



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

BOULDER SILL

DRAFT - NOT TO BE USED FOR CONSTRUCTION

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NOTES:

1. A BOULDER SILL MAY BE USED ALONE OR IN COMBINATION WITH A CONSTRUCTED RIFFLE.
2. AN ELEVATION CONTROL POINT SHALL BE DESIGNATED AT THE CENTER OF THE SILL TO ESTABLISH PART OF THE PROFILE. POOL ELEVATION CONTROL POINTS OR EXCAVATION TO A SPECIFIED MAXIMUM POOL DEPTH SHALL BE DESIGNATED TO ESTABLISH THE REMAINING PROFILE. SURVEY OF CONTROL POINTS SHALL BE REQUIRED TO ESTABLISH ACCURATE INSTALLATION WITHIN THE TOLERANCE SPECIFIED BY THE DESIGNER.
3. NO PART OF THE SILL SHALL BE PLACED ABOVE THE ELEVATION OF THE STREAM BED.
4. IF PLANS DESIGNATE THE USE OF MULTIPLE BOULDER SILLS 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. TYPICAL RIFFLE AND POOL CROSS SECTIONS SHALL BE PROVIDED ELSEWHERE IN THE PLANS TO ESTABLISH THE DIMENSIONS OF THE CHANNEL GRADING INTO WHICH THE BOULDER SILLS ARE TO BE INSTALLED.
6. THE SILL SHALL BE CONSTRUCTED WITH FLAT-SIDED BOULDERS OF A SIZE (LENGTH, WIDTH, AND DEPTH) AS SPECIFIED BY THE DESIGNER. THE LENGTH OF THE SILL EMBEDDED INTO EACH BANK SHALL EQUAL OR EXCEED THE WIDTH OF THE CHANNEL.
7. FILTER FABRIC OF A TYPE AND SIZE SPECIFIED BY THE DESIGNER SHALL BE USED TO SEAL THE GAPS BETWEEN THE BOULDERS AND THE STREAM BED, UNDER THE COARSE BACKFILL MATERIAL. THE FABRIC SHALL BE PLACED ALONG THE ENTIRE LENGTH OF THE SILL. THE FABRIC SHALL BE SECURED BY THE WEIGHT OF THE HEADER BOULDER PLACED ON TOP OF THE FOOTER BOULDER WITH THE FABRIC END PLACED BETWEEN THEM. 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 BOULDERS 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 ANY FOOTER BOULDERS AND SHALL EXTEND UPSTREAM FROM THE SILL A DISTANCE SPECIFIED BY THE DESIGNER.
9. THE BOULDER SILL IS GENERALLY CONSTRUCTED AS FOLLOWS:
 - A. OVER-EXCAVATE STREAM BED TO A DEPTH EQUAL TO THE TOTAL THICKNESS OF THE HEADER AND FOOTER BOULDERS.
 - B. PLACE FOOTER BOULDERS. A LAYER OF BEDDING MATERIAL UNDER THE FOOTER BOULDERS MAY BE SPECIFIED BY THE DESIGNER. THERE SHALL BE NO GAPS BETWEEN BOULDERS.
 - C. INSTALL FILTER FABRIC.
 - D. PLACE COARSE BACKFILL BEHIND THE FOOTER BOULDERS.
 - E. INSTALL HEADER BOULDERS ON TOP OF AND SET SLIGHTLY BACK FROM THE FOOTER BOULDERS (SUCH THAT PART OF THE HEADER BOULDER IS RESTING ON THE COARSE BACKFILL). HEADER BOULDERS SHALL SPAN THE SEAMS OF THE FOOTER BOULDERS. THERE SHALL NOT BE A SEAM IN THE CENTER OF THE STREAM BED (AT THE THALWEG). THERE SHALL BE NO GAPS BETWEEN BOULDERS.
 - F. PLACE COARSE BACKFILL BEHIND HEADER BOULDERS ENSURING THAT ANY VOIDS BETWEEN THE BOULDERS ARE FILLED.
10. STREAM BANK STABILIZATION, IF SPECIFIED, SHALL BE ADDED TO THIS DETAIL OR DETAILED SEPARATELY AND REFERENCED HEREIN.

DIMENSIONS (VALUES TO BE PROVIDED BY DESIGNER)			
VARIABLE	VALUES	TYPICAL UNIT	DESCRIPTION
X1		FT. (NAVD)	SILL CONTROL POINT ELEVATION
X2		FT. (NAVD)	POOL CONTROL POINT ELEVATION
X3		FT.	STREAM BED WIDTH
X4		FT.	CHANNEL WIDTH
X5		FT.	LENGTH OF SILL EMBEDDED IN SOIL
X6		FT.	LENGTH OF COARSE BACKFILL
X7		IN. OR FT.	BOULDER WIDTH
X8		IN. OR FT.	BOULDER LENGTH
X9		IN. OR FT.	BOULDER THICKNESS (DEPTH)
X10		IN. OR FT.	BOULDER PLACEMENT OFFSET
X11		IN. OR FT.	APPROXIMATE BASE FLOW DEPTH

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