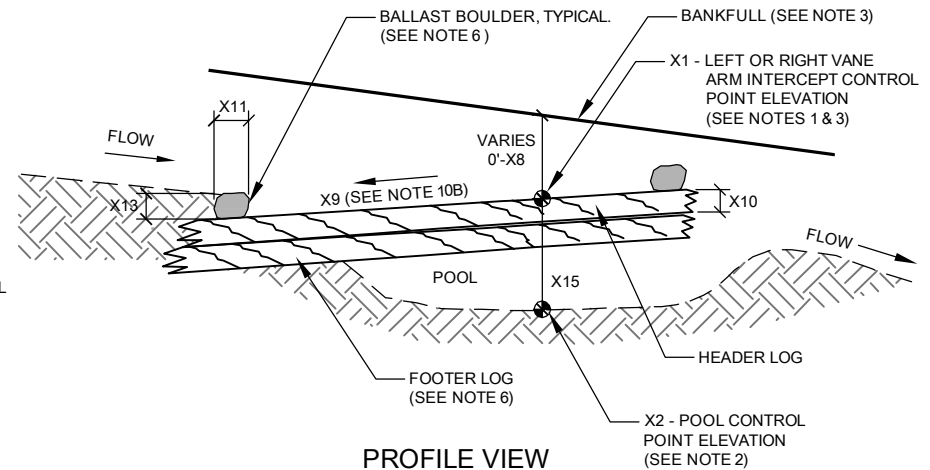
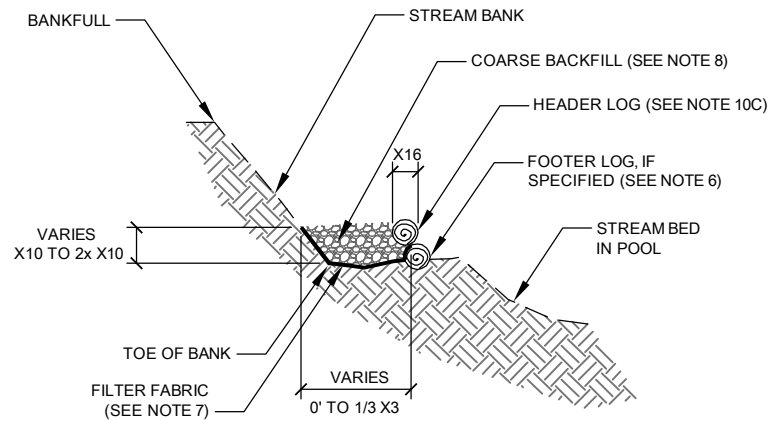


PLAN VIEW



PROFILE VIEW



ARM SECTION A - A'

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.

**NOT TO SCALE**



CHARLOTTE-MECKLENBURG  
 STORM WATER SERVICES  
 GENERIC DETAIL REQUIREMENTS

**LOG VANE**

DRAFT - NOT TO BE USED FOR CONSTRUCTION

SHEET NUMBER	
1 OF 2	
REV. DATE	REV. #

**NOTES:**

1. A LOG VANE IS A STREAM BANK PROTECTION, IN-STREAM STRUCTURE THAT DIRECTS STREAM FLOW AWAY FROM THE STREAM BANK AND IN TOWARD THE CENTER OF THE CHANNEL. THE DETAIL SHALL BE "FLIPPED" DEPENDING ON WHICH STREAM BANK (LEFT OR RIGHT) IS ON THE OUTSIDE OF THE MEANDER BEND.
2. A POOL ELEVATION CONTROL POINT OR EXCAVATION TO A SPECIFIED MAXIMUM POOL DEPTH SHALL BE DESIGNATED TO ESTABLISH PART OF THE PROFILE. SURVEY OF CONTROL POINTS SHALL BE REQUIRED TO ESTABLISH ACCURATE LOG VANE INSTALLATION WITHIN THE TOLERANCE SPECIFIED BY THE DESIGNER.
3. THE VANE SHALL INTERCEPT THE STREAM BANK AT A HEIGHT EQUAL TO BETWEEN ½ BANKFULL STAGE AND BANKFULL STAGE. AN ELEVATION CONTROL POINT MAY BE ESTABLISHED AT THE LEFT OR RIGHT STREAM BANK/VANE INTERCEPT POINT. THE VANE INTERCEPT LOCATION MAY BE OTHERWISE DESCRIBED BY ITS RELATIONSHIP TO BANKFULL STAGE OR BY THE LENGTH AND SLOPE OF THE VANE ARM. BANKFULL IS NOT NECESSARILY THE TOP OF THE STREAM BANK SLOPE.
4. IF PLANS DESIGNATE THE USE OF MULTIPLE LOG VANES A TABLE OF ALL STATION LOCATIONS AND CONTROL POINT ELEVATIONS SHALL BE PROVIDED IN THIS DETAIL OR PROVIDED ELSEWHERE IN THE PLANS AND REFERENCED HEREIN.
5. A TYPICAL CROSS SECTION SHALL BE PROVIDED ELSEWHERE IN THE PLANS TO ESTABLISH THE DIMENSIONS OF THE CHANNEL GRADING INTO WHICH THE LOG VANES ARE TO BE INSTALLED.
6. LOG VANES SHALL BE CONSTRUCTED OF ONE OR MORE LOGS HELD IN PLACE BY BALLAST BOULDERS. LOGS SHALL BE OF A LENGTH AND DIAMETER SPECIFIED BY THE DESIGNER AND BE RELATIVELY STRAIGHT HARDWOOD, RECENTLY HARVESTED. THE LENGTH SHALL BE SUCH THAT THE LOG IS BURIED INTO THE SOIL OF THE STREAM BANK (ON ONE END) AND STREAM BED (ON THE OTHER END) A MINIMUM DISTANCE AS SPECIFIED BY THE DESIGNER. FLAT-SIDED BALLAST BOULDERS SHALL BE OF A SIZE (LENGTH, WIDTH, AND DEPTH) AS SPECIFIED BY THE DESIGNER.
7. FILTER FABRIC OF A TYPE AND SIZE SPECIFIED BY THE DESIGNER SHALL BE USED TO SEAL THE GAPS BETWEEN THE LOGS AND UNDER THE COARSE BACKFILL MATERIAL OF THE VANE. THERE SHALL BE NO FILTER FABRIC VISIBLE IN THE FINISHED WORK; EDGES SHALL BE FOLDED TUCKED, OR TRIMMED AS NEEDED.
8. COARSE BACKFILL OF THE LOG VANE SHALL BE OF A TYPE, SIZE, AND GRADATION AS SPECIFIED BY THE DESIGNER. COARSE BACKFILL SHALL BE PLACED TO A THICKNESS EQUAL TO THE DEPTH OF THE HEADER AND FOOTER LOGS AND SHALL EXTEND OUT FROM THE VANE TO THE STREAM BANK.
9. LOG VANES SHALL BE BUILT TYPICALLY AS FOLLOWS:
  - A. OVER-EXCAVATE STREAM BED TO A DEPTH EQUAL TO THE TOTAL THICKNESS OF THE HEADER (AND FOOTER IF SPECIFIED) LOGS.
  - B. PLACE FOOTER LOG OF THE VANE ARM IF SPECIFIED. THE SLOPE OF THE VANE ARM IS MEASURED ALONG THE VANE ARM WHICH IS INSTALLED AT AN ANGLE TO THE STREAM BANK AND PROFILE.
  - C. INSTALL HEADER LOG OF THE VANE ARM ON TOP OF AND SLIGHTLY FORWARD OR BACK FROM THE FOOTER LOG.
  - D. NAIL FILTER FABRIC TO THE HEADER LOG USING A GALVANIZED NAIL WITH A PLASTIC CAP. THE SIZE AND GAGE OF NAIL AND NAIL SPACING SHALL BE SPECIFIED BY THE DESIGNER.
  - E. PLACE BALLAST BOULDERS ON THE VANE.
  - F. PLACE COARSE BACKFILL BEHIND LOGS ENSURING THAT ANY VOIDS BETWEEN THE LOGS ARE FILLED.
  - G. BACKFILL REMAINDER OF VANE WITH PREVIOUSLY EXCAVATED MATERIAL.
10. IF ANY EROSION CONTROL MATTING IS SPECIFIED FOR USE IN THE VICINITY OF THE STREAM BANK/VANE INTERCEPT POINT THE MATTING EDGES SHALL BE NEATLY SECURED AROUND THE LOGS.

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**NOT TO SCALE**

DIMENSIONS (VALUES TO BE PROVIDED BY DESIGNER)			
VARIABLE	VALUES	TYPICAL UNIT	DESCRIPTION
X1		FT. (NAVD)	LEFT OR RIGHT LOG VANE BANK INTERCEPT CONTROL POINT ELEVATION
X2		FT. (NAVD)	POOL CONTROL POINT ELEVATION
X3		FT.	BANKFULL WIDTH
X4		FT.	VANE ARM LENGTH
X5		FT.	VANE ARM LOG LENGTH
X6		FT.	LENGTH OF VANE ARM EMBEDDED INTO SOIL
X7		DEGREES	VANE ANGLE WITH STREAM BANK
X8		FT. OR IN.	DIFFERENCE BETWEEN TOP OF BANK (BANKFULL) AND VANE ARM INTERCEPT POINT
X9		PERCENT	VANE ARM SLOPE
X10		IN.	LOG DIAMETER
X11		FT. OR IN.	BOULDER LENGTH
X12		FT. OR IN.	BOULDER WIDTH
X13		FT. OR IN.	BOULDER THICKNESS
X14		IN.	D50 OF COARSE BACKFILL
X15		FT.	MAXIMUM POOL DEPTH
X16		IN.	HEADER LOG SETBACK



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SHEET NUMBER	
2 OF 2	
REV. DATE	REV. #