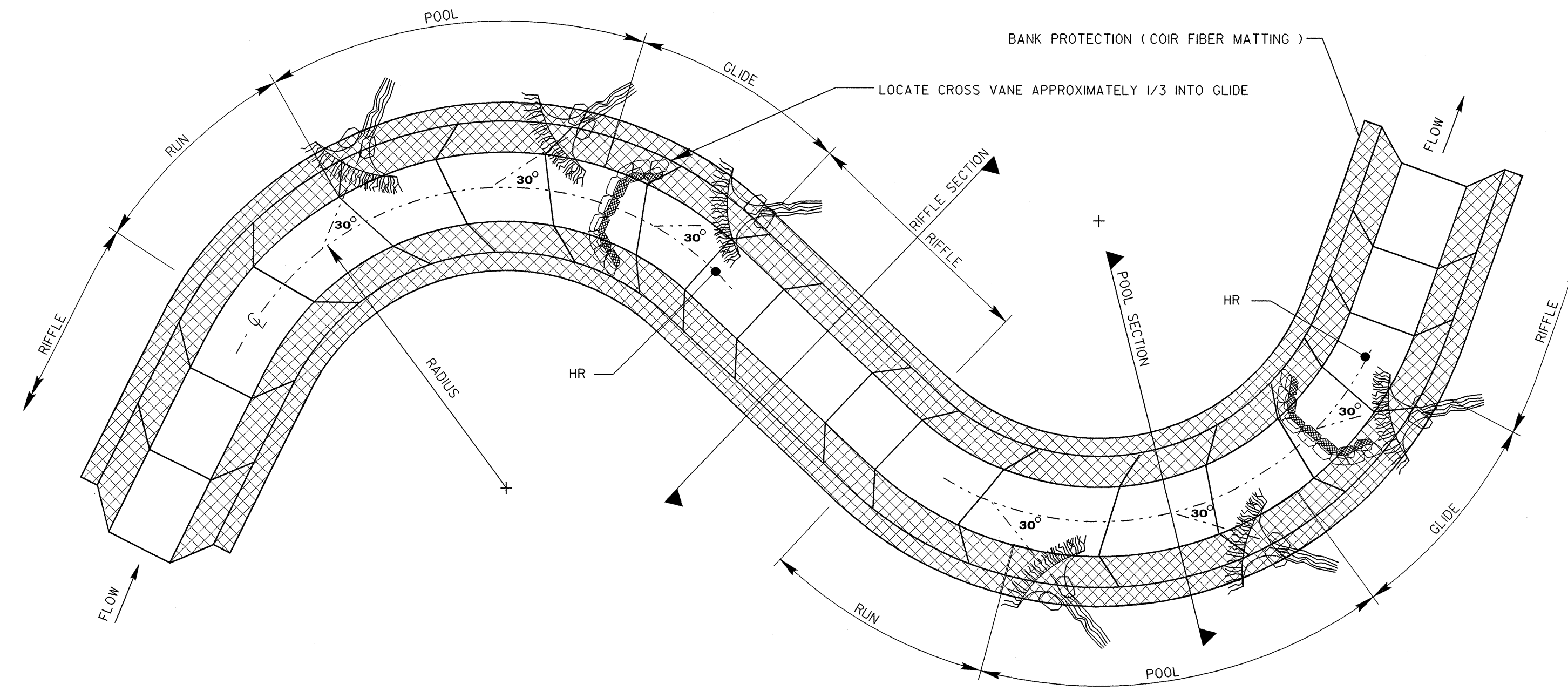
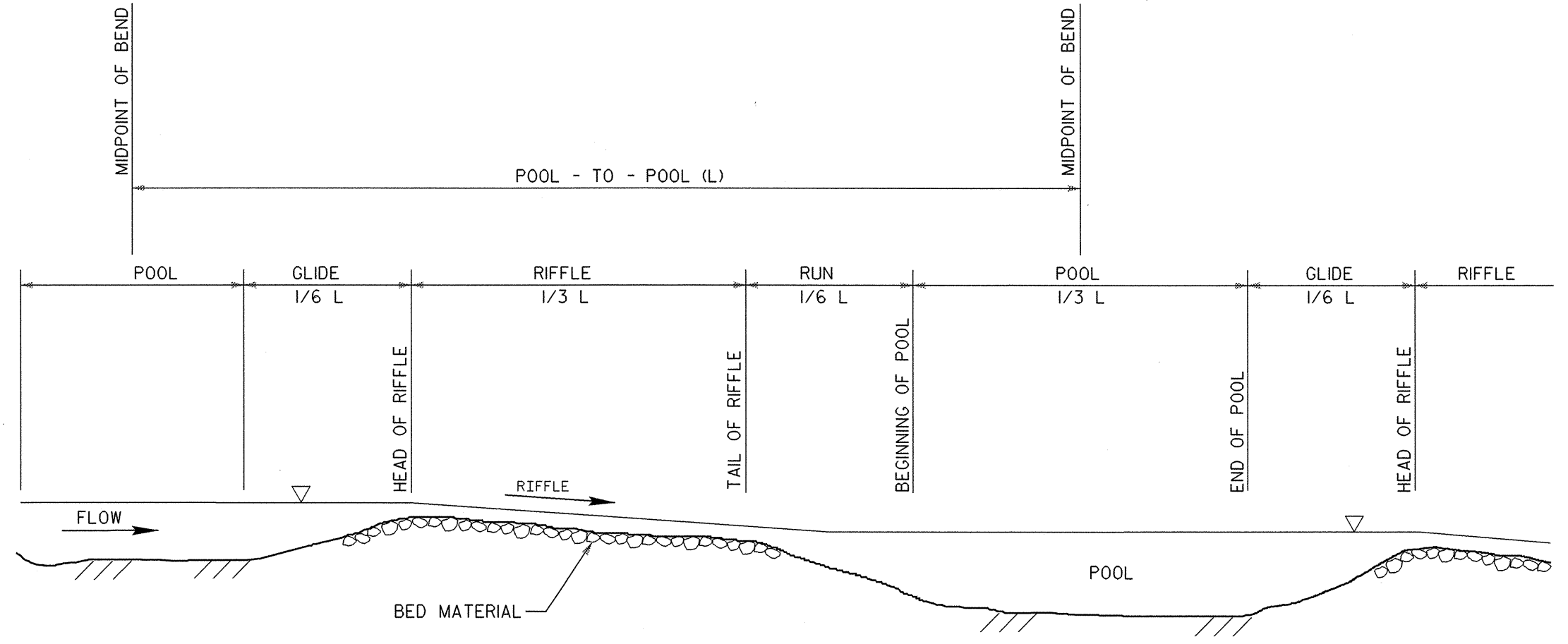


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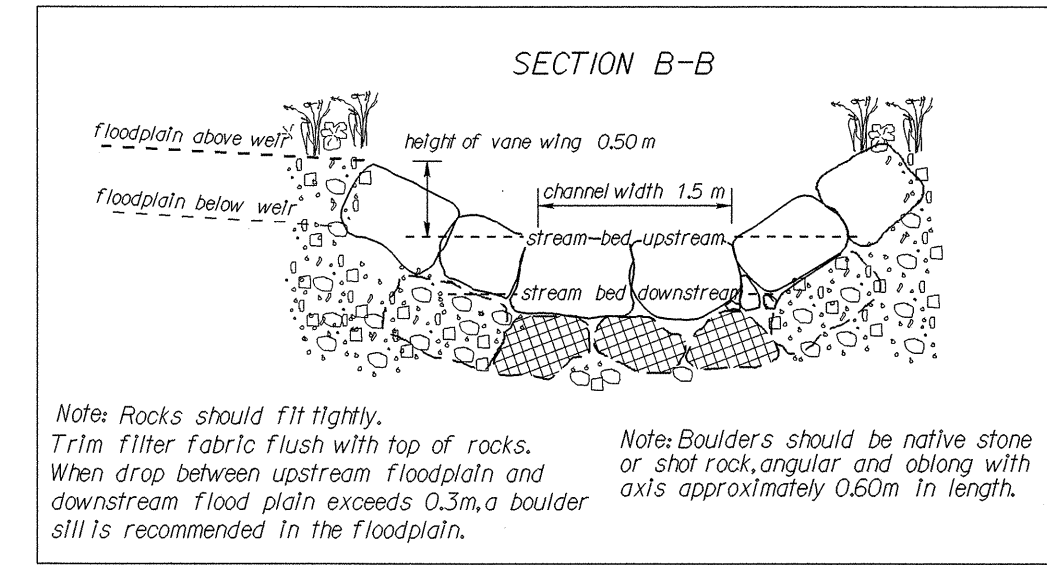
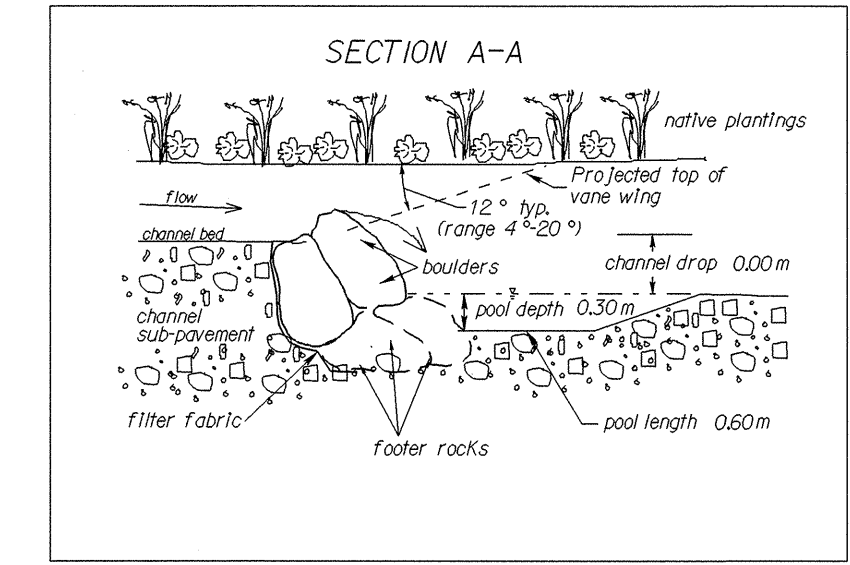


**TYPICAL PLAN**  
NOT TO SCALE



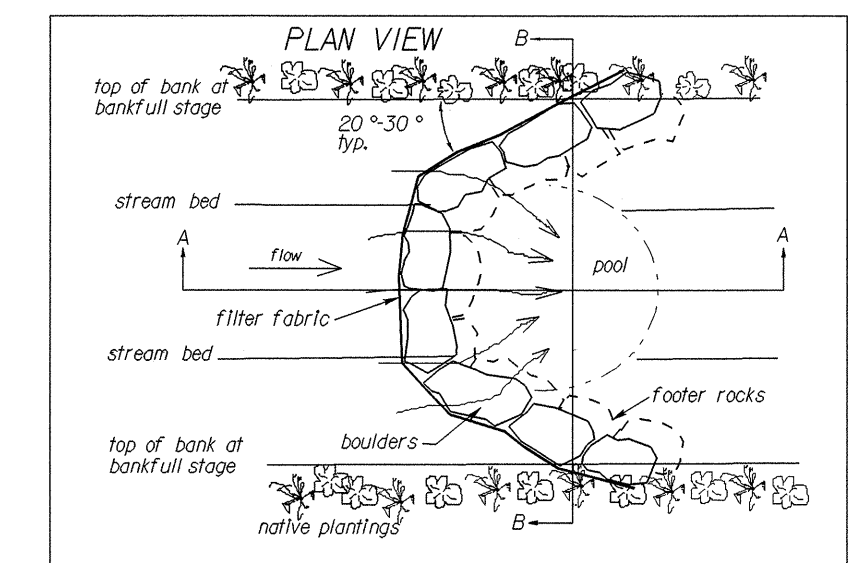
**TYPICAL PROFILE**  
NOT TO SCALE

- NOTES:**
1. THE POOL TO POOL SPACING (L) SHALL BE MEASURED AS THE DISTANCE FROM THE MIDPOINT OF THE UPSTREAM BEND TO THE MIDPOINT OF THE DOWNSTREAM BEND.
  2. REFER TO MORPHOLOGICAL MEASUREMENT TABLE AND PLAN SHEET FOR DIMENSIONS.

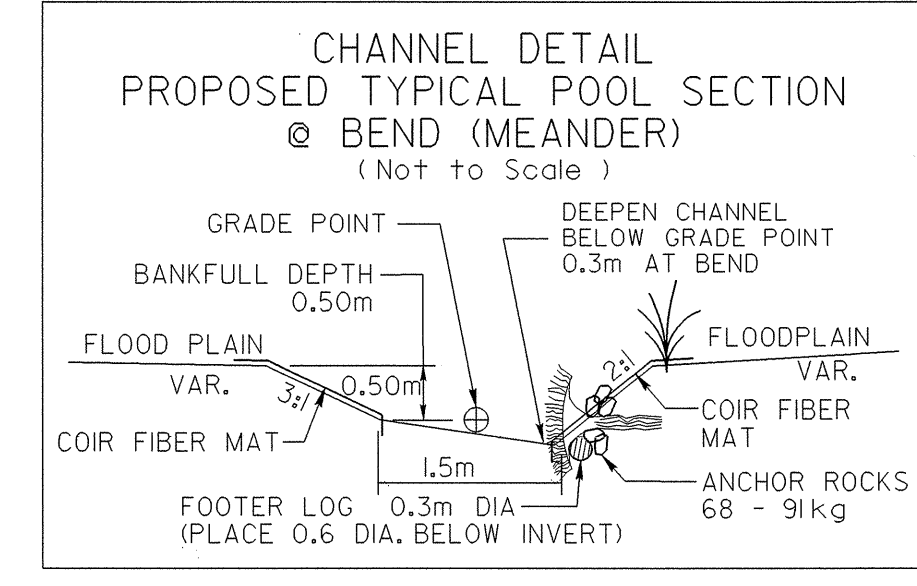
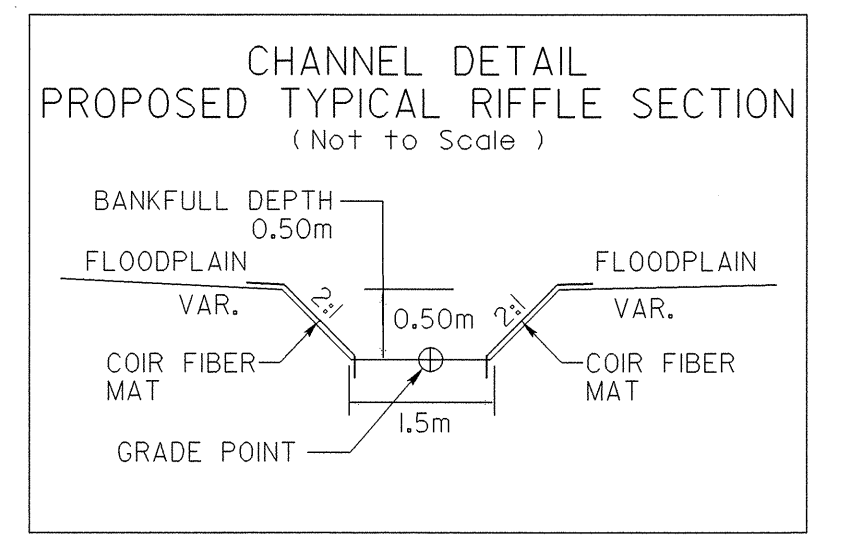
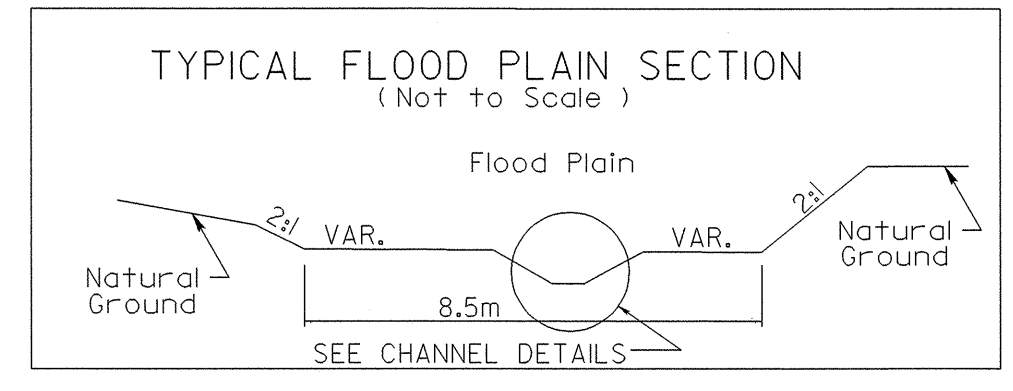


*Note: Rocks should fit tightly. Trim filter fabric flush with top of rocks. When drop between upstream floodplain and downstream flood plain exceeds 0.3m, a boulder sill is recommended in the floodplain.*

*Note: Boulders should be native stone or shot rock, angular, and oblong with axis approximately 0.60m in length.*



**CROSS VANE ROCK WEIR DETAILS**



**NATURAL CHANNEL DESIGN TYPICALS**

- NOTES:**
1. THE CONTRACTOR SHALL LAYOUT THE CHANNEL ALIGNMENT WHICH SHALL CONSIST OF STAKING OUT THE CENTER OF EACH RADIUS, SCRIBING THE CENTER LINE OF THE CHANNEL FOR EACH BEND USING THE INDICATED RADIUS, AND SCRIBING CENTERLINE OF THE TANGENT SECTIONS BY CONNECTING SUCCESSIVE BENDS WITH STRAIGHT LINE.  $R_i = 6.5m \pm$  / 21.3 ft
  2. FIELD ADJUSTMENTS OF THE ALIGNMENT MAY BE REQUIRED TO AVOID CERTAIN OBSTACLES, APPROVAL BY THE ENGINEER OF THE STAKE-OUT ALIGNMENT SHALL BE REQUIRED PRIOR TO INITIATION OF THE CONSTRUCTION OF THE CHANNEL.
  3. LOCATE ROCK VANES ACCORDING TO PLAN SHEET.
  4. NUMBER OF ROOTWADS INSTALLED TO BE DETERMINED ON SITE.
  5. ROOTWADS TO BE SPACED 4x DIAMETER OF ROOT BASE.
  6. FOOTER LOG ANCHOR ROCK TO BE PLACED ON THE DOWNSTREAM END OF EACH FOOTER LOG SO THAT IT IS LEANING AGAINST THE LOG ON THE SIDE AWAY FROM THE CHANNEL.
  7. WHEN BACKFILLING OVER AND AROUND FOOTER LOGS, ROOTWAD LOGS AND ANCHOR ROCKS FIRMLY SECURE ALL COMPONENTS INCLUDING JOINTS, CONNECTIONS AND GAPS.
  8. PLANTINGS SHOULD BE PLACED ABOVE BANKFULL DEPTH.

MORPHOLOGICAL MEASUREMENT TABLE				
VARIABLES	EXISTING CHANNEL	PROPOSED REACH	USGS STATION	REFERENCE REACH
1) STREAM TYPE	E4	E4	N/A	E4
2) DRAINAGE AREA	0.43 km <sup>2</sup> / 0.18 mi <sup>2</sup>	0.43 km <sup>2</sup> / 0.18 mi <sup>2</sup>	-	0.43 km <sup>2</sup> / 0.18 mi <sup>2</sup>
3) BANKFULL WIDTH	2.33 m / 7.64 ft	3.50 m / 11.50 ft	-	2.33 m / 7.64 ft
4) BANKFULL MEAN WIDTH	0.45 m / 1.50 ft	0.36 m / 1.18 ft	-	0.45 m / 1.50 ft
5) WIDTH/DEPTH RATIO	5.18	9.69	-	5.18
6) BANKFULL CROSS-SECTIONAL AREA	1.05 m <sup>2</sup> / 11.3 ft <sup>2</sup>	1.24 m <sup>2</sup> / 13.35 ft <sup>2</sup>	-	1.05 m <sup>2</sup> / 11.3 ft <sup>2</sup>
7) BANKFULL MEAN VELOCITY	0.95 m/s / 3.12 ft/s	0.80 m/s / 2.62 ft/s	-	0.95 m/s / 3.12 ft/s
8) BANKFULL DISCHARGE	1.00 m <sup>3</sup> /s / 35.3 ft <sup>3</sup> /s	1.00 m <sup>3</sup> /s / 35.3 ft <sup>3</sup> /s	-	1.00 m <sup>3</sup> /s / 35.3 ft <sup>3</sup> /s
9) BANKFULL MAX DEPTH	0.63 m / 2.07 ft	0.50 m / 1.64 ft	-	0.63 m / 2.07 ft
10) WIDTH OF FLOODPRONE AREA	8.35 m / 27.39 ft (avg)	8.5 m / 27.89 ft	-	8.35 m / 27.39 ft (avg)
11) ENTRENCHMENT RATIO	3.58	2.43	-	3.58
12) MEANDER LENGTH	12-20 m / 39-66 ft	24.0 m / 78.74 ft	-	12-20 m / 39-66 ft
13) RATIO OF MEANDER LENGTH TO BANKFULL WIDTH	5.1-8.6	6.86	-	5.1-8.6
14) RADIUS OF CURVATURE	3.5-7.0 m / 11.5-23.0 ft	6.50 m / 21.33 ft	-	3.5-7.0 m / 11.5-23.0 ft
15) RATIO OF RADIUS OF CURVATURE TO BANKFULL WIDTH	1.5-3.0	1.86	-	1.5-3.0
16) BELT WIDTH	5.0-7.0 m / 16.4-23.0 ft	11.0 m / 36.1 ft	-	5.0-7.0 m / 16.4-23.0 ft
17) MEANDER WIDTH RATIO	2.1-3.0	3.14	-	2.1-3.0
18) SINUOSITY (STREAM LENGTH/VALLEY LENGTH)	1.11	1.16	-	1.11
19) VALLEY SLOPE	11%	12.0%	-	11%
20) AVERAGE SLOPE	0.97%	1.4%	-	0.97%
21) POOL SLOPE	0.00%	0.00%	-	0.00%
22) RATIO OF POOL SLOPE TO AVERAGE SLOPE	0.00	0.00	-	0.00
23) MAXIMUM POOL DEPTH	0.65 m / 2.13 ft	0.85 m / 2.78 ft	-	0.65 m / 2.13 ft
24) RATIO OF POOL DEPTH TO AVERAGE BANKFULL DEPTH	1.44	2.36	-	1.44
25) POOL WIDTH	2.70 m / 8.86 ft	4.9 m / 16.07 ft	-	2.70 m / 8.86 ft
26) RATIO OF POOL WIDTH TO BANKFULL WIDTH	1.16	1.40	-	1.16
27) POOL TO POOL SPACING	20.0 m / 65.6 ft	14.0 m / 45.9 ft	-	20.0 m / 65.6 ft
28) RATIO OF POOL TO POOL SPACING TO BANKFULL WIDTH	8.58	4.00	-	8.58
29) RATIO OF LOWEST BANK HEIGHT TO BANKFULL HEIGHT & MAX BANKFULL DEPTH	0.63	1.00	-	0.63

5 0 10

CONST. REV.

R / W REV.

PROJECT REFERENCE NO. R-2206C

SHEET NO. 2-S

R / W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER