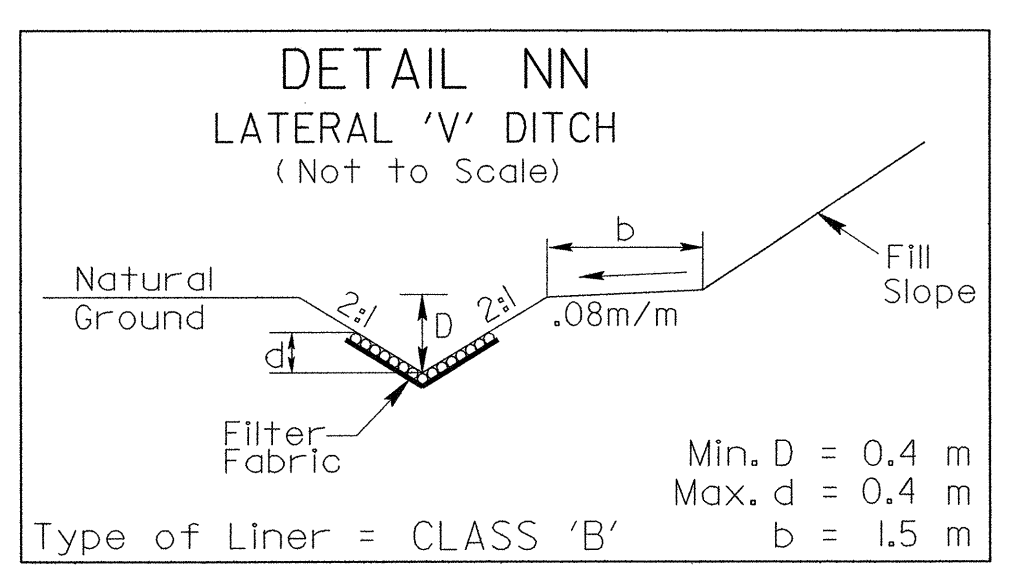
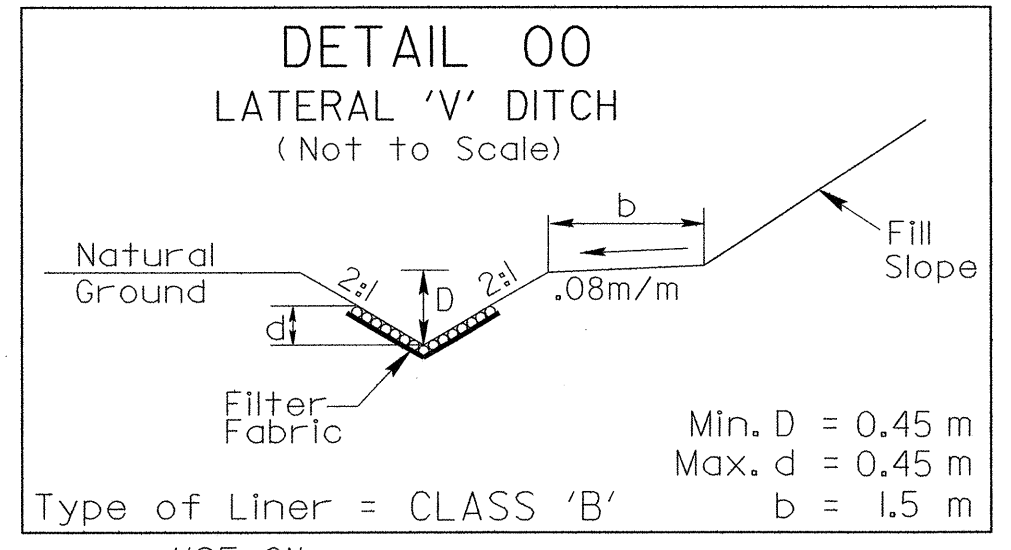


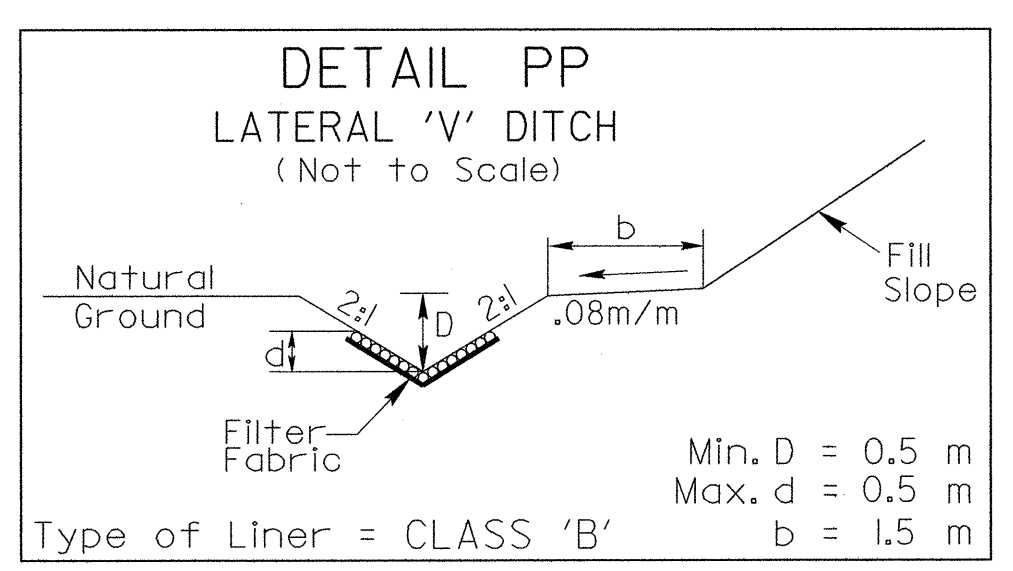
- USE ON:
- L- 105+95 TO 106+72 RT. EST. DDE=580 CM
 - L- 109+40 TO 110+00 LT. EST. DDE= 141 CM
 - L- 112+45 TO 113+37 RT. EST. DDE= 1034 CM
 - L- 113+37 TO 113+80 RT. EST. DDE= 309 CM
 - L- 114+20 TO 114+50 RT. EST. DDE= 74 CM
 - L- 125+60 TO 126+13 LT. EST. DDE= 422 CM
 - L- 131+40 TO 131+64 LT. EST. DDE= 196 CM
 - L- 134+94 TO 135+40 LT. EST. DDE= 38 CM
 - L- 138+34 TO 138+63 RT. EST. DDE= 44 CM
 - L- 142+79 TO 142+92 LT. EST. DDE= 122 CM
 - L- 142+92 TO 143+35 LT. EST. DDE= 147 CM
 - L- 154+66 TO 155+00 RT. EST. DDE= 604 CM
 - L- 157+71 TO 158+00 RT. EST. DDE= 42 CM
 - L- 158+36 TO 159+36 LT. EST. DDE= 531 CM
 - L- 165+19 TO 165+40 LT. EST. DDE= 178 CM
 - Y9- 18+55 TO 19+20 LT. EST. DDE= 18 CM
 - Y9- 17+20 TO 18+43 RT. EST. DDE= 328 CM
 - DRIVE 'E' 10+16 TO 10+26 RT. EST. DDE = 3 CM



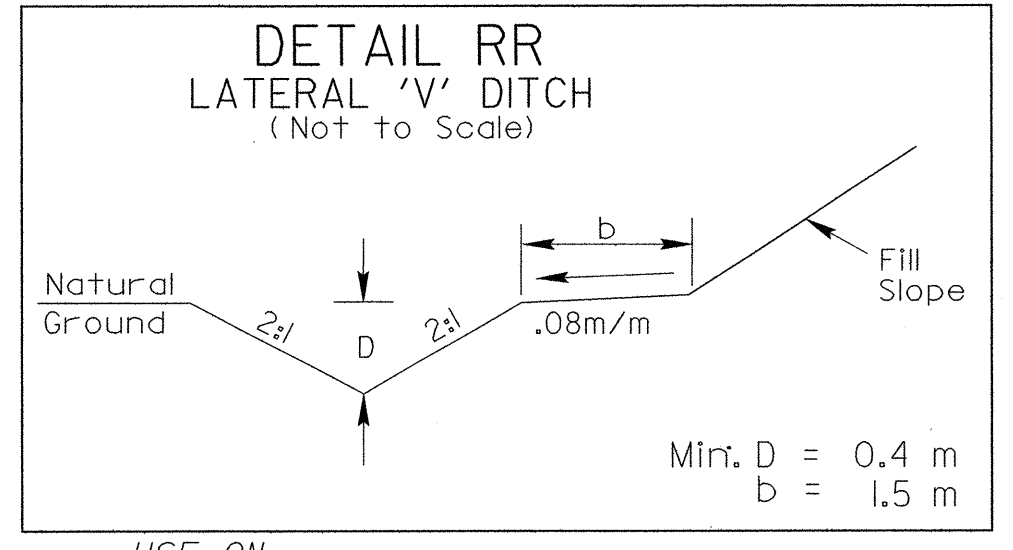
- USE ON:
- L- 114+50 TO 115+40 RT. EST. DDE= 700 CM



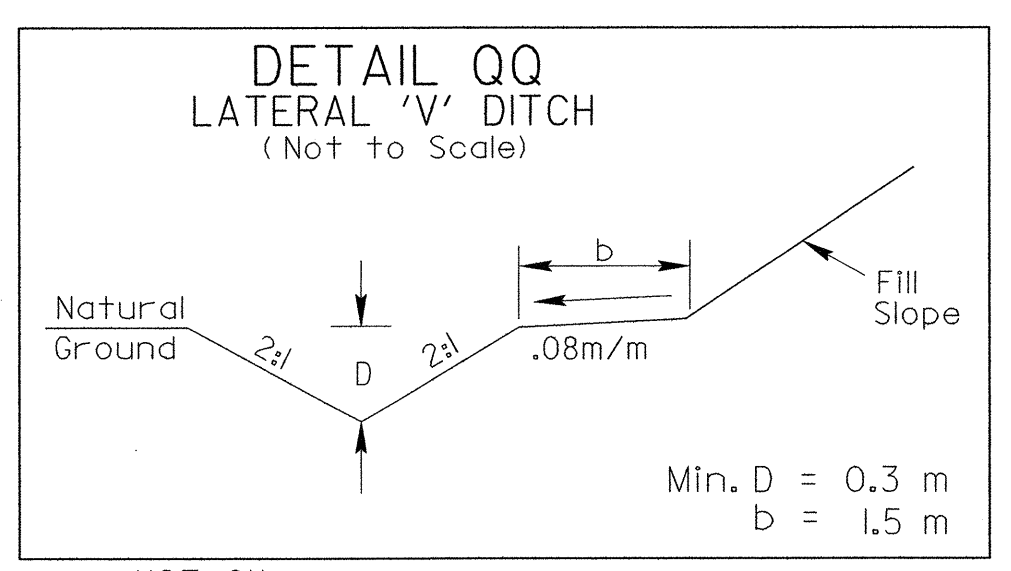
- USE ON:
- L- 118+29 TO 118+46 RT. EST. DDE= 30 CM
 - L- 118+80 TO 119+40 RT. EST. DDE= 543 CM



- USE ON:
- L- 123+70 TO 124+60 LT. EST. DDE= 124 CM



- USE ON:
- L- 121+69 TO 122+58 RT. EST. DDE= 340 CM



- USE ON:
- L- 104+20 TO 105+50 RT. EST. DDE= 224 CM
 - L- 105+50 TO 105+95 RT. EST. DDE= 64 CM
 - L- 113+80 TO 114+20 RT. EST. DDE= 76 CM
 - L- 115+40 TO 116+05 RT. EST. DDE= 257 CM
 - L- 118+46 TO 118+80 RT. EST. DDE= 297 CM
 - L- 119+40 TO 119+80 LT. EST. DDE= 65 CM
 - L- 124+60 TO 125+60 LT. EST. DDE= 257 CM
 - L- 132+20 TO 132+93 LT. EST. DDE= 295 CM
 - L- 138+63 TO 139+00 RT. EST. DDE= 40 CM
 - L- 158+00 TO 158+48 RT. EST. DDE= 141 CM
 - L- 159+45 TO 159+70 LT. EST. DDE= 16 CM
 - L- 171+20 TO 171+90 LT. EST. DDE= 105 CM
 - Y10- 12+52 TO 13+40 RT. EST. DDE = 139 CM

METRIC

PROJECT REFERENCE NO. R-2206B SHEET NO. 2-D

R/W SHEET NO.

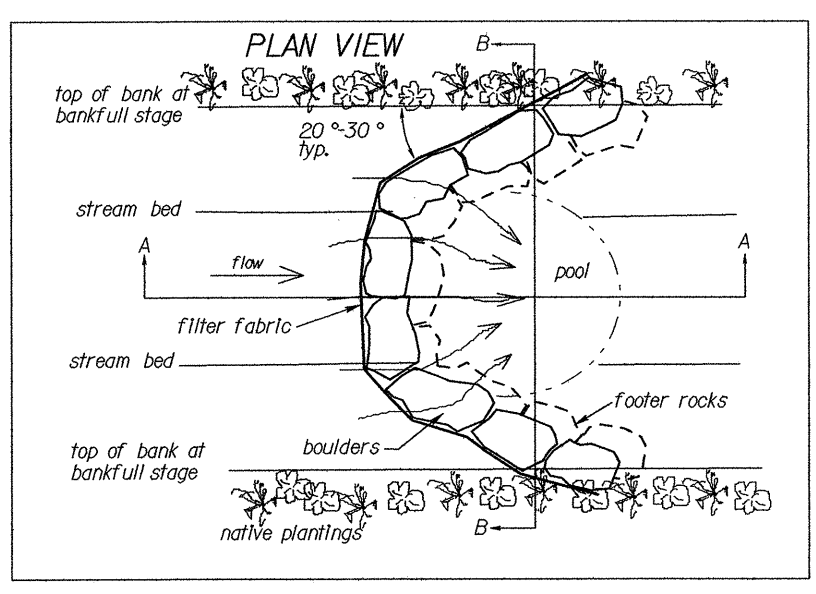
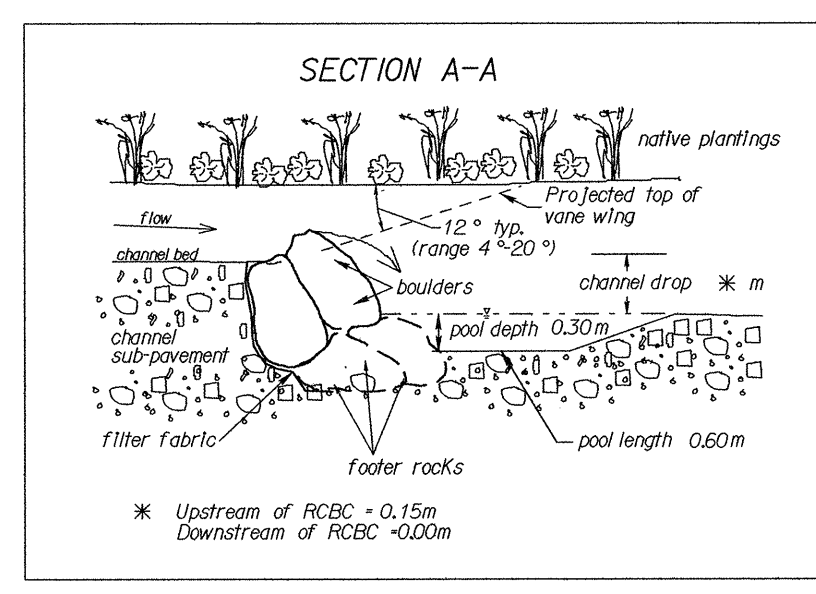
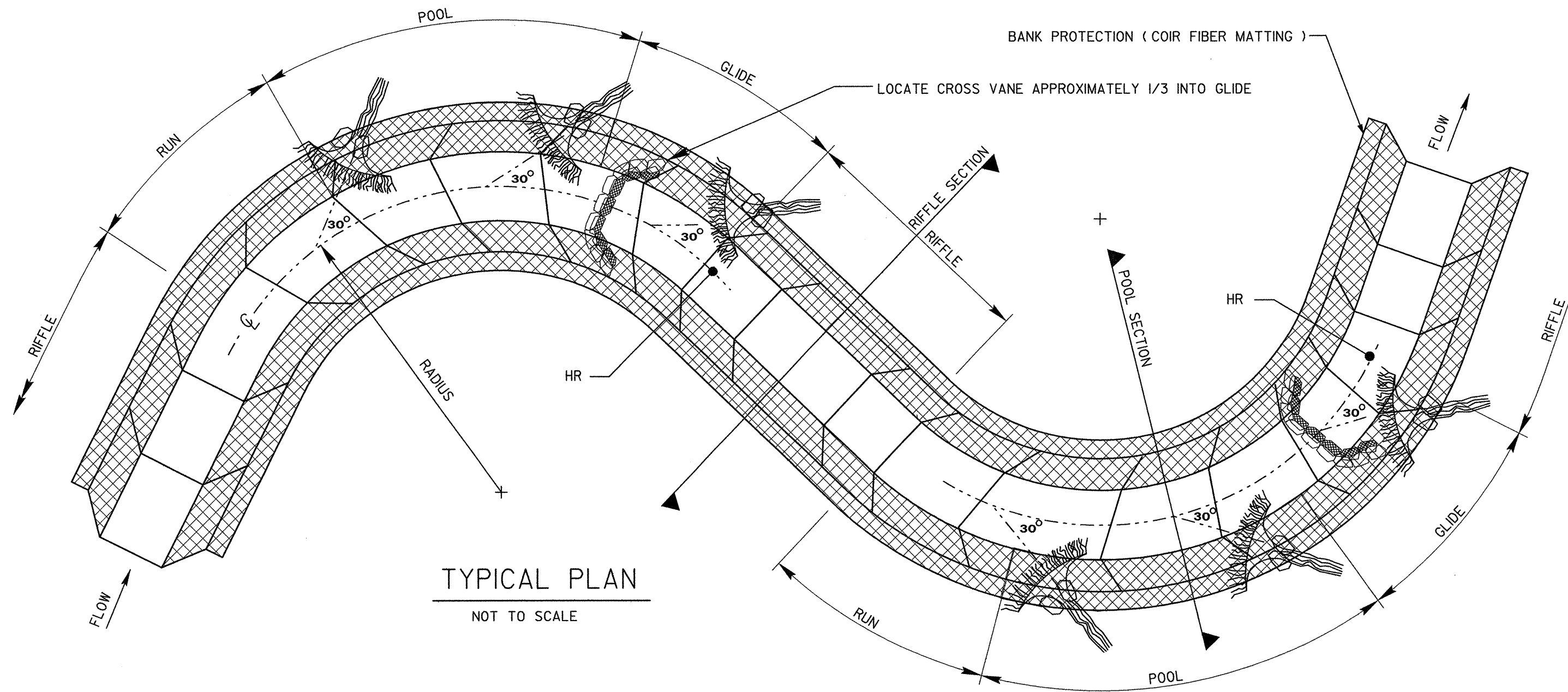
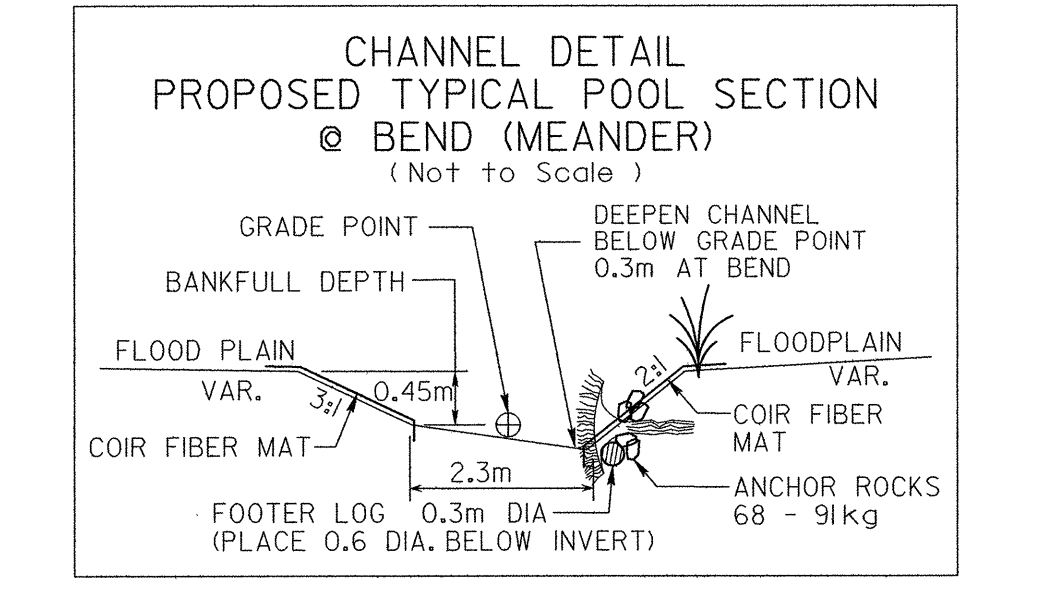
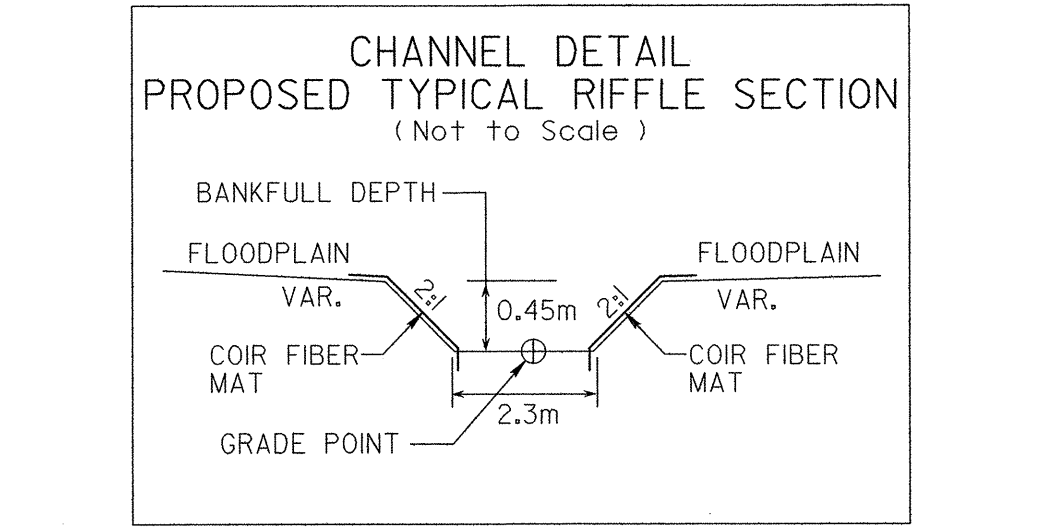
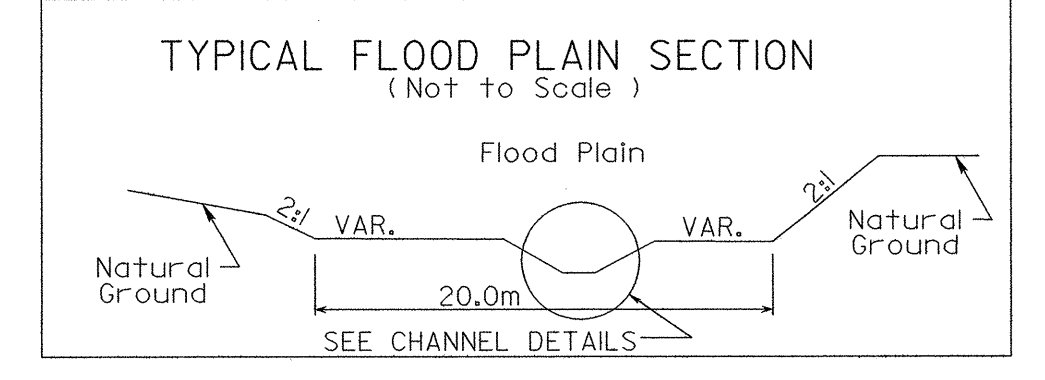
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

SEAL 022609
SEAL 14160

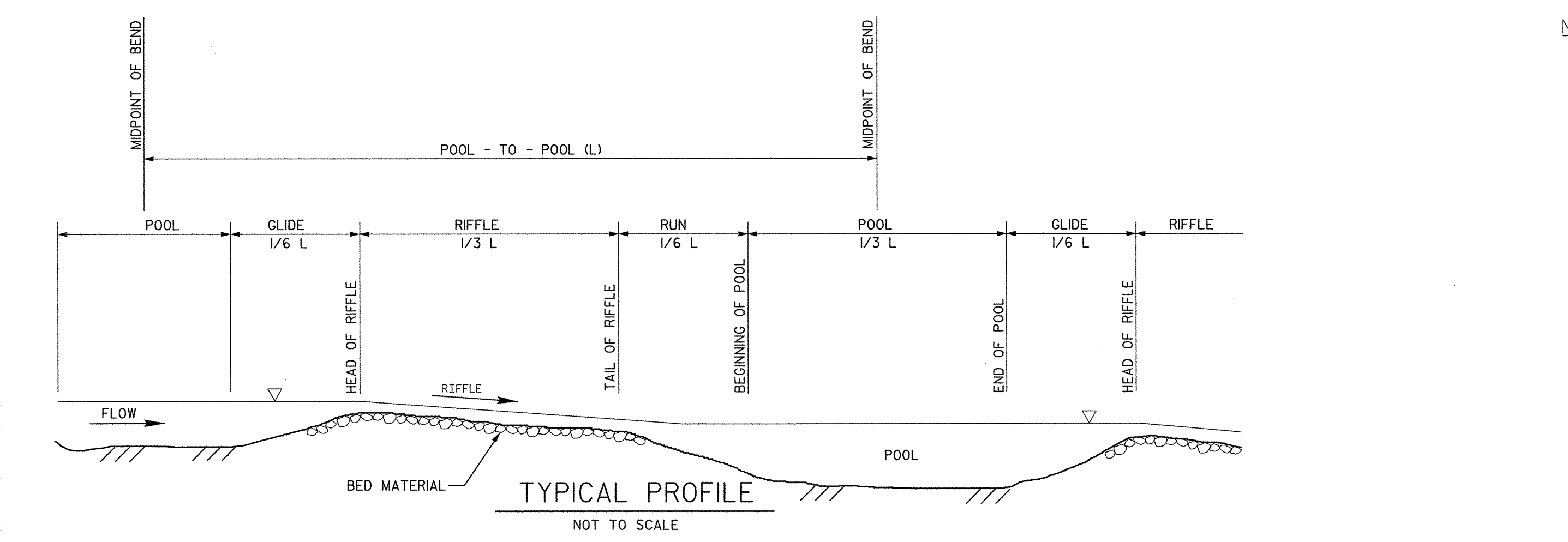
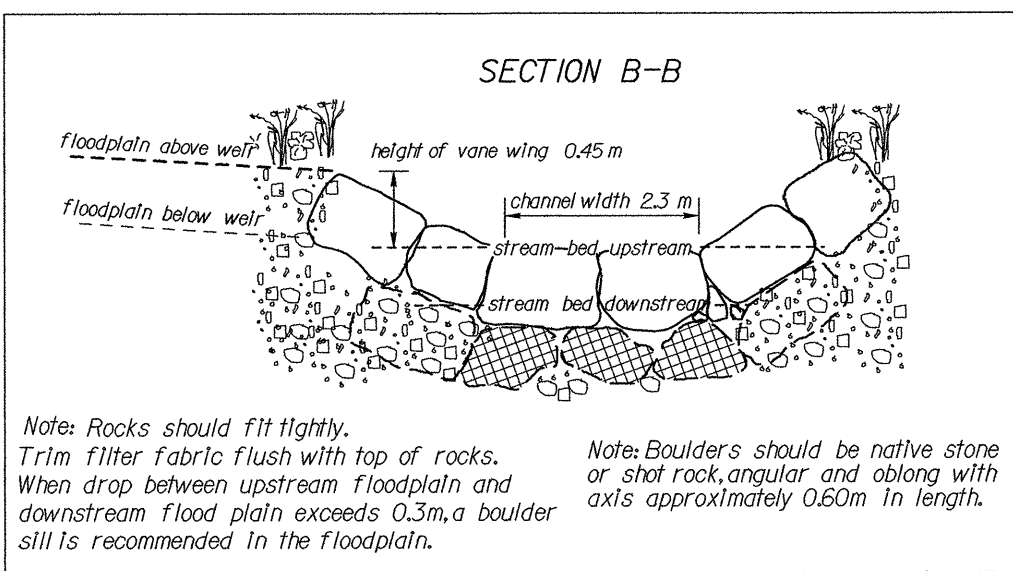
WILBUR SMITH ASSOCIATES
RALEIGH, N. C. 27602-2478

TRANSLITE CONSULTING
1300 PARSONS DRIVE, SUITE 10-10
RALEIGH, N. C. 27609

CONST. REV.
R/W REV.



CROSS VANE ROCK WEIR DETAILS



- NOTES:
- 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.
 - REFER TO MORPHOLOGICAL MEASUREMENT TABLE AND PLAN SHEET FOR DIMENSIONS.

NATURAL CHANNEL DESIGN TYPICALS

- NOTES:
- THE STREAM RESTORATION WILL BE DEPENDENT UPON THE CONDITION OF THE RELIC STREAM EXPOSED WHEN THE PONDS ARE DRAINED. THE OFFICE OF NATURAL ENVIRONMENT AND/OR HYDRAULICS UNIT WILL OBSERVE THE STREAM AND APPROVE HOW THE RESTORATION WILL PROCEED. THE RELIC STREAM WILL BE CONSERVED FOR MITIGATION OF IT'S CONDITION IS STABLE.
 - 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. $R=9.0m \pm / - 29.5 \text{ ft}$
 - 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.
 - LOCATE ROCK VANES ACCORDING TO PLAN SHEET.
 - NUMBER OF ROOTWADS INSTALLED TO BE DETERMINED ON SITE.
 - ROOTWADS TO BE SPACED 4x DIAMETER OF ROOT BASE.
 - 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.
 - WHEN BANKFILLING OVER AND AROUND FOOTER LOGS, ROOTWAD LOGS AND ANCHOR ROCKS FIRMLY SECURE ALL COMPONENTS INCLUDING JOINTS, CONNECTIONS AND GAPS.
 - PLANTINGS SHOULD BE PLACED ABOVE BANKFULL DEPTH.

MORPHOLOGICAL MEASUREMENT TABLE

VARIABLES	EXISTING CHANNEL	PROPOSED REACH	USGS STATION	REFERENCE REACH
1) STREAM TYPE	N/A - (2) Ponds	C5	N/A	C5
2) DRAINAGE AREA	1.00 km ² / 0.39 mi ²	1.00 km ² / 0.39 mi ²	-	1.00 km ² / 0.39 mi ²
3) BANKFULL WIDTH	N/A	4.8 m / 15.5 ft	-	4.45 m / 14.6 ft
4) BANKFULL MEAN WIDTH	-	0.35 m / 1.14 ft	-	0.32 m / 1.04 ft
5) WIDTH / DEPTH RATIO	-	8.84	-	14.0
6) BANKFULL CROSS-SECTIONAL AREA	-	1.43 m ² / 5.34 ft ²	-	1.41 m ² / 5.2 ft ²
7) BANKFULL MEAN VELOCITY	-	0.80 m/s / 2.61 ft/s	-	0.80 m/s / 2.64 ft/s
8) BANKFULL DISCHARGE	-	1.13 m ³ /s / 40.0 ft ³ /s	-	1.13 m ³ /s / 40.0 ft ³ /s
9) BANKFULL MAX. DEPTH	-	0.45 m / 1.50 ft	-	0.52 m / 1.69 ft
10) WIDTH OF FLOODPRONE AREA	-	21.7 m / 71.3 ft	-	54.9 m / 180 ft
11) ENTRENCHMENT RATIO	-	5.28	-	12.33
12) MEANDER LENGTH	-	20 m / 41 ft	-	20-26 m / 41-85 ft
13) RATIO OF MEANDER LENGTH TO BANKFULL WIDTH	-	3.04	-	2.80-5.82
14) RADIUS OF CURVATURE	-	9.0 m / 29.5 ft	-	9.0-12.0 m / 29.5-39.4 ft
15) RATIO OF RADIUS OF CURVATURE TO BANKFULL WIDTH	-	2.19	-	2.02-2.70
16) BELT WIDTH	-	6.5 m / 21.3 ft	-	6.0 m / 19.7 ft
17) MEANDER WIDTH RATIO	-	1.58	-	1.35
18) SINUOSITY (STREAM LENGTH / VALLEY LENGTH)	-	1.05	-	1.06
19) VALLEY SLOPE	-	1.87%	-	0.20%
20) AVERAGE SLOPE	-	1.73%	-	0.23%
21) POOL SLOPE	-	0.00%	-	0.00%
22) RATIO OF POOL SLOPE TO AVERAGE SLOPE	-	0.00	-	0.00
23) MAXIMUM POOL DEPTH	-	0.45 m / 1.48 ft	-	0.54 m / 1.77 ft
24) RATIO OF POOL DEPTH TO AVERAGE BANKFULL DEPTH	-	1.30	-	1.70
25) POOL WIDTH	-	4.25 m / 13.94 ft	-	4.5 m / 14.76 ft
26) RATIO OF POOL WIDTH TO BANKFULL WIDTH	-	1.03	-	1.01
27) POOL TO POOL SPACING	-	8.0 m / 26.2 ft	-	4.0-8.0 m / 13.1-26.2 ft
28) RATIO OF POOL TO POOL SPACING TO BANKFULL WIDTH	-	1.94	-	0.90-1.79
29) RATIO OF LOWEST BELT HEIGHT TO BANKFULL HGT. & MAX BANKFULL DEPTH	-	1.00	-	0.86

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TIME: 11:37:16 AM
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