Attachment B
FISHERIES RESTORATION GRANT PROGRAM PROJECT LOCATION By County
RESOURCES AGENCY
CALIFORNIA
DEPARTMENT
FISH&GAME
Del Norte
Siskiyou
Modoc
Humboldt
Trinity
Shasta
Lassen
Tehama
Plumas
Glenn
Butte
Sierra
Mendocino
Colusa
Yuba
Nevada
Lake
Sutter
Placer
Yolo
El Dorado
Sonoma
Napa
Alpine
Sacramento
Amador
Solano
Calaveras
Marin
Contra Costa
San Joaquin
Tuolumne
Mono
San Francisco
Alameda
Stanislaus
Mariposa
San Mateo
Santa Clara
Merced
Madera
Santa Cruz
Fresno
San Benito
Inyo
Tulare
Monterey
Kings
San Luis Obispo
Kern
San Bernardino
Santa Barbara
Ventura
Los Angeles
Orange
Riverside
San Diego
Project Area
USACE Districts
San Francisco
Sacramento
Los Angeles

Attachment C

Figures are from the California Salmonid Stream Restoration Manual (http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp)

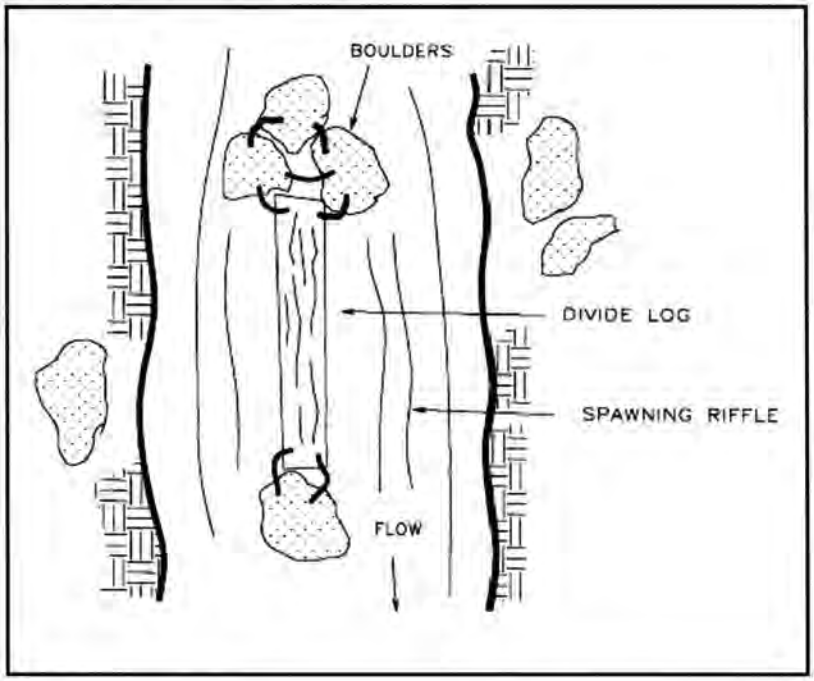


Figure VII-17. Divide log.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

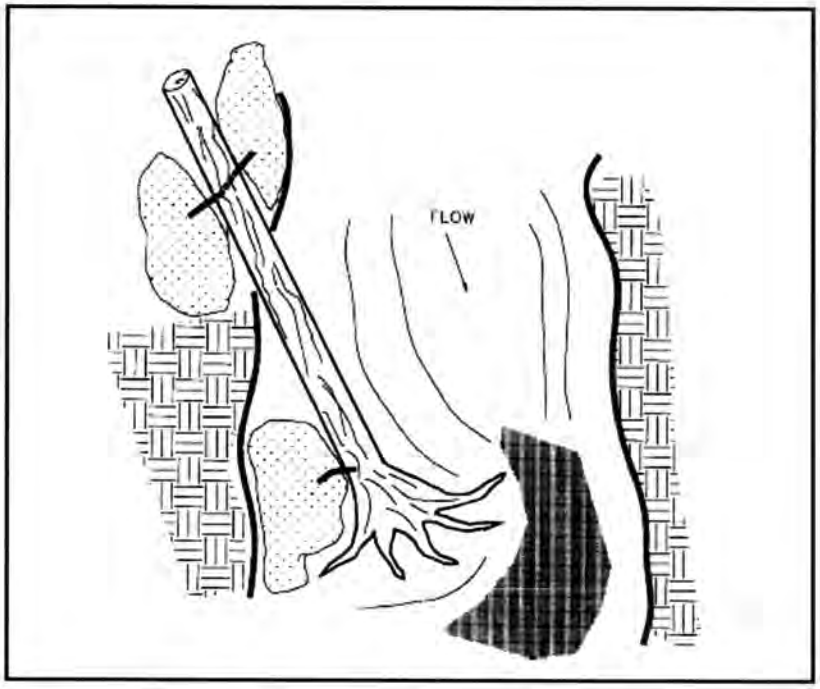


Figure VII-18. Digger log.

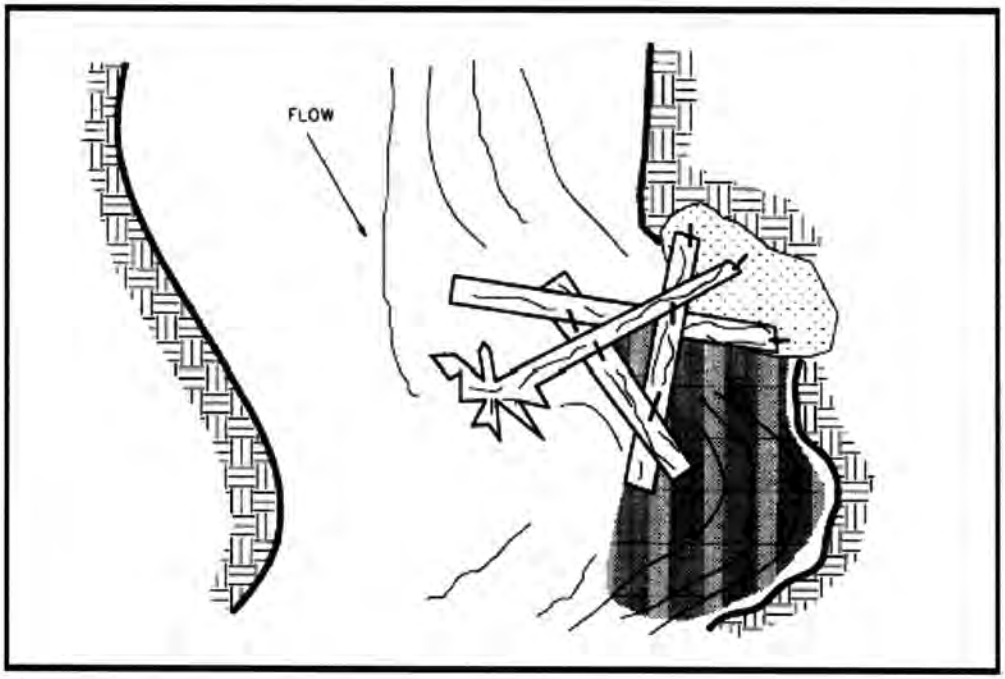


Figure VII-19. Spider logs.

The above figures can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

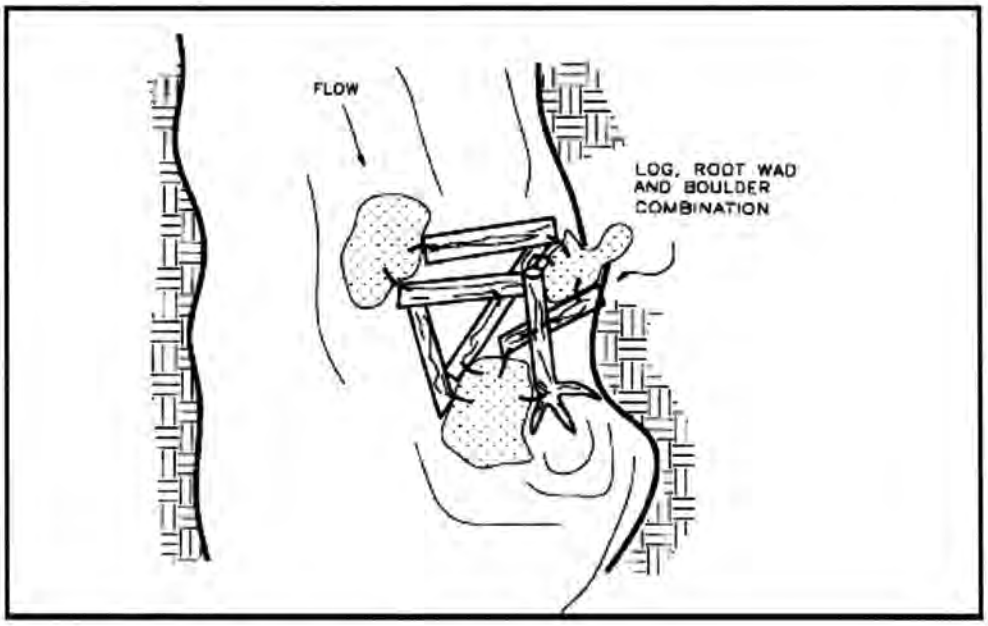


Figure VII-20. Log, root wad, and boulder combination.

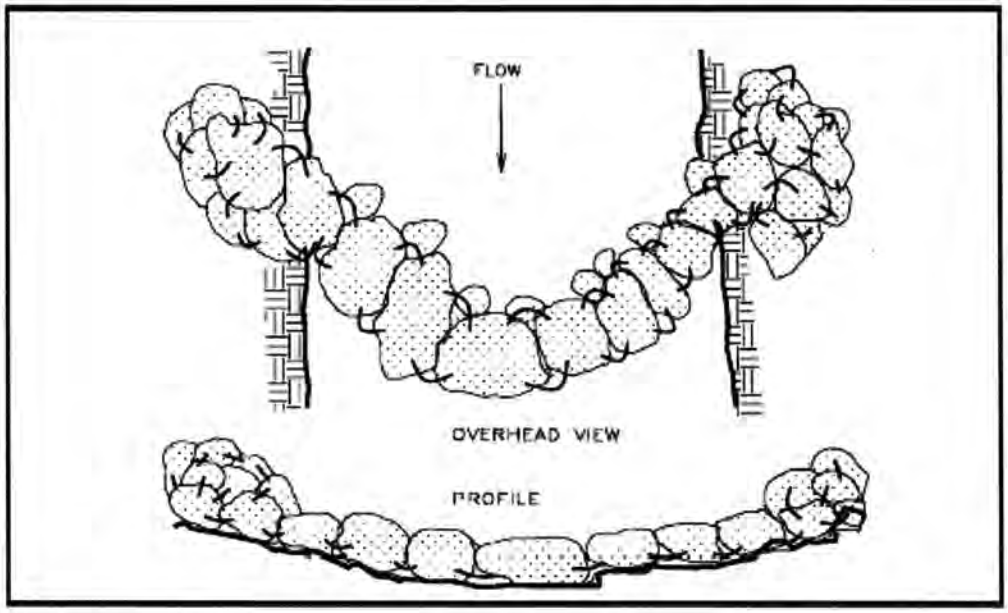


Figure VII-21. Downstream-V boulder weir.

The above figures can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

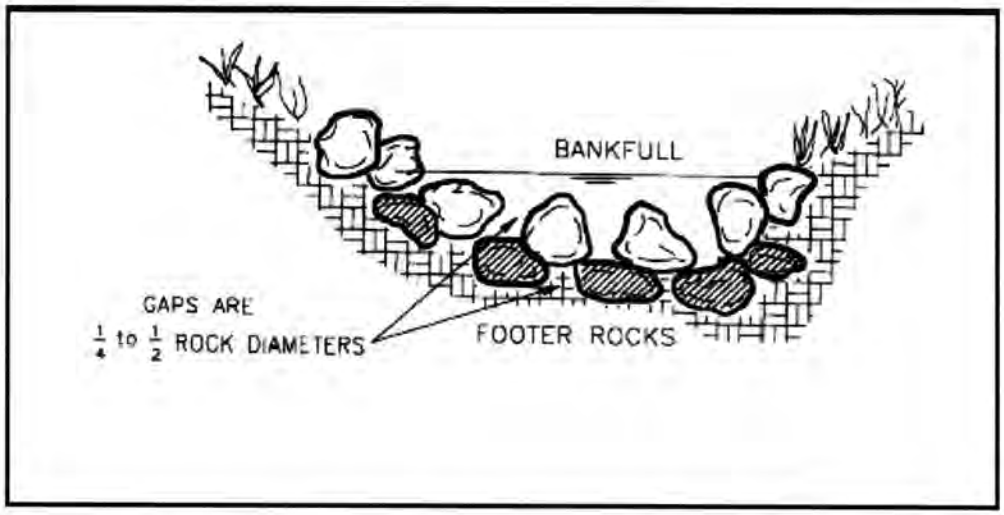


Figure VII-22. Vortex boulder weir, cross section view (Rosgen, 1993).

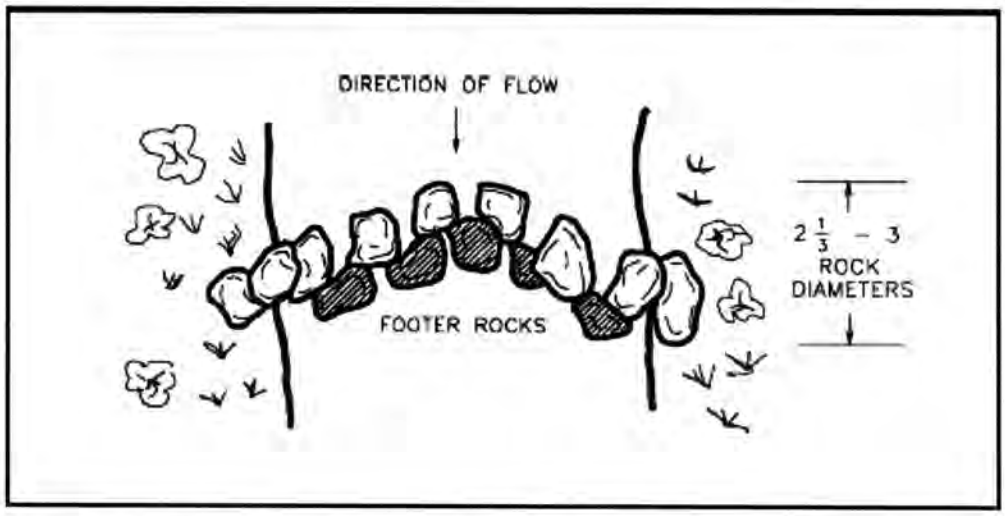


Figure VII-23. Vortex boulder weir, plan view (Rosgen, 1993).

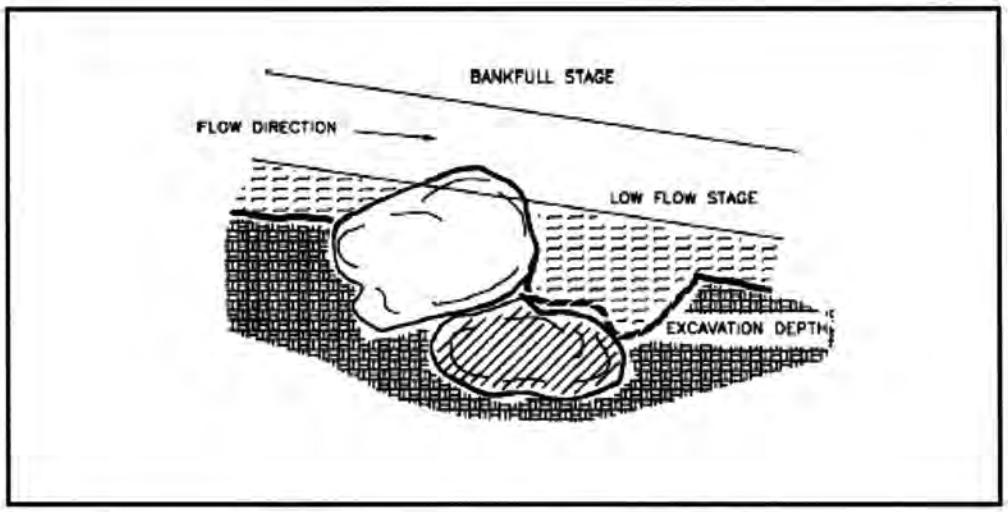


Figure VII-24. Vortex boulder weir, profile view (Rosgen, 1993).

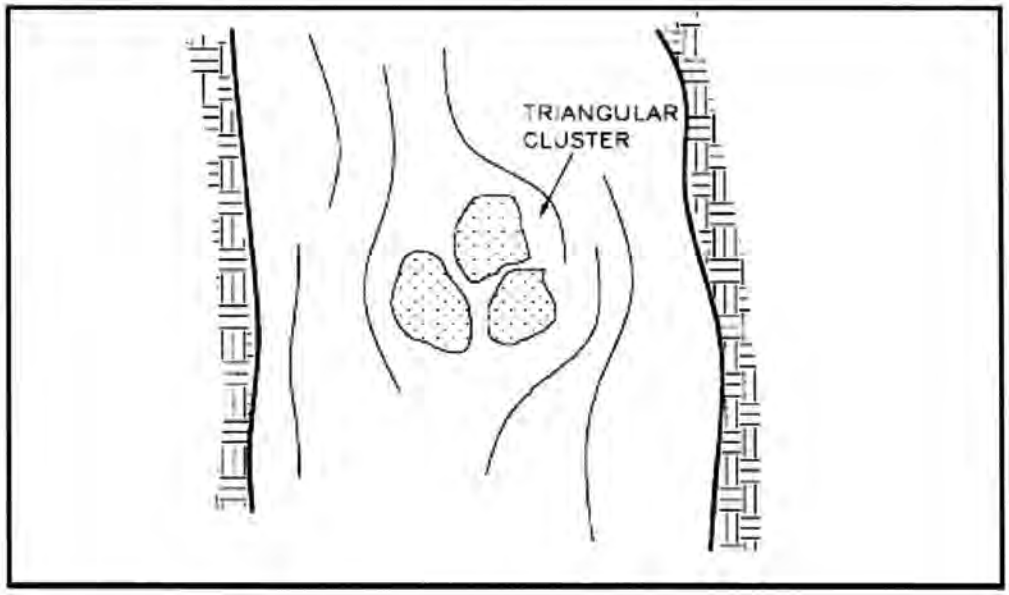


Figure VII-25. Boulder cluster.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

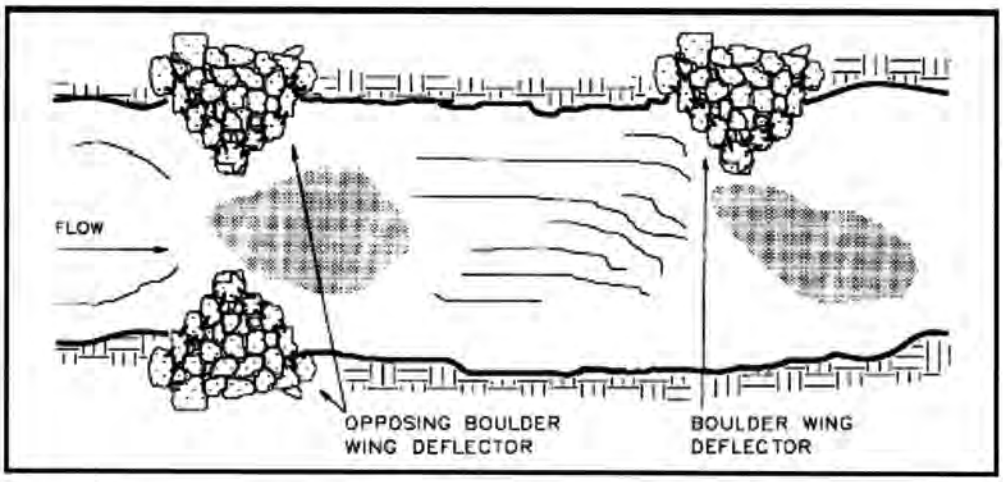


Figure VII-26. Single and opposing boulder wing-deflectors.

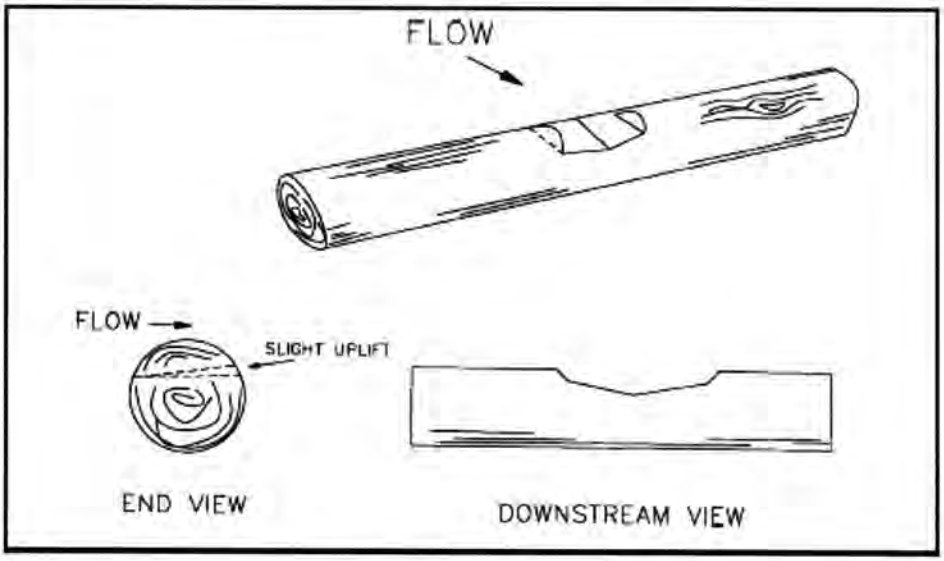


Figure VII-27. Straight log weir with low-flow notch.

The above figures can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

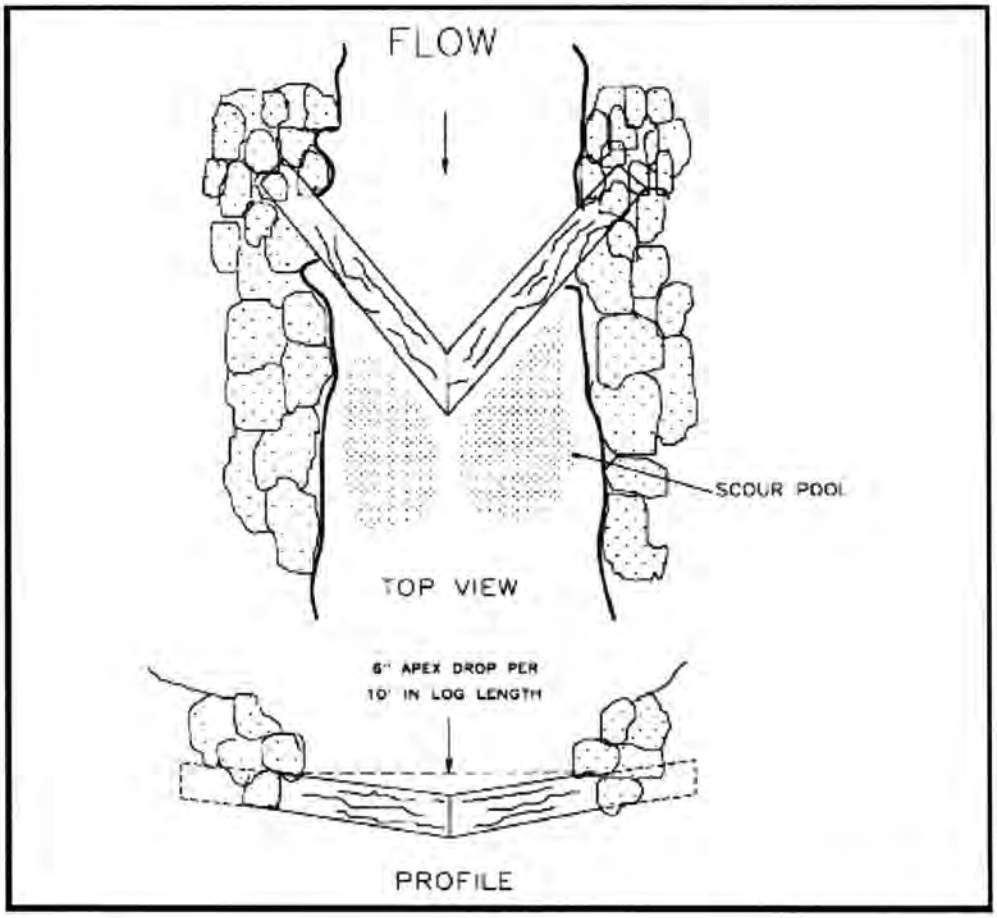


Figure VII-28. Downstream-V log weir.

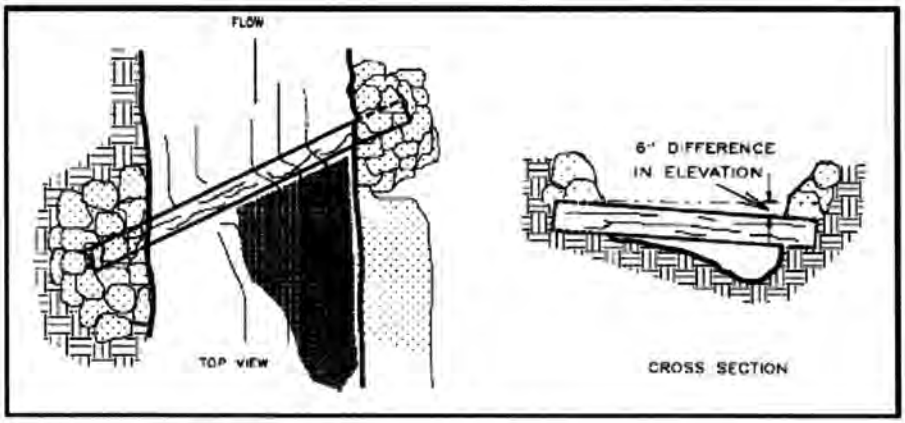


Figure VII-29. Diagonal log weir.

The above figures can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

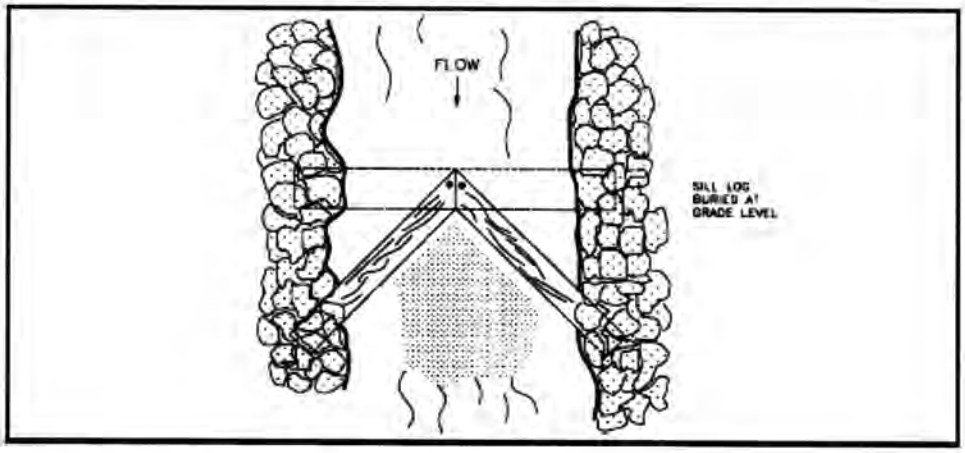


Figure VII-30. Upstream-V log weir.

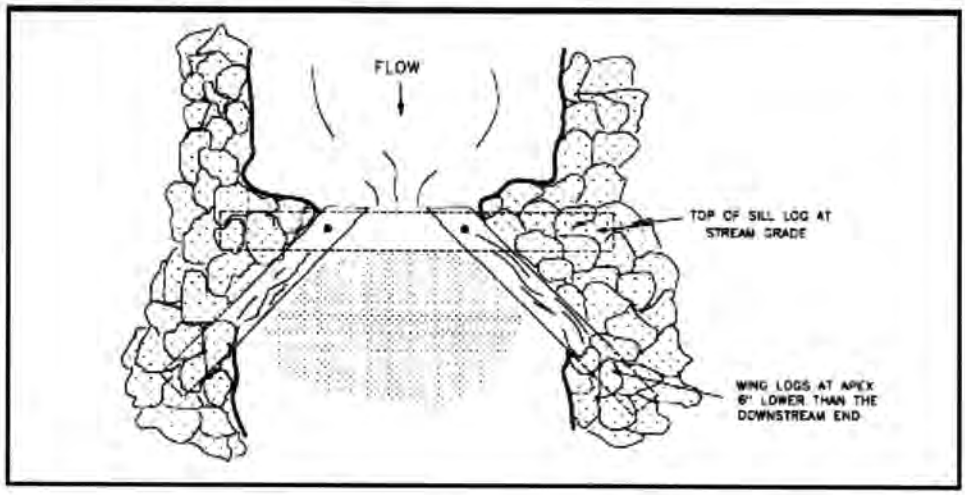


Figure VII-31. Upstream-V log weir with a low-flow notch.

The above figures can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

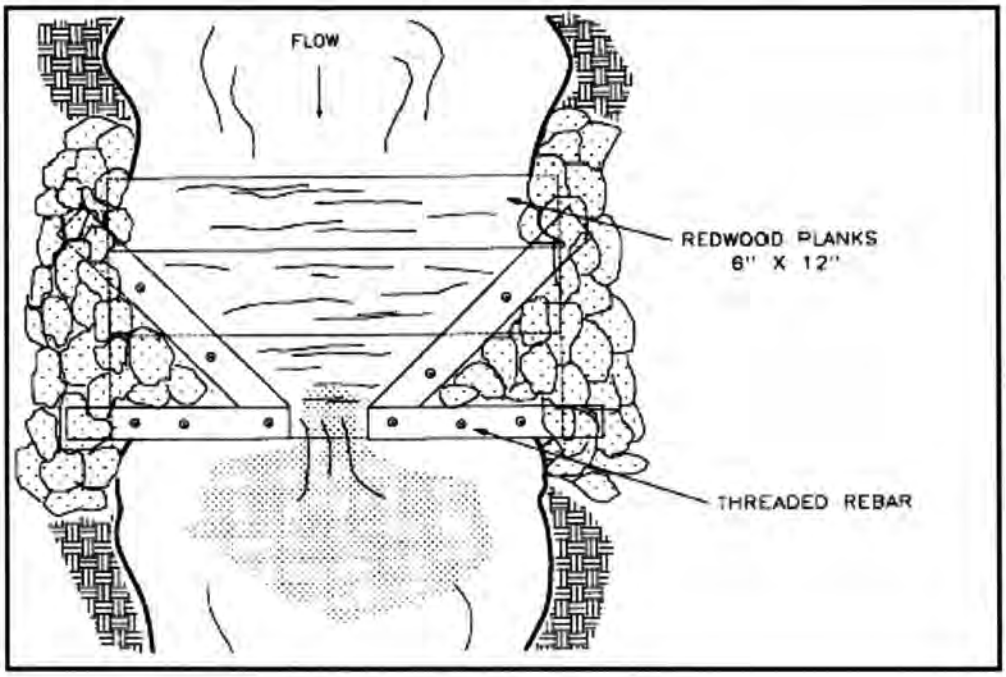


Figure VII-33. Log constrictors over planks.

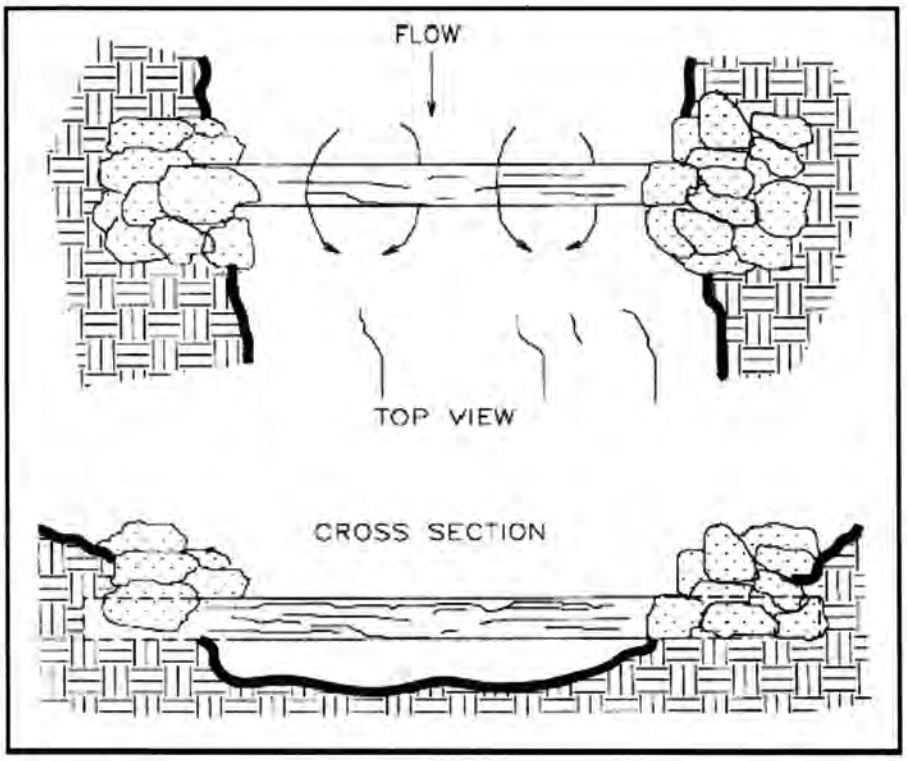


Figure VII-34. Upsurge weir.

The above figures can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

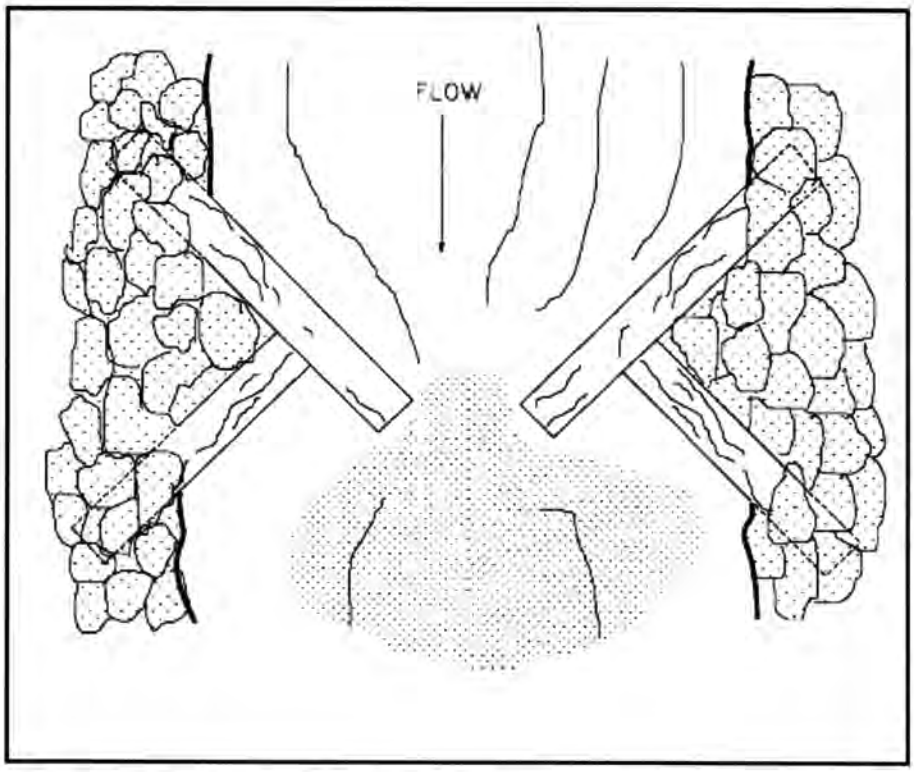


Figure VII-35. Opposing log wing-deflector.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

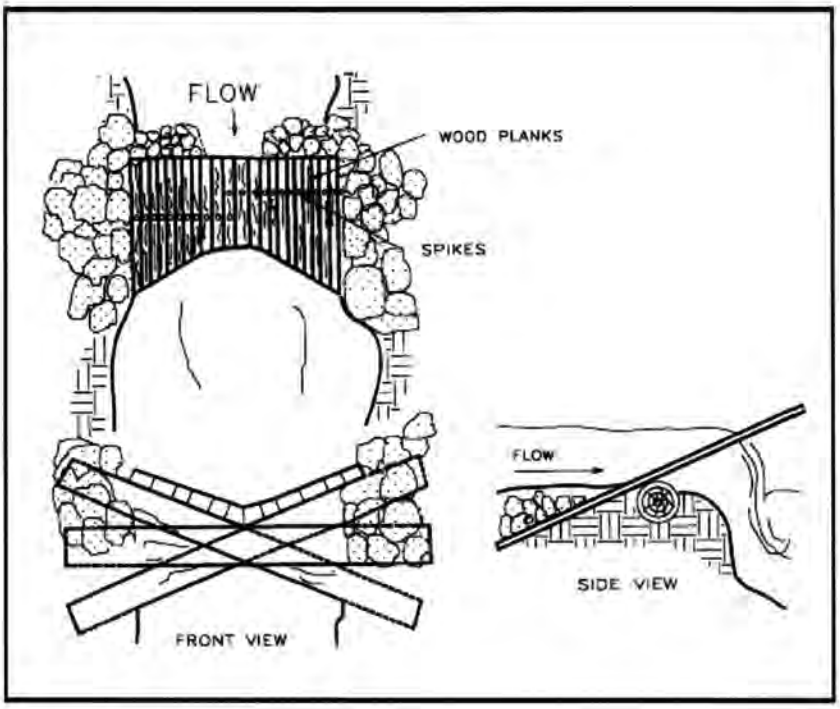


Figure VII-36. Hewitt ramp.

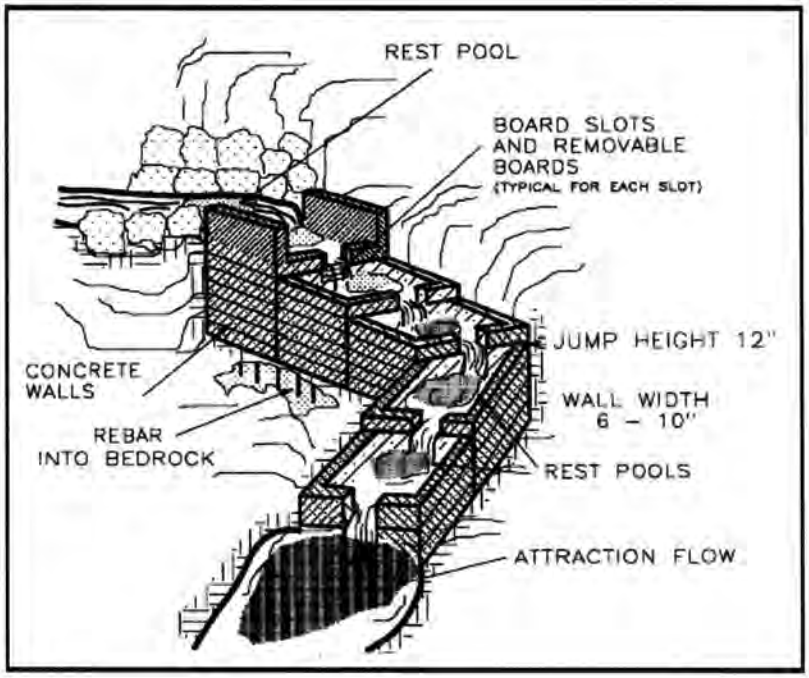
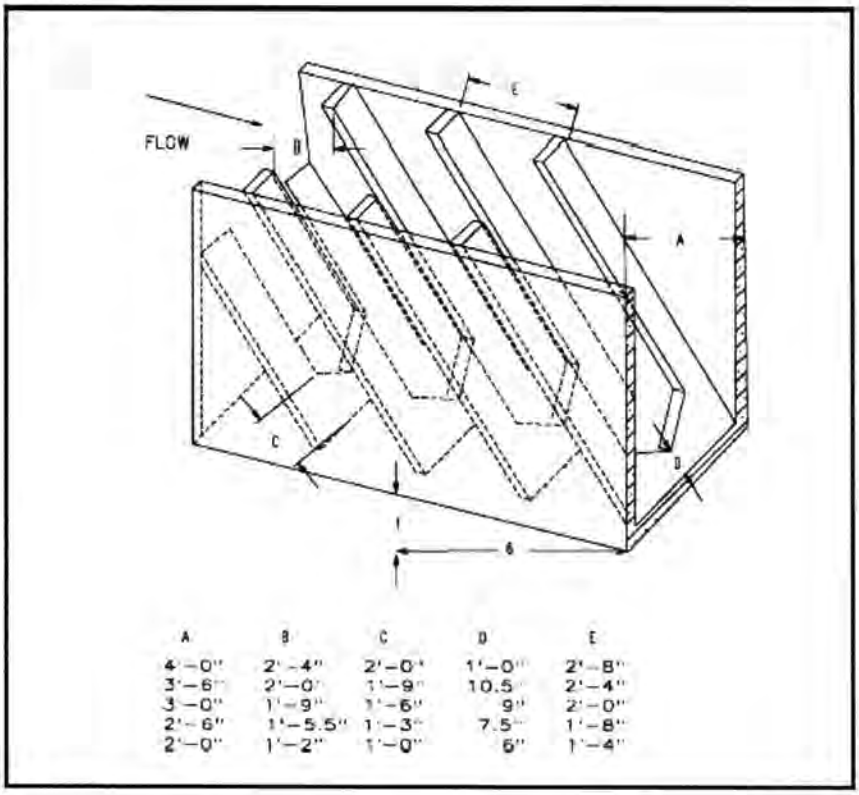


Figure VII-39. Step-and-pool fishway.

The above figures can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)



A	B	C	D	E
4'-0"	2'-4"	2'-0"	1'-0"	2'-8"
3'-6"	2'-0"	1'-9"	10.5"	2'-4"
3'-0"	1'-9"	1'-6"	9"	2'-0"
2'-6"	1'-5.5"	1'-3"	7.5"	1'-8"
2'-0"	1'-2"	1'-0"	6"	1'-4"

Figure VII-40. Denil fishway.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

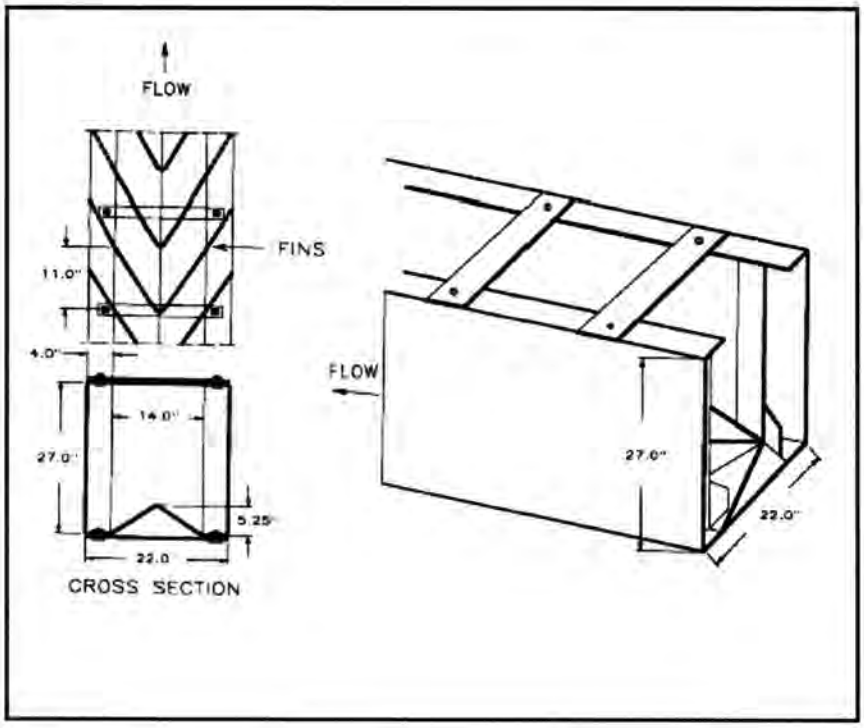


Figure VII-41. Alaskan steep-pass.

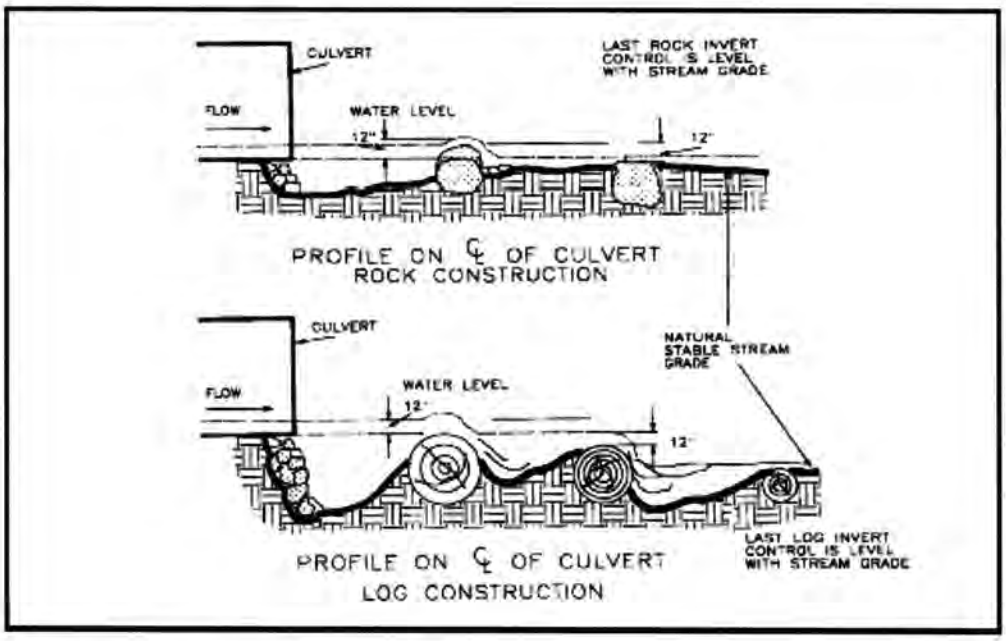


Figure VII-42. Back-flooding weirs.

The above figures can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

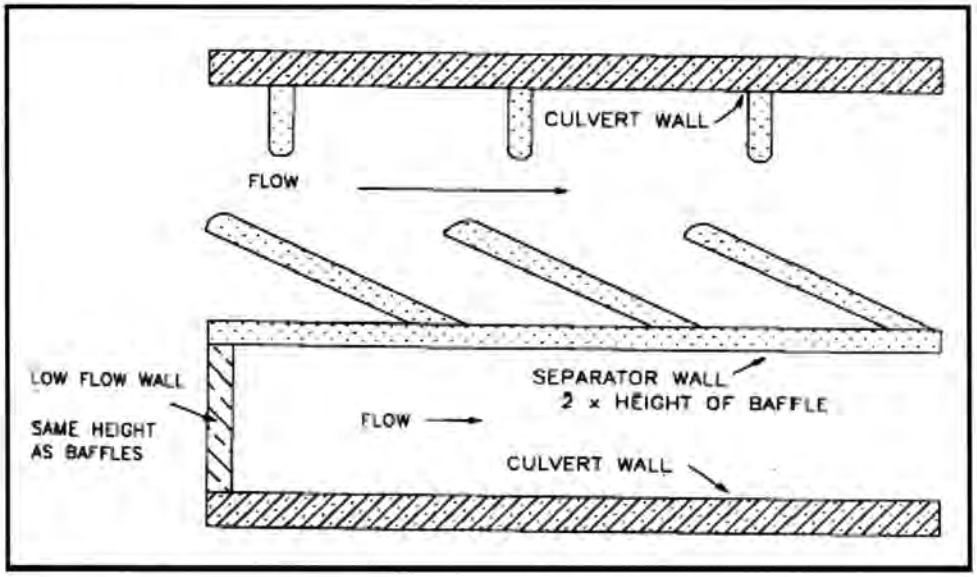


Figure VII-43. Washington baffles with a separator wall. (*Stream Enhancement Guide*, British Columbia Ministry of Environment, 1980, p. 42).

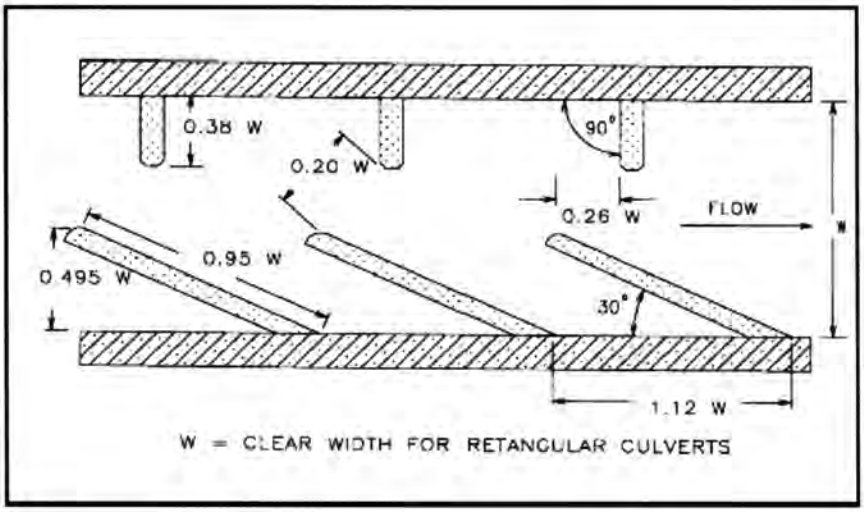


Figure VII-44. Washington baffles. (*Stream Enhancement Guide*, British Columbia Ministry of Environment, 1980, p.42).

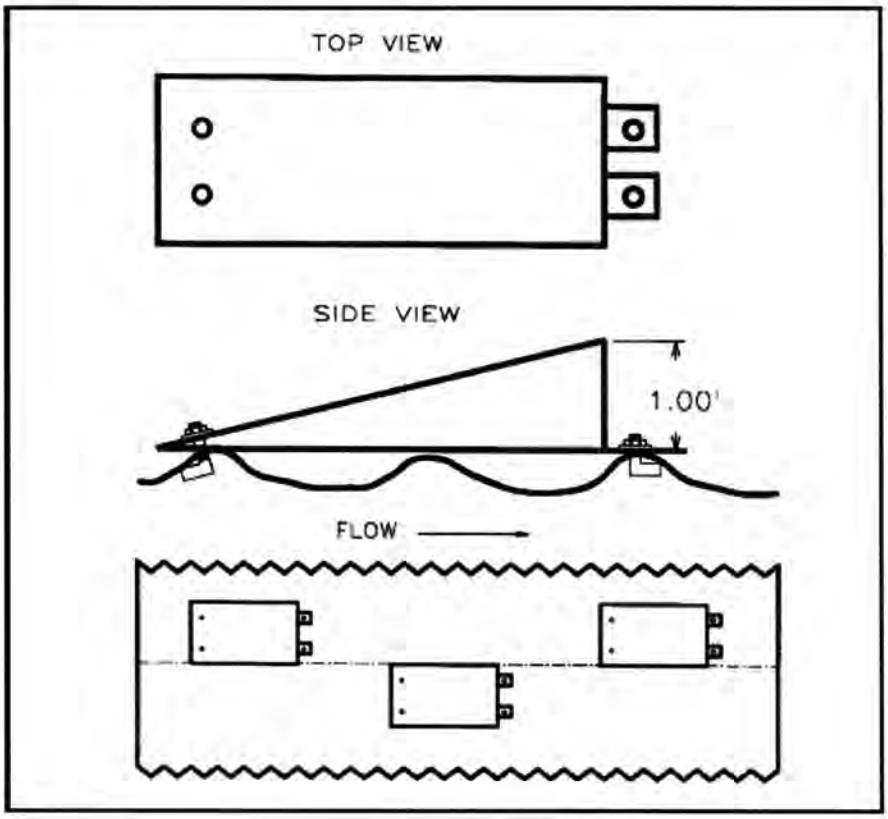


Figure VII-47. Corrugated metal pipe steel ramp baffles.

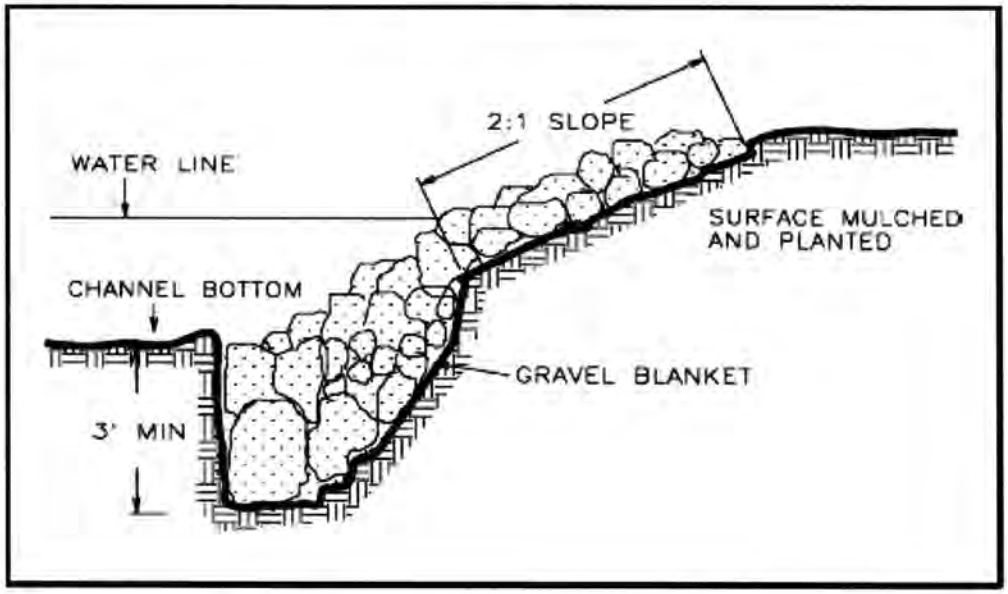


Figure VII-48. Riprap.

The above figures can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

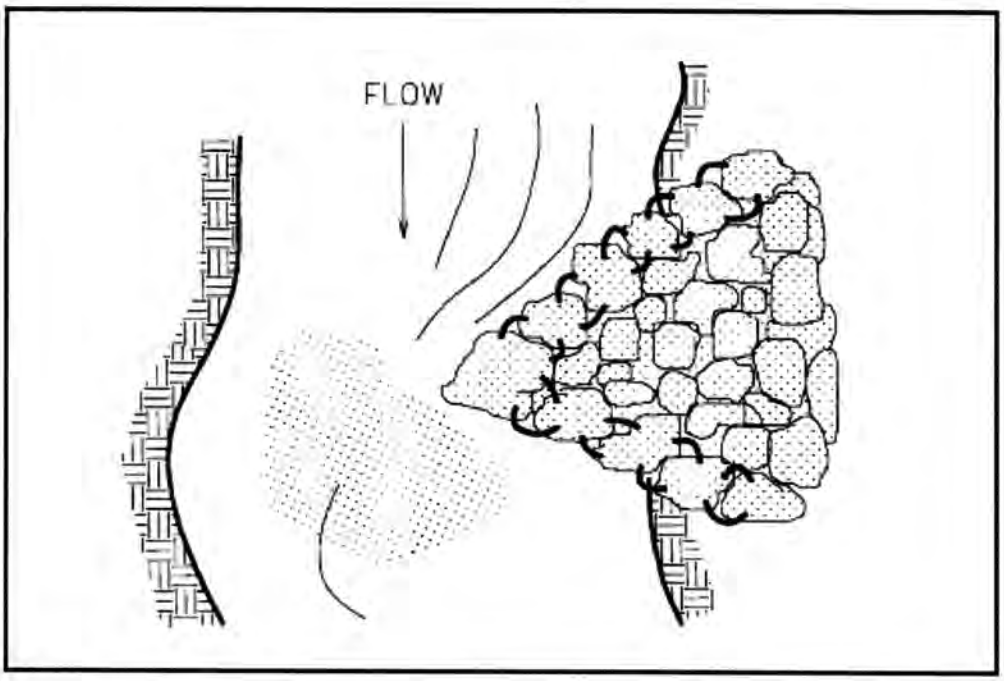


Figure VII-49. Boulder wing-deflector.

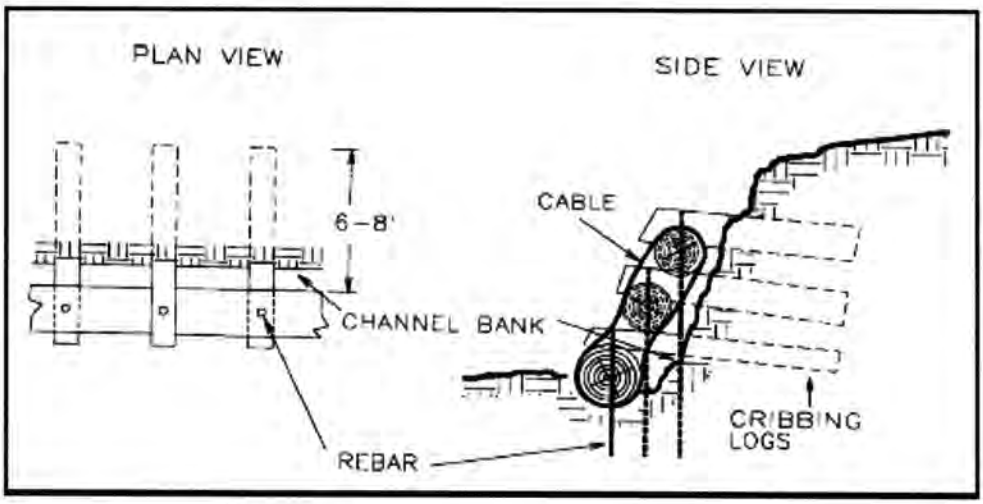
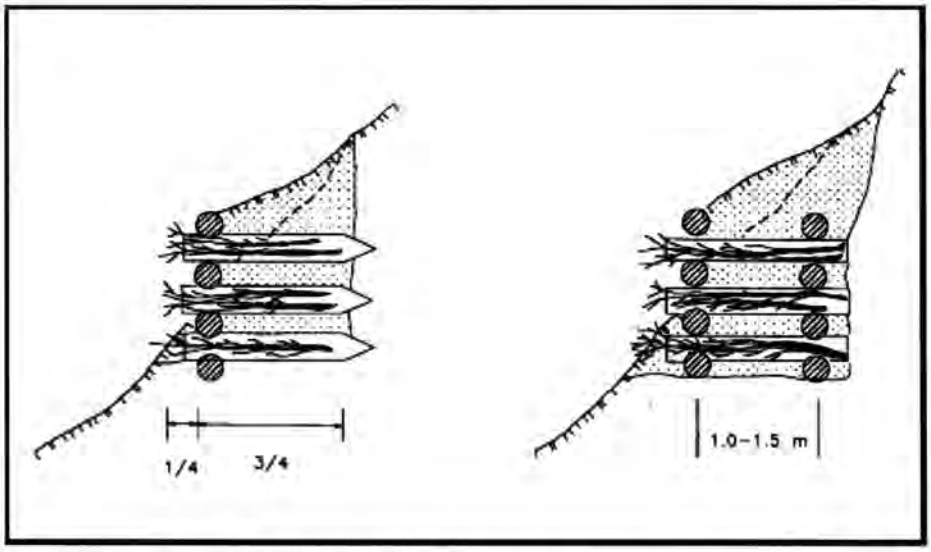


Figure VII-50. Log cribbing.

The above figures can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)



FigureVII-51. Live Vegetated Crib Wall (Schiechtl and Stern. 1996)

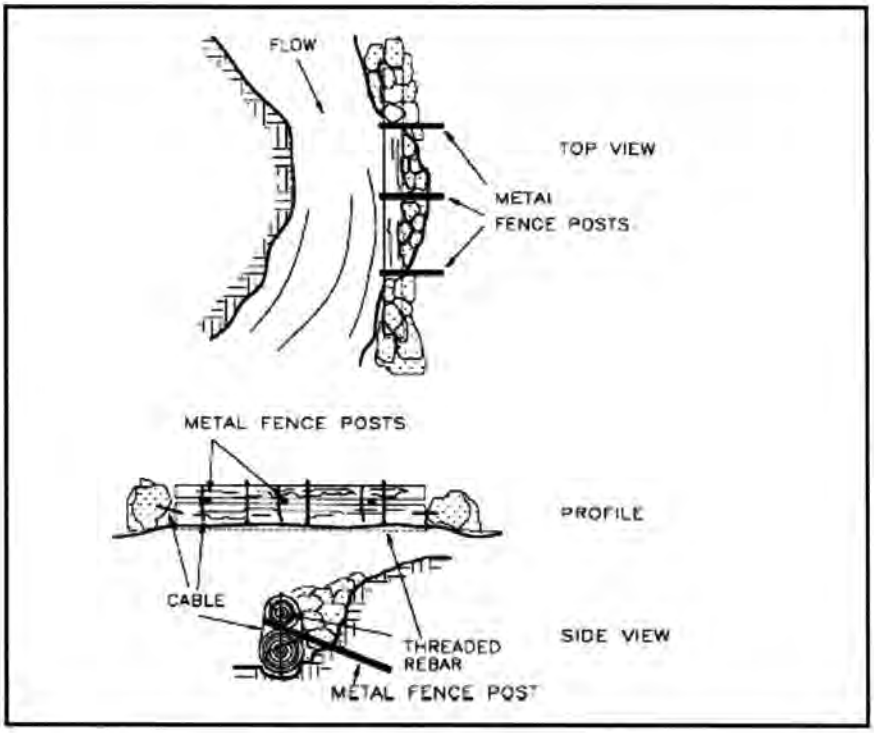


Figure VII-52. Log bank armor.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

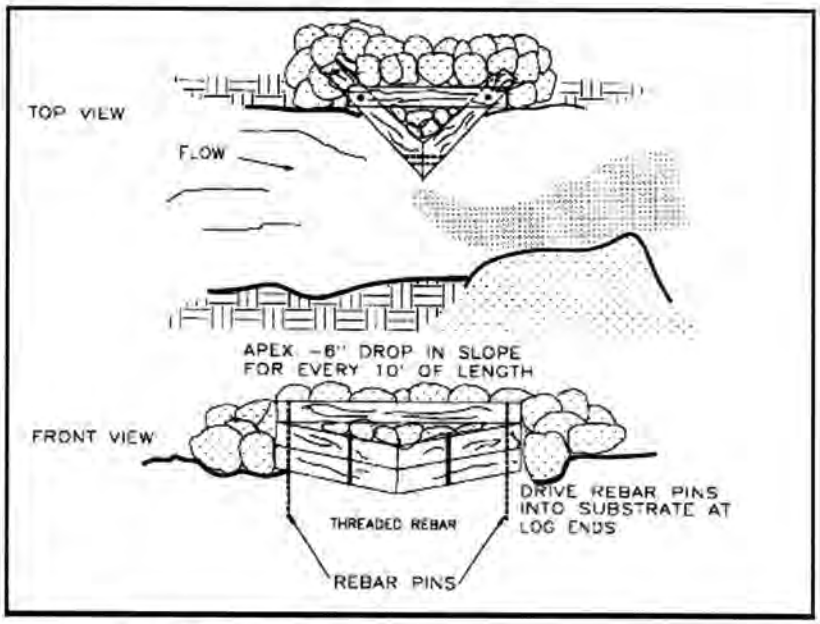


Figure VII-53. Log wing-deflector.

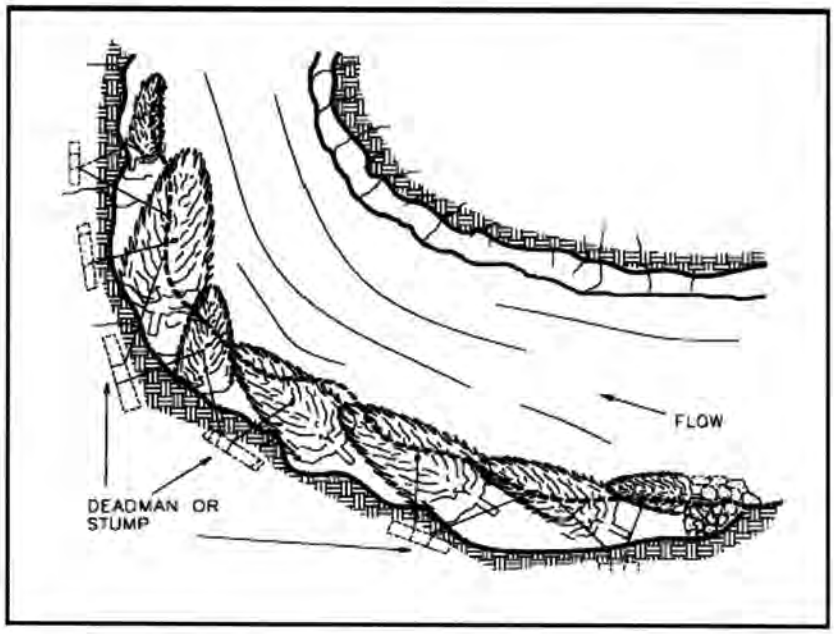


Figure VII-54. Tree revetment.

The above figures can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

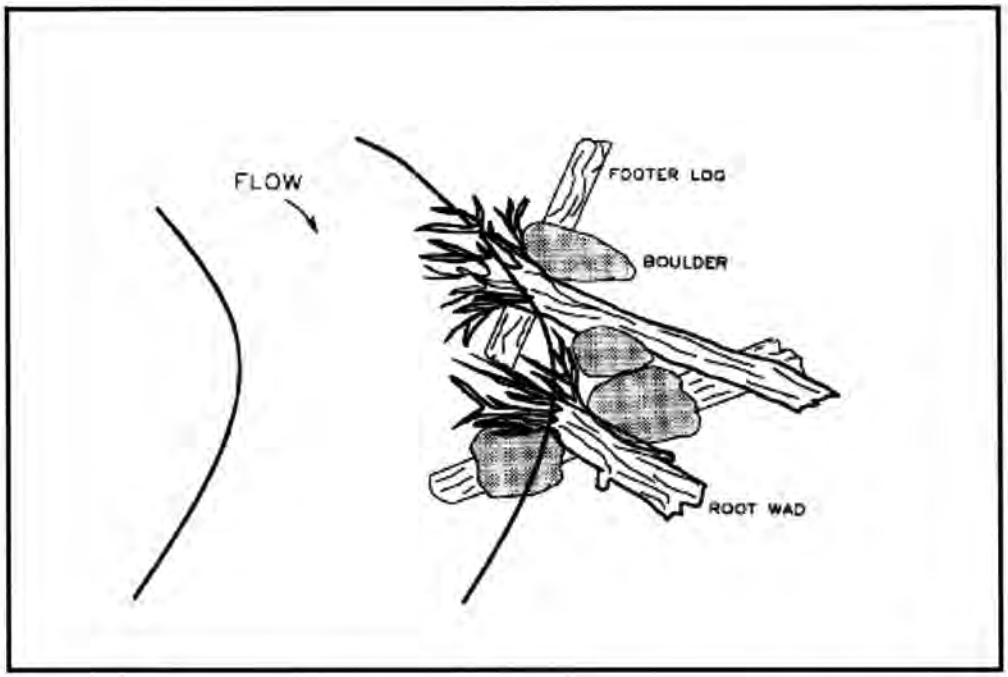


Figure VII-55. Plan view of native material revetment (Rosgen, 1993)

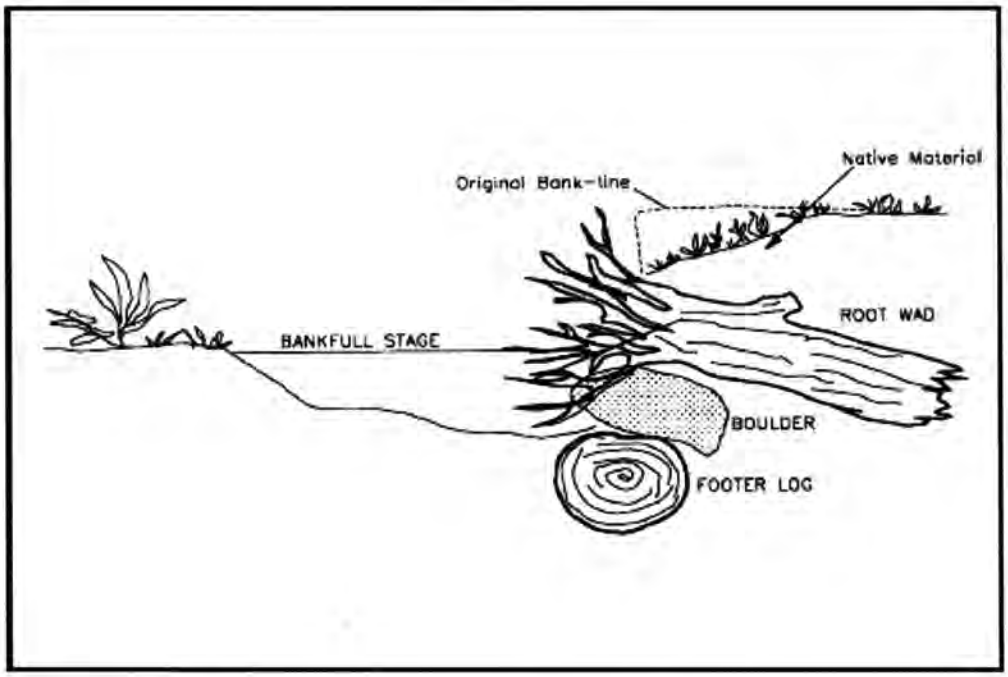


Figure VII-56. Native material revetment (Rosgen, 1993).

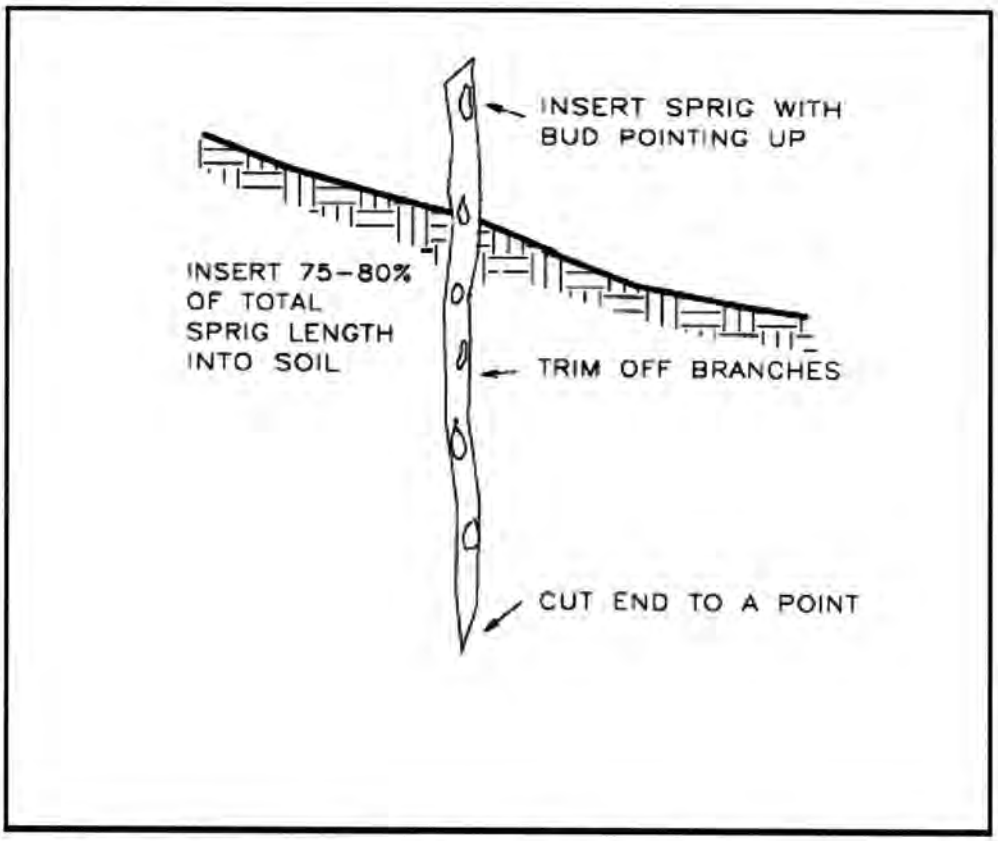


Figure VII-57. Willow sprigging. (Prunuske, 1987).

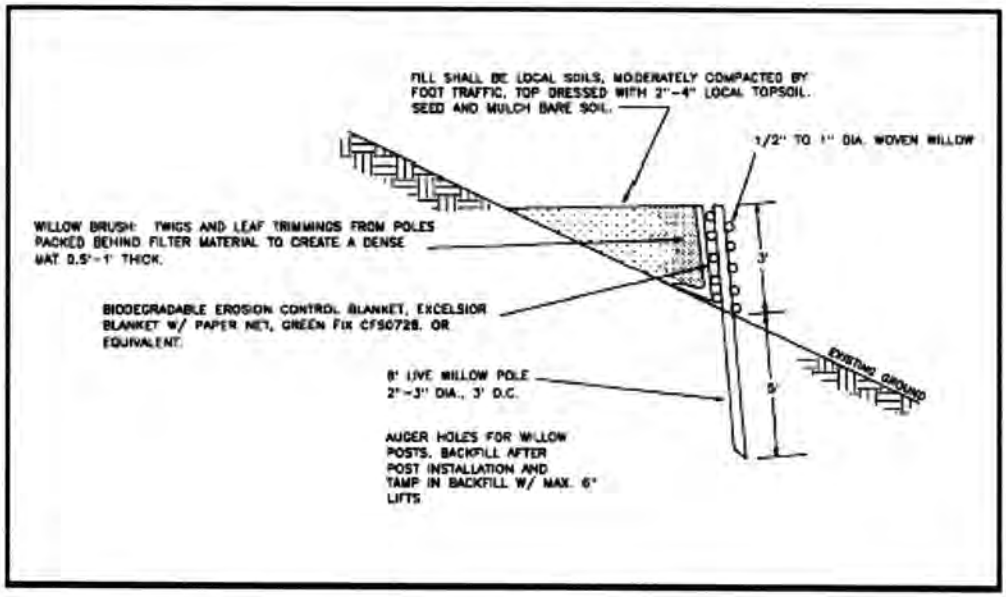


Figure VII-58. Willow Wall Revetment (L. Prunuske, 1997)

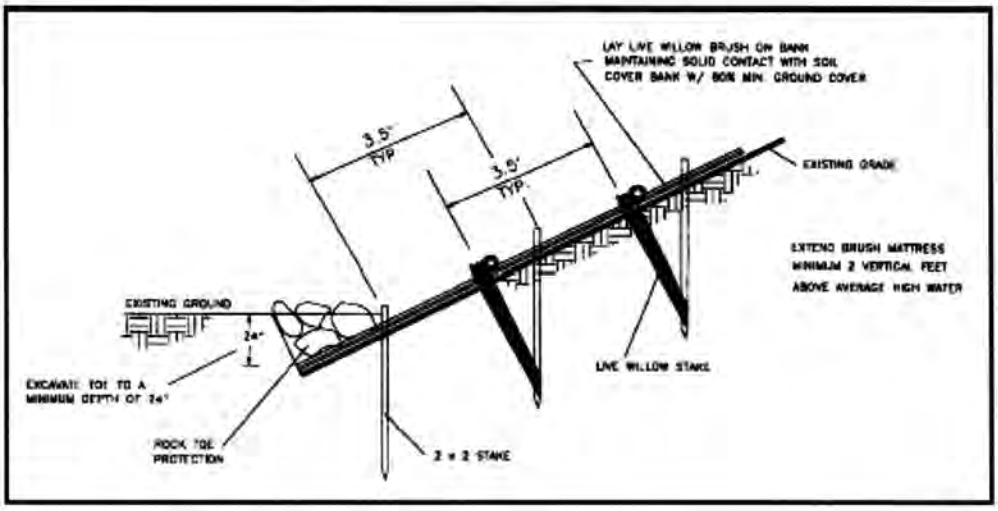


Figure VII-60. Brusch Mattress Cross Section (L. Prunuske, 1997)

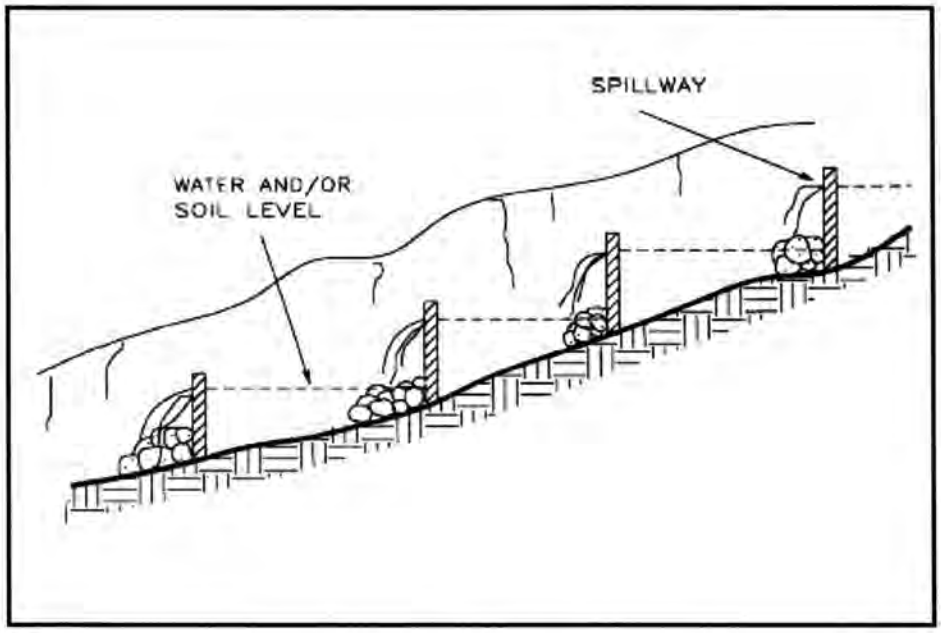


Figure VII-67. Checkdam placement. (Prunuske, 1987).

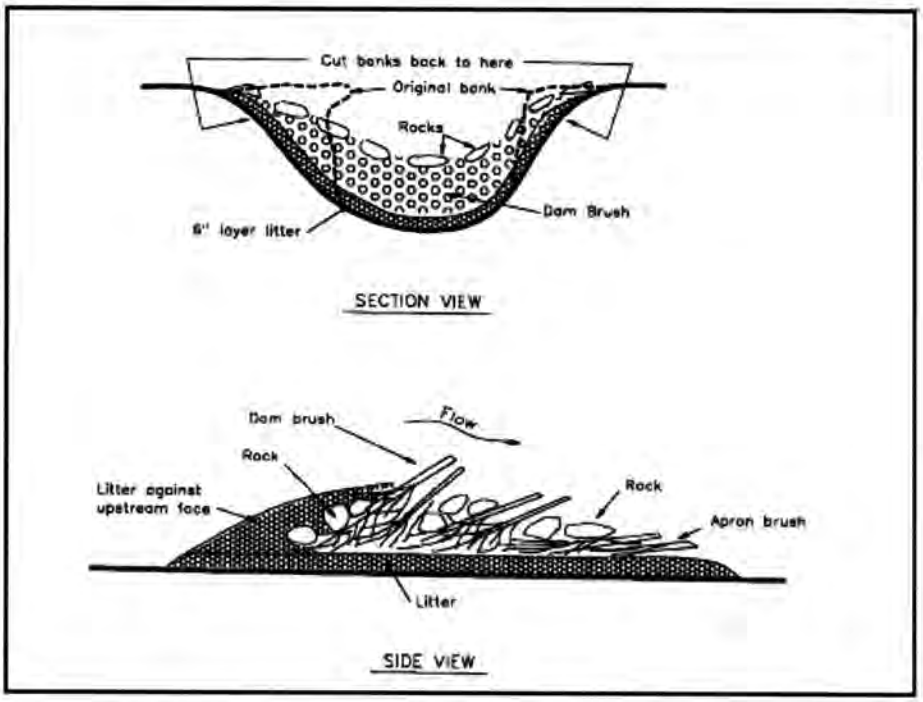


Figure VII-69. Brush and Rock Checkdam (Kraebel and Pillsbury, 1934)

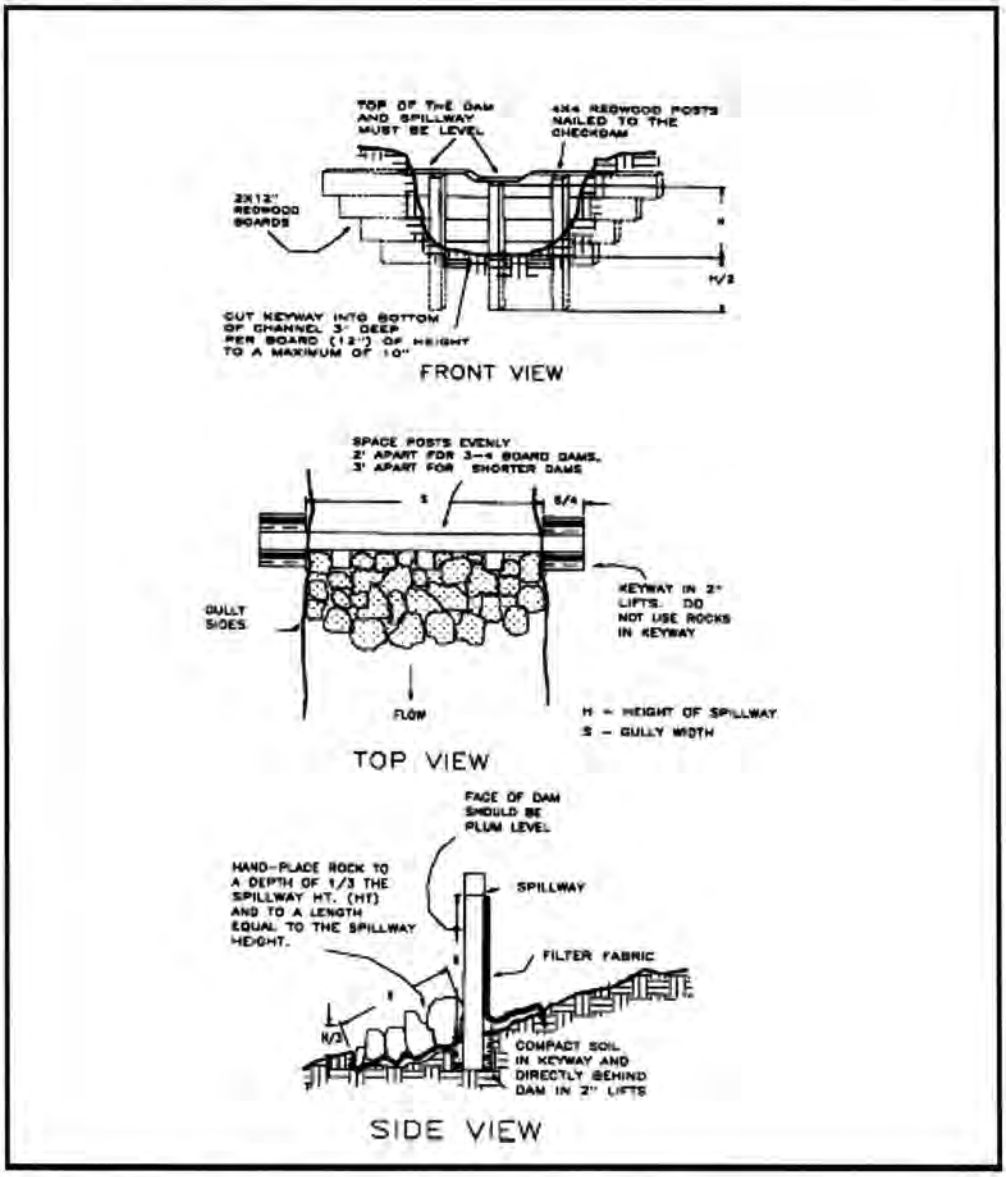


Figure VII-68. Redwood board checkdam. (Prunuske, 1987)

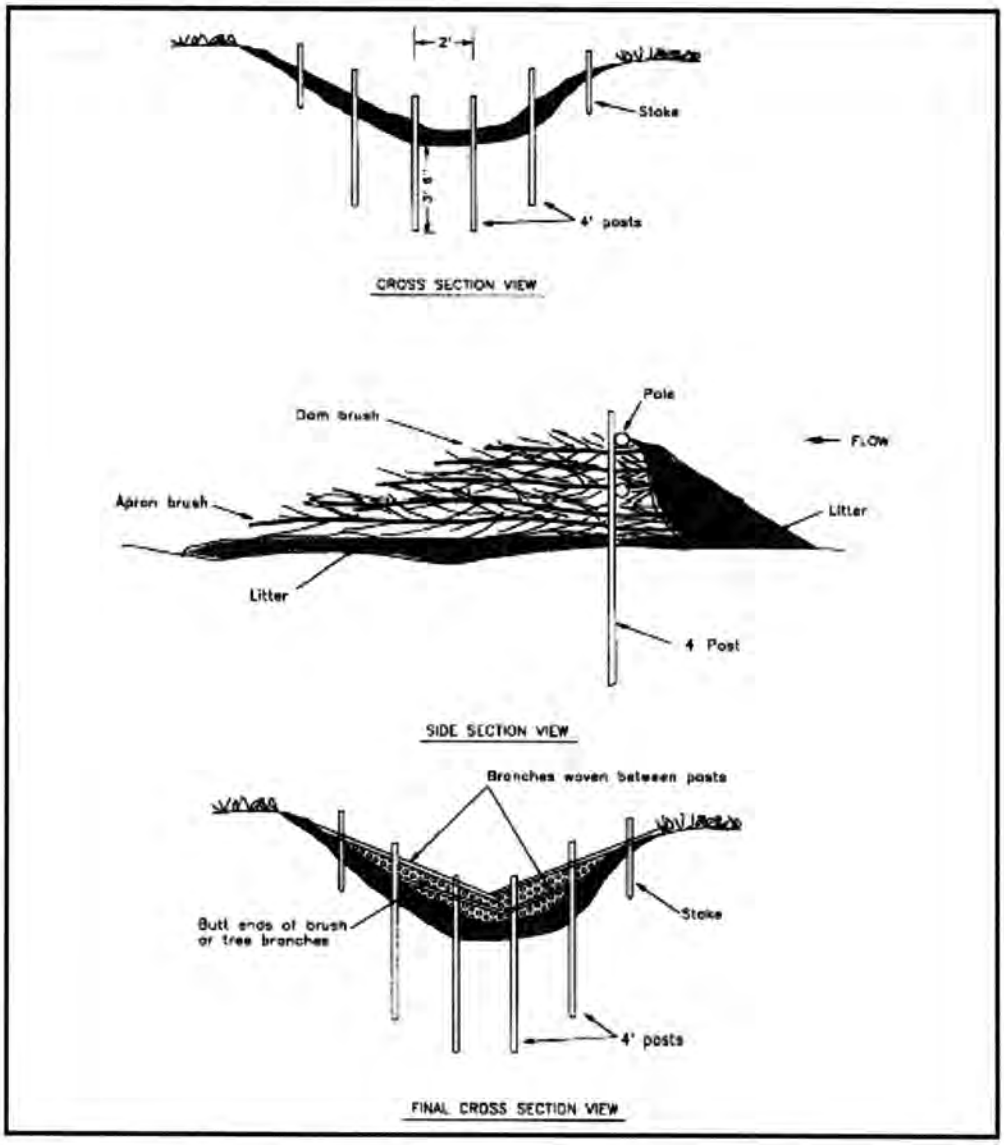


Figure VII-70. Post Checkdam (Kraebel and Pillsbury, 1934)

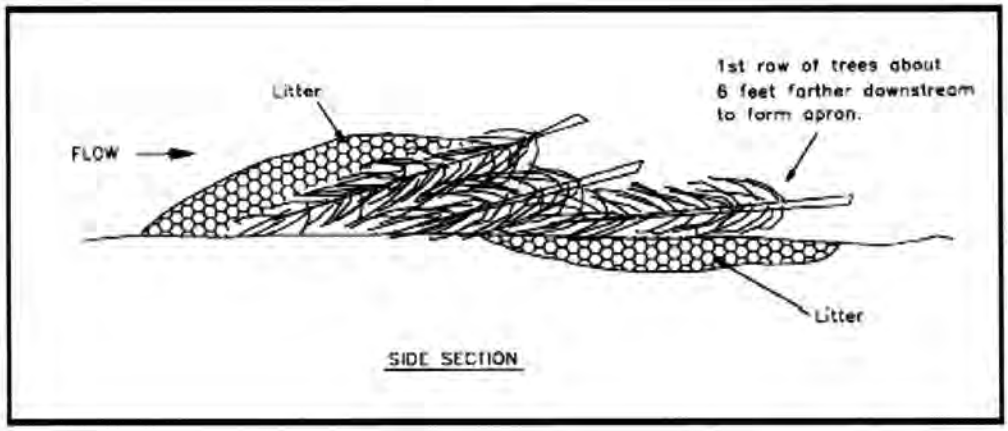


Figure VII-71. Tree Checkdam (Kraebel and Pillsbury, 1934)

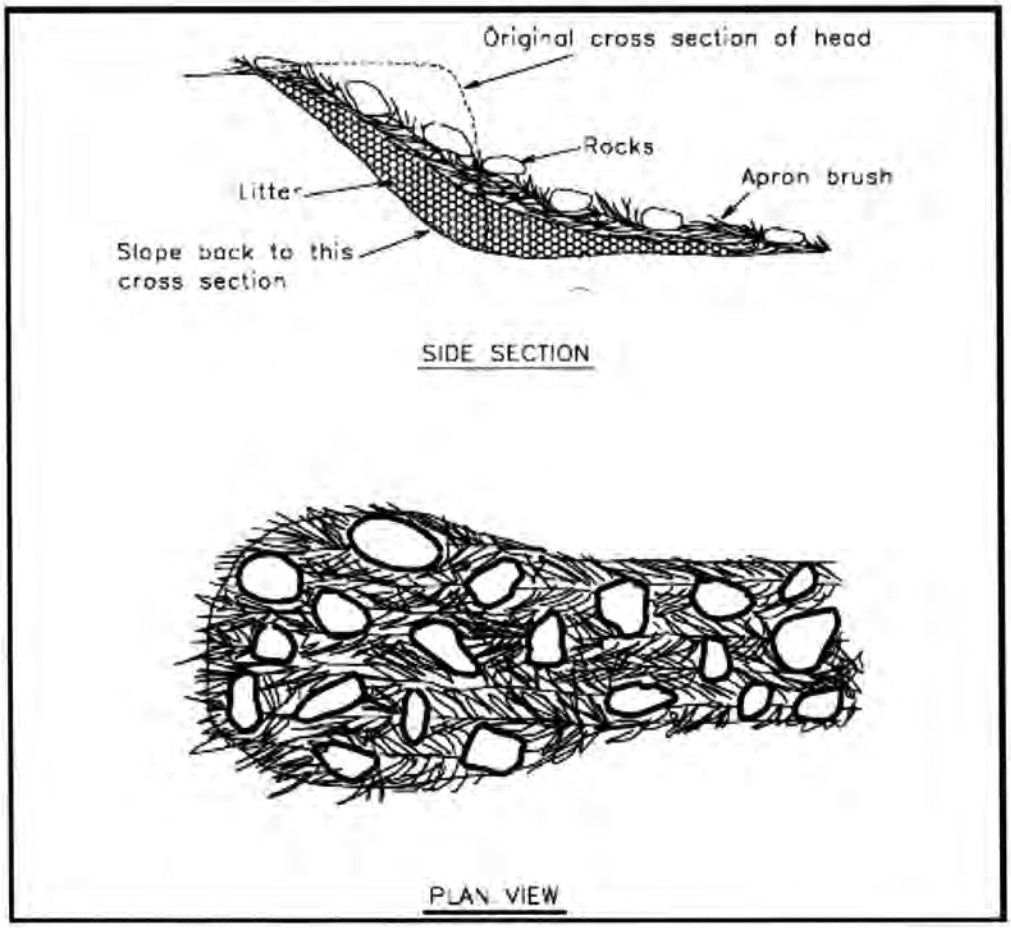


Figure VII-72. Brush and Rock Mattress (Kraebel and Pillsbury, 1934)

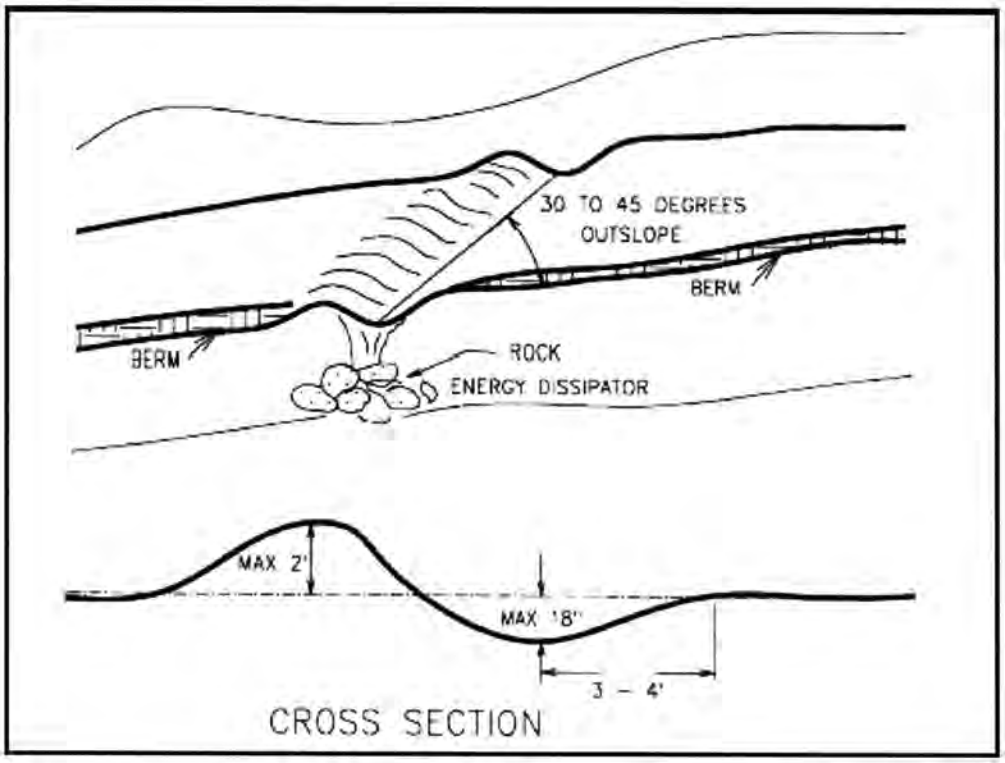


Figure VII-73. Waterbar.

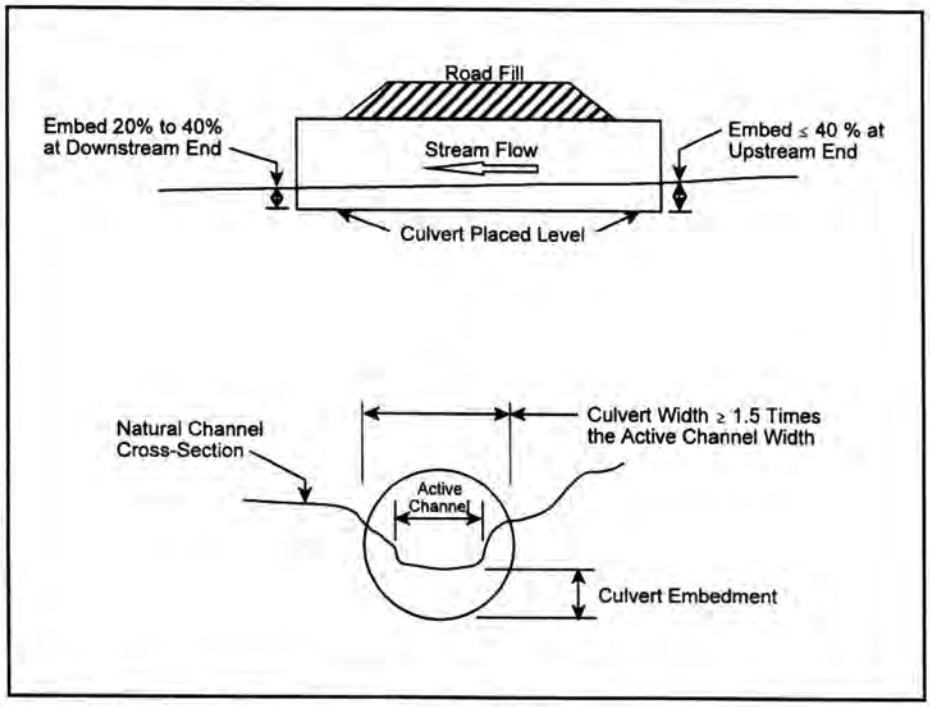


Figure IX-A-1. Active channel design option.

The above figures can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

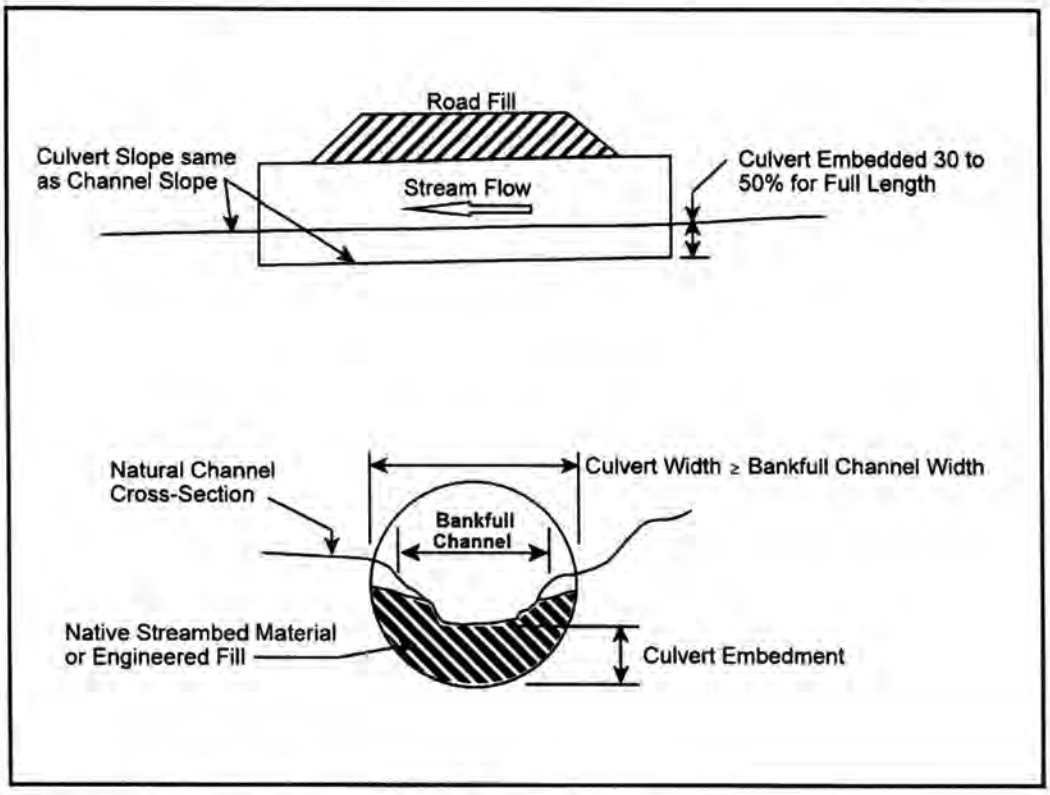


Figure IX-A- 2 Stream simulation design option.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

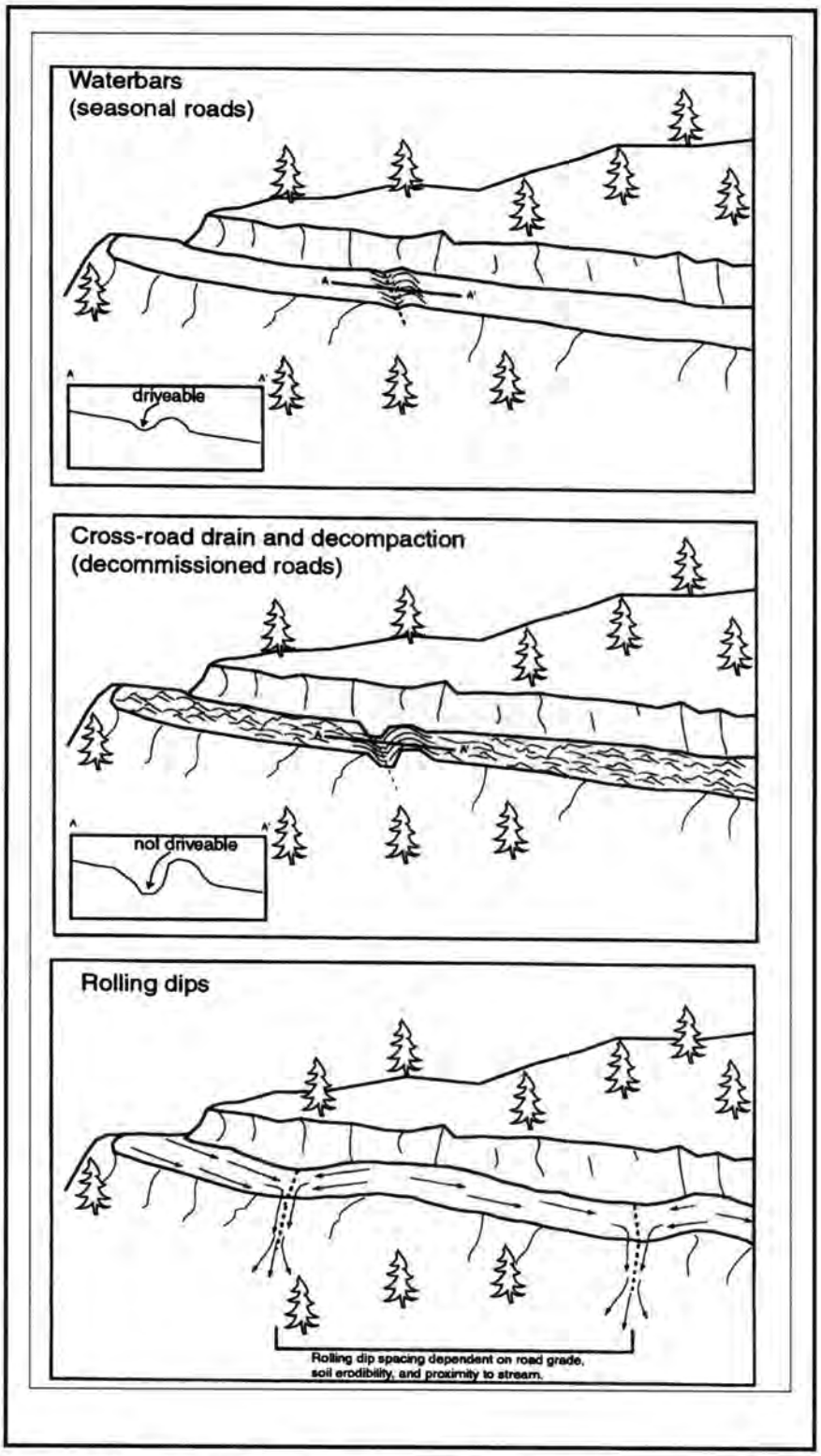


Figure X- 10. Techniques for dispersing road runoff.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

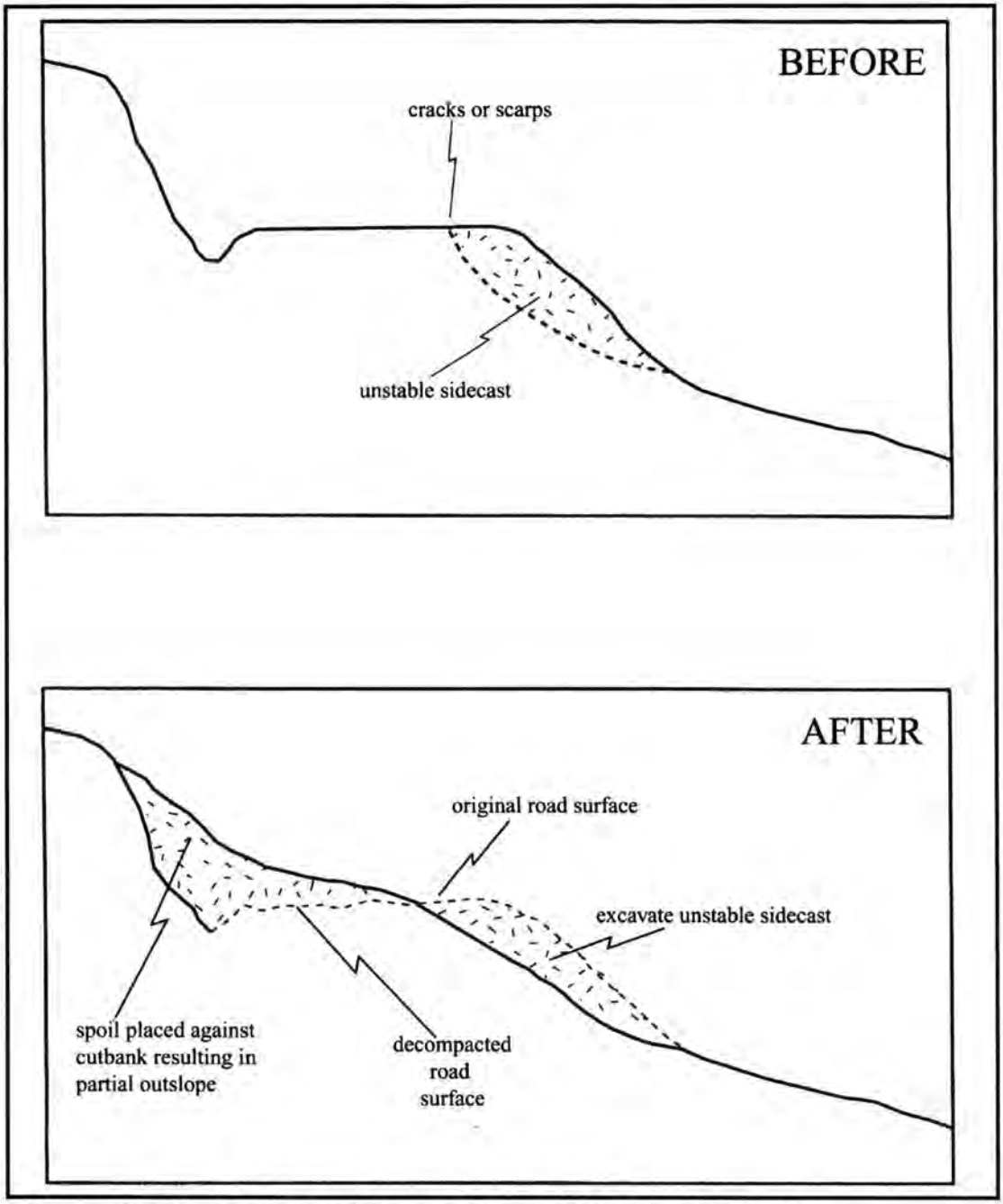


Figure X- 11. Partial outsloping for road decommissioning.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

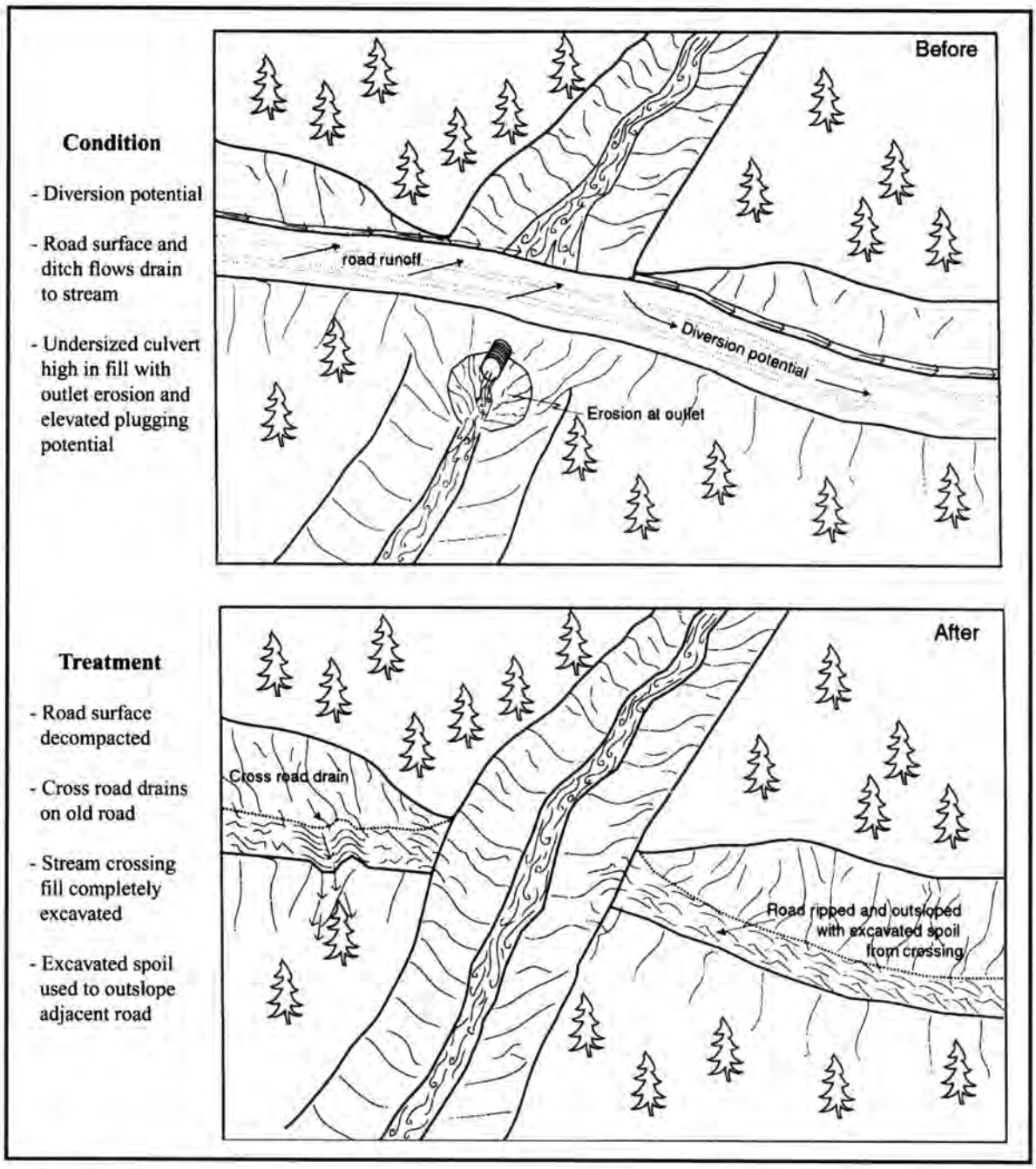


Figure X- 12. Typical stream crossing excavation on a decommissioned road.

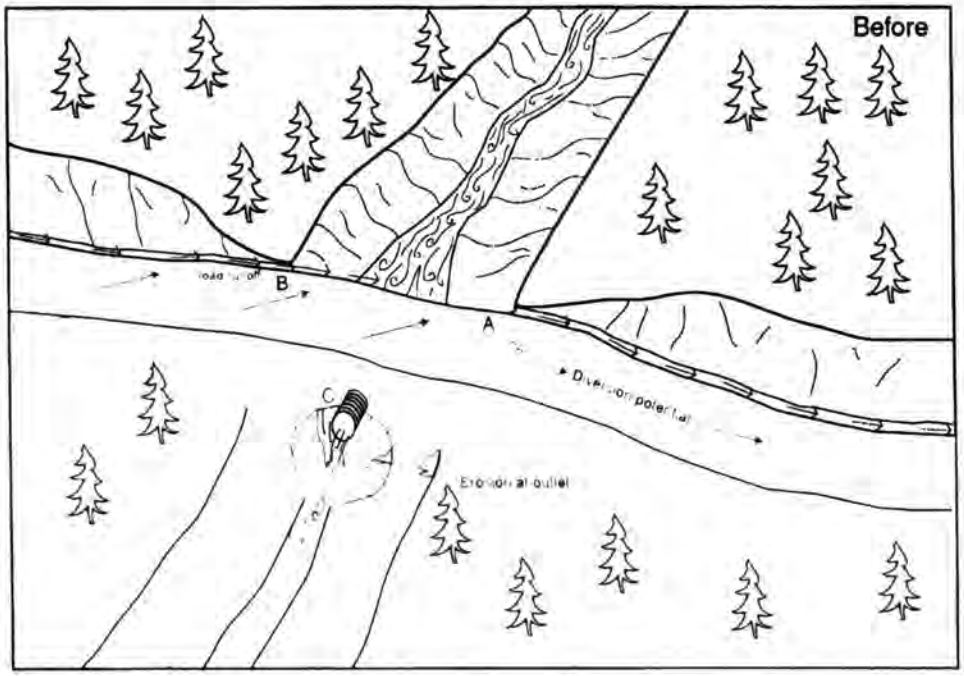
The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

Common Problems

A - Diversion potential

B - Road surface and ditch flows drain to stream

C - Undersized culvert high in fill with outlet erosion



General Standards

A - Road surface and ditch "disconnected" from stream

B - No diversion potential

C - 100 year culvert set at base of till

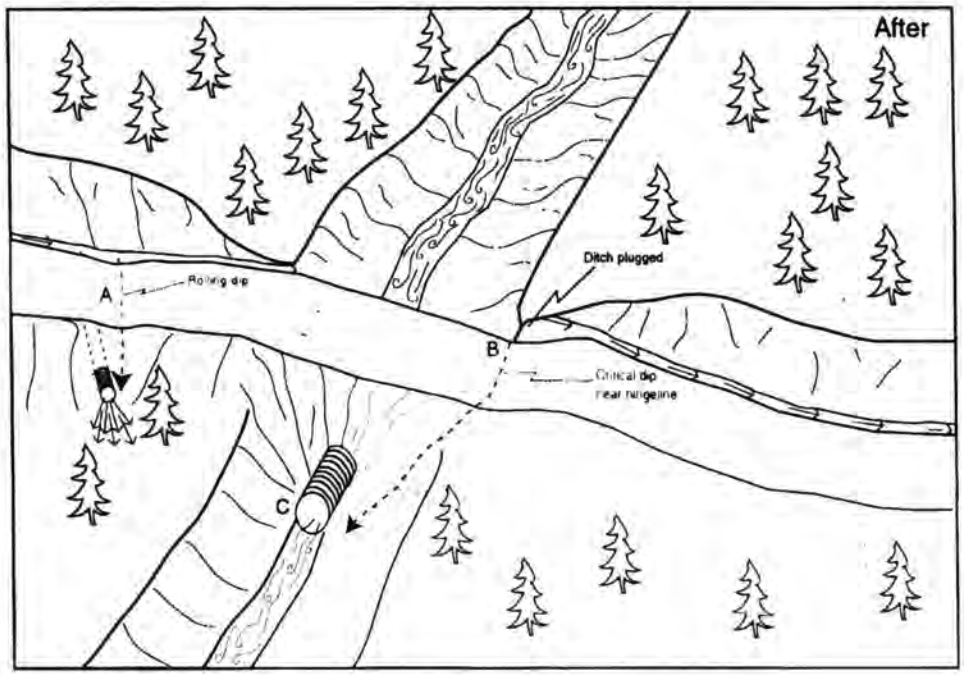


Figure X- 13. Typical upgraded stream crossing.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

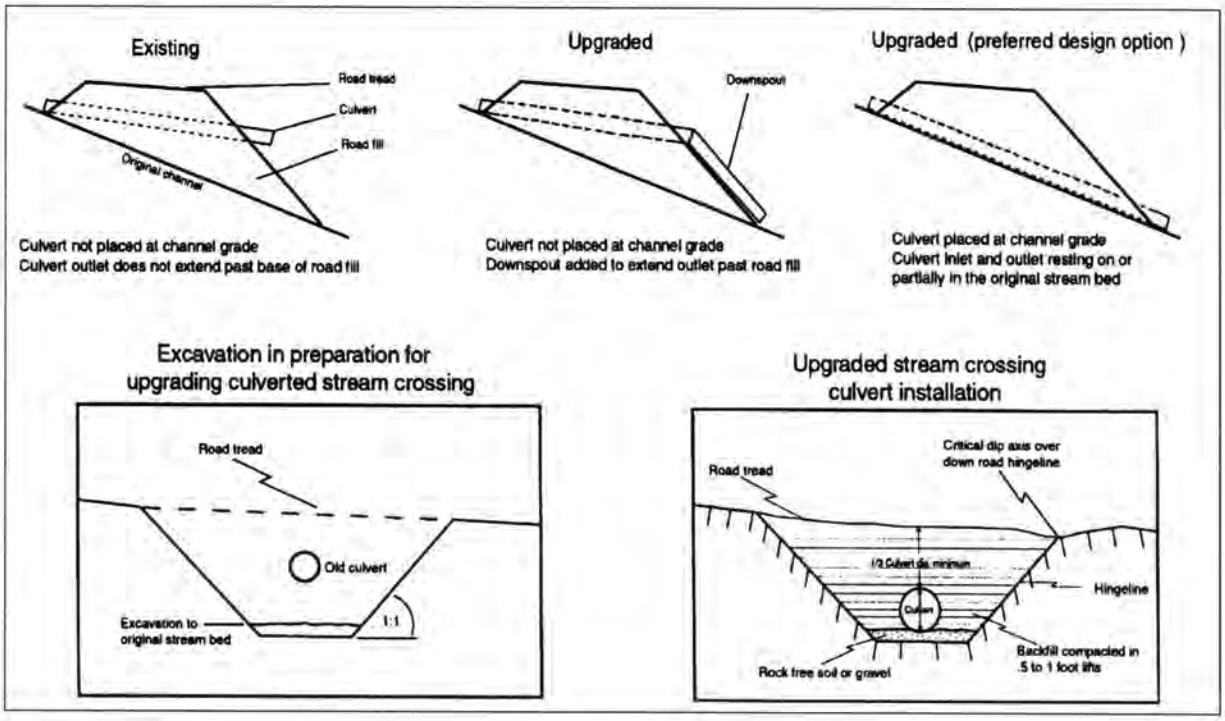


Figure X- 14. Typical culvert installation on non fish-bearing streams.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

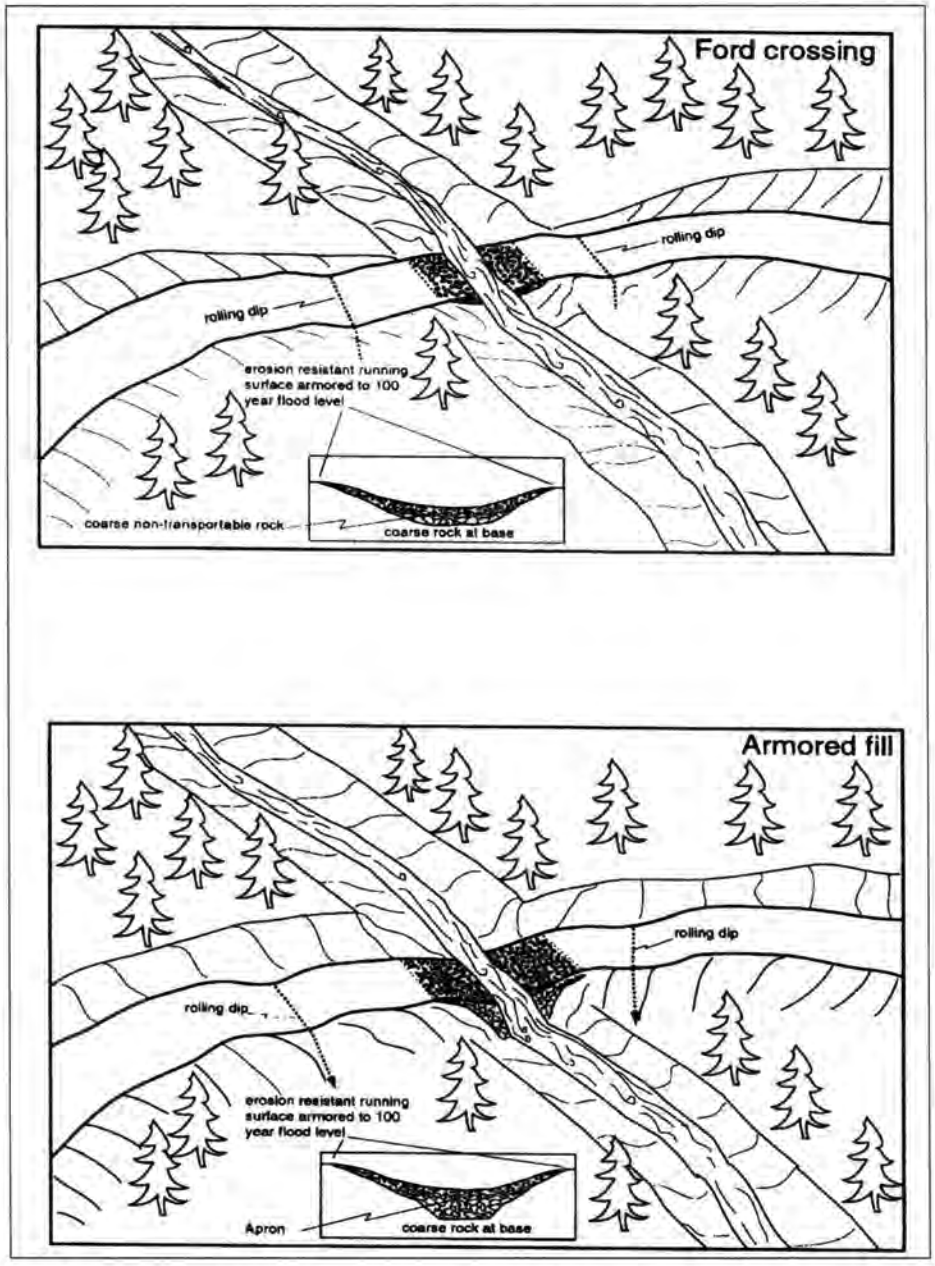


Figure X-15. Typical armored fill stream crossing.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

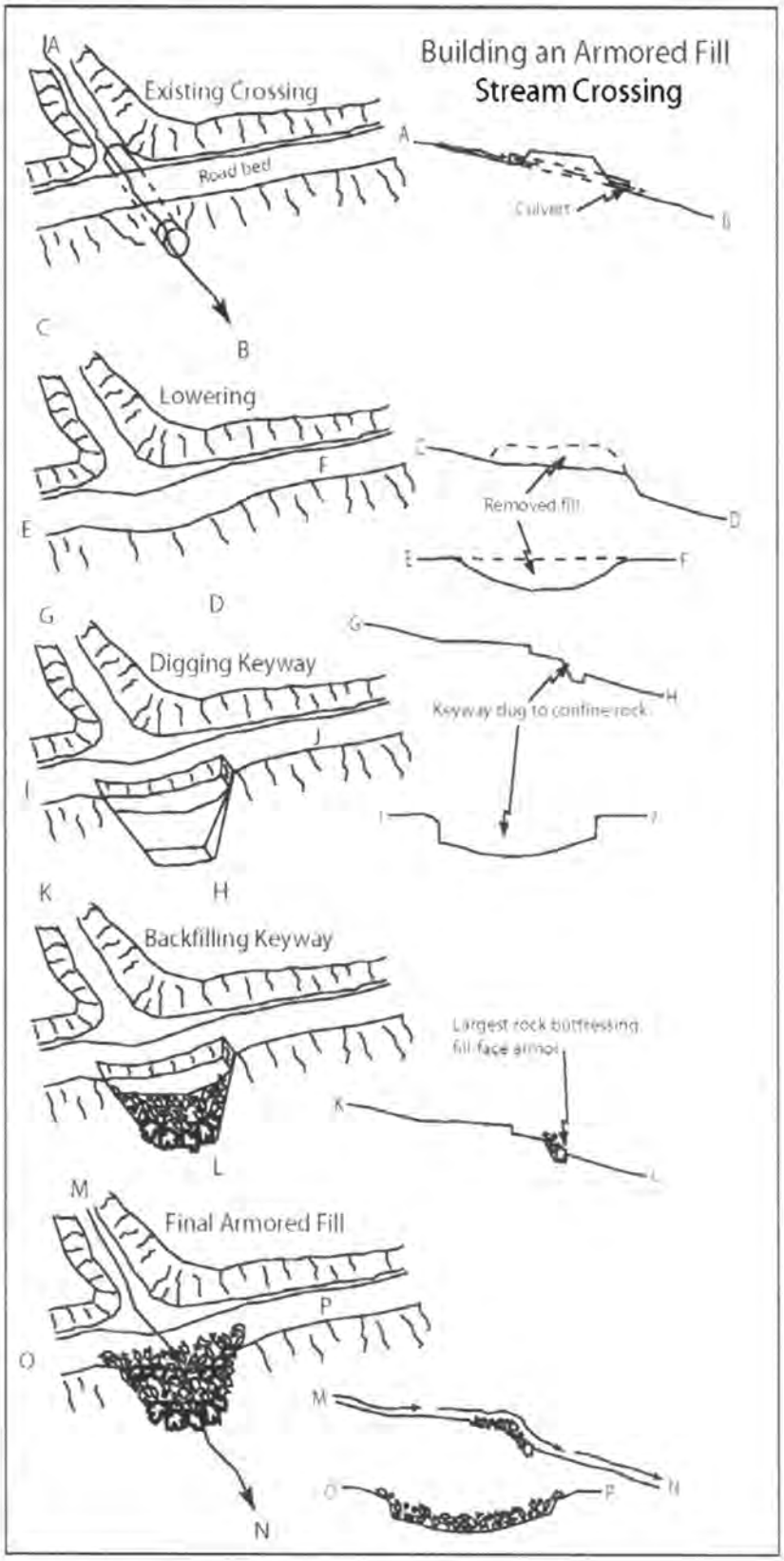


Figure X-16. Design elements of a typical armored fill crossing. The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

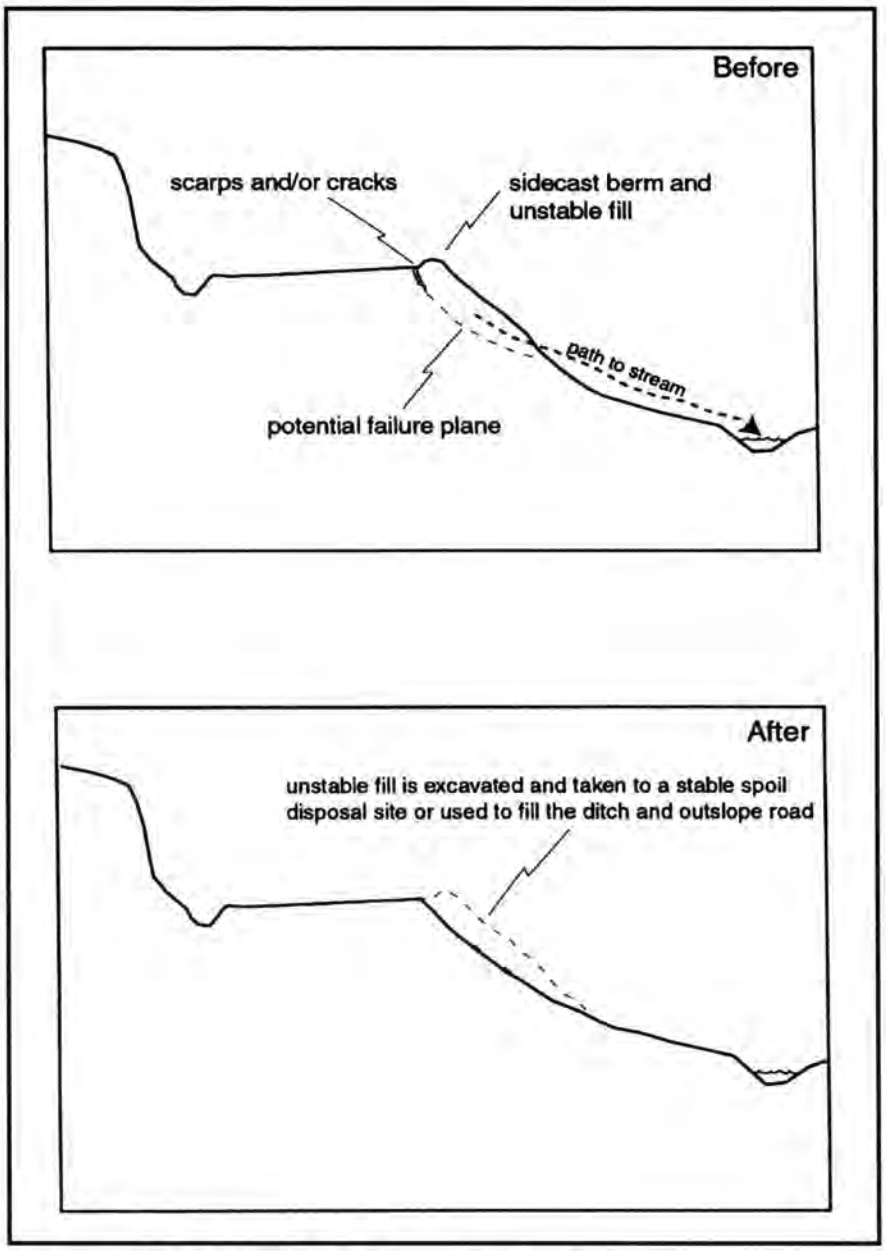


Figure X- 17. Removal of unstable sidecast materials.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

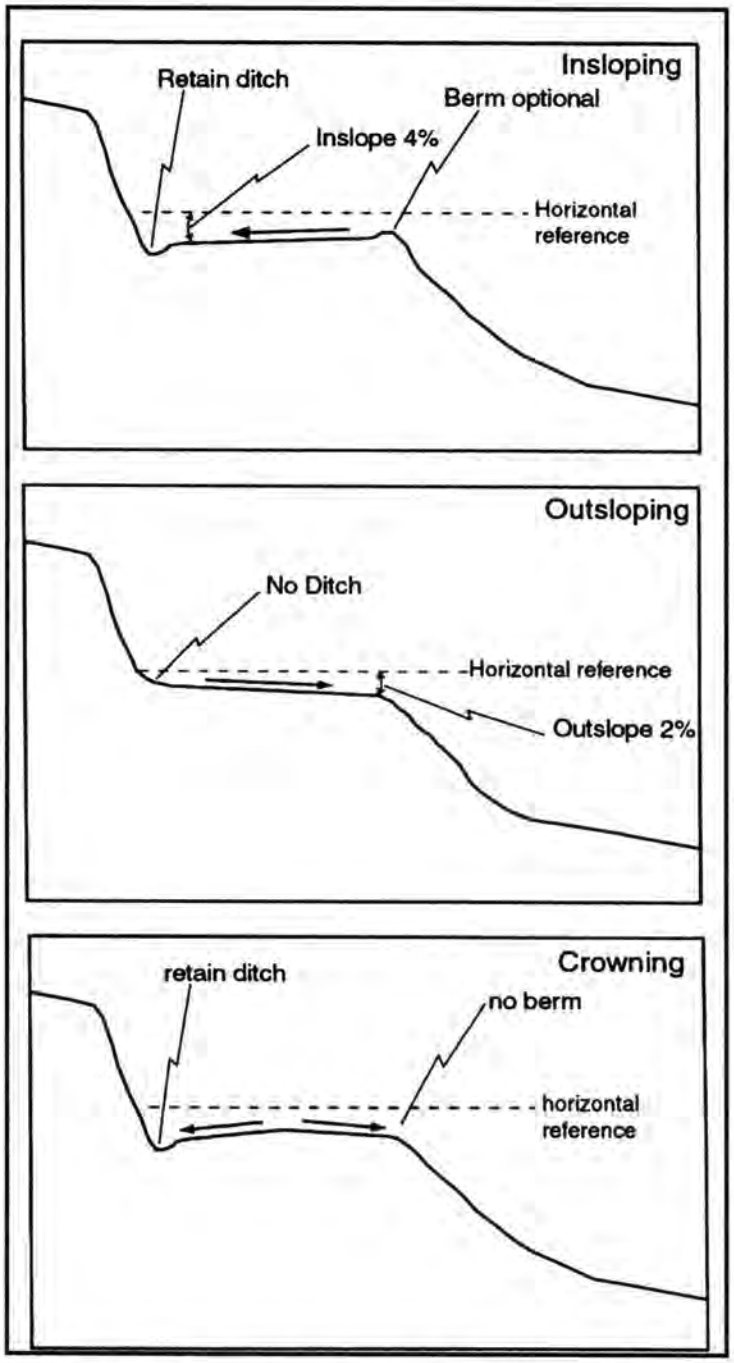


Figure X- 18. Utilizing road shape to reduce surface runoff rates.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

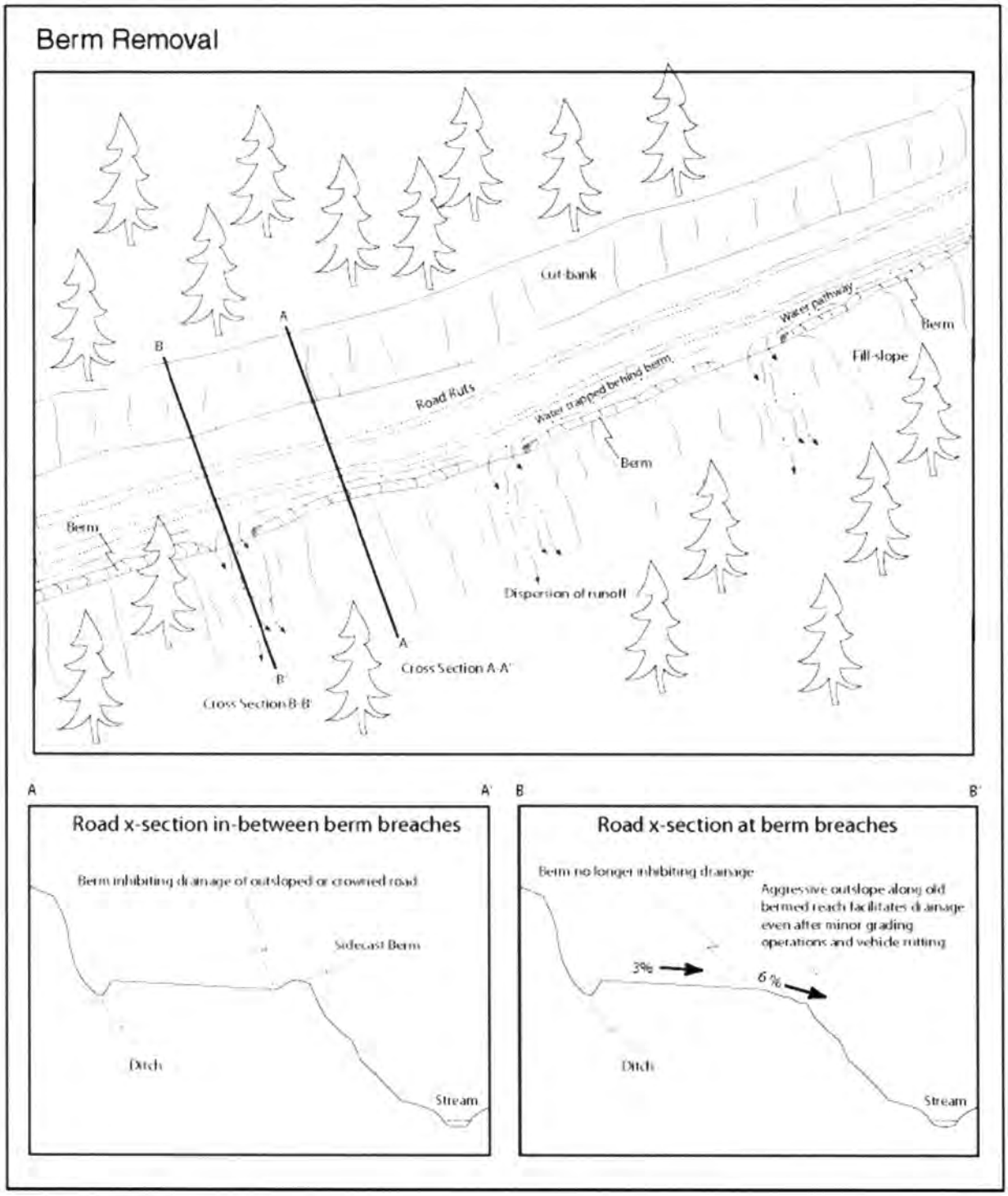


Figure X19. Berm removal for improved drainage on outsloped and crowned roads.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

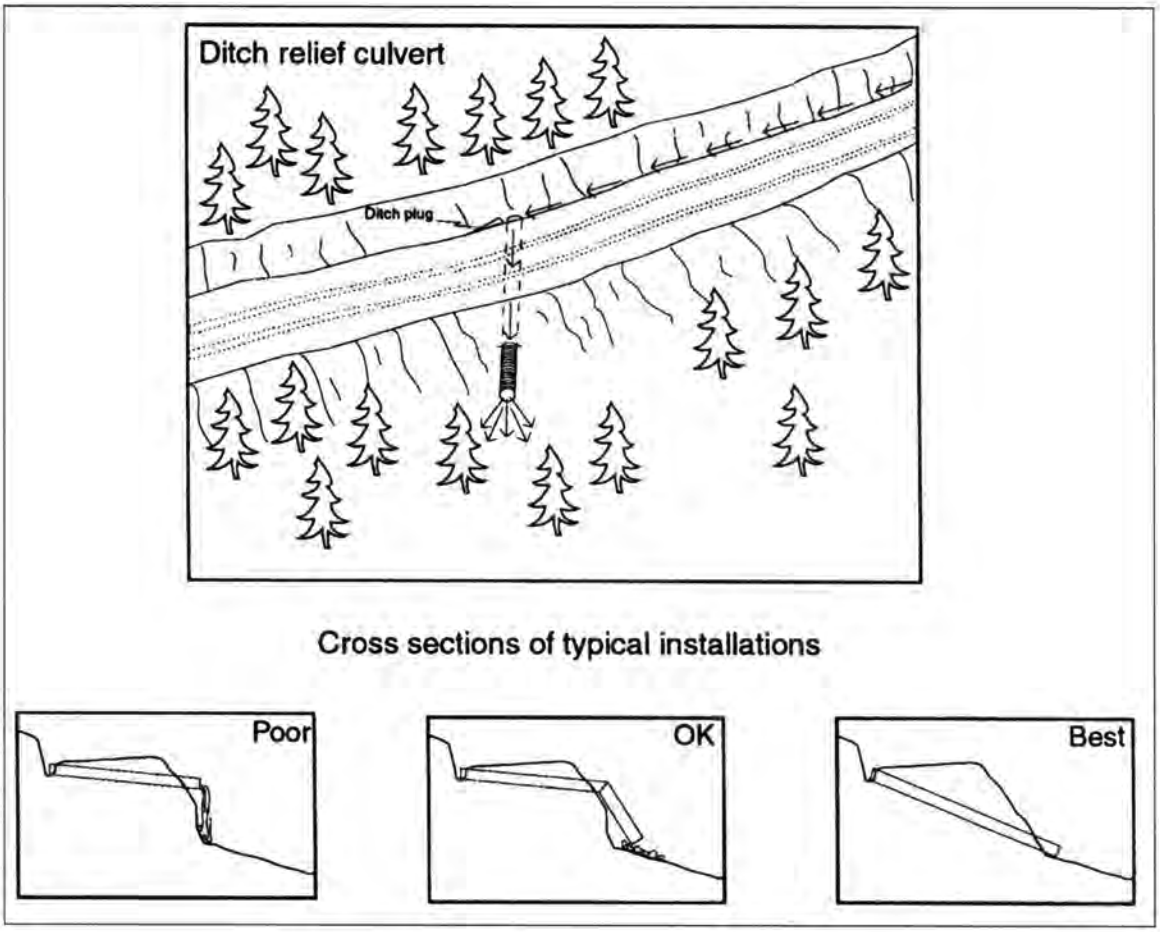


Figure X- 20. Typical ditch relief culvert installation.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

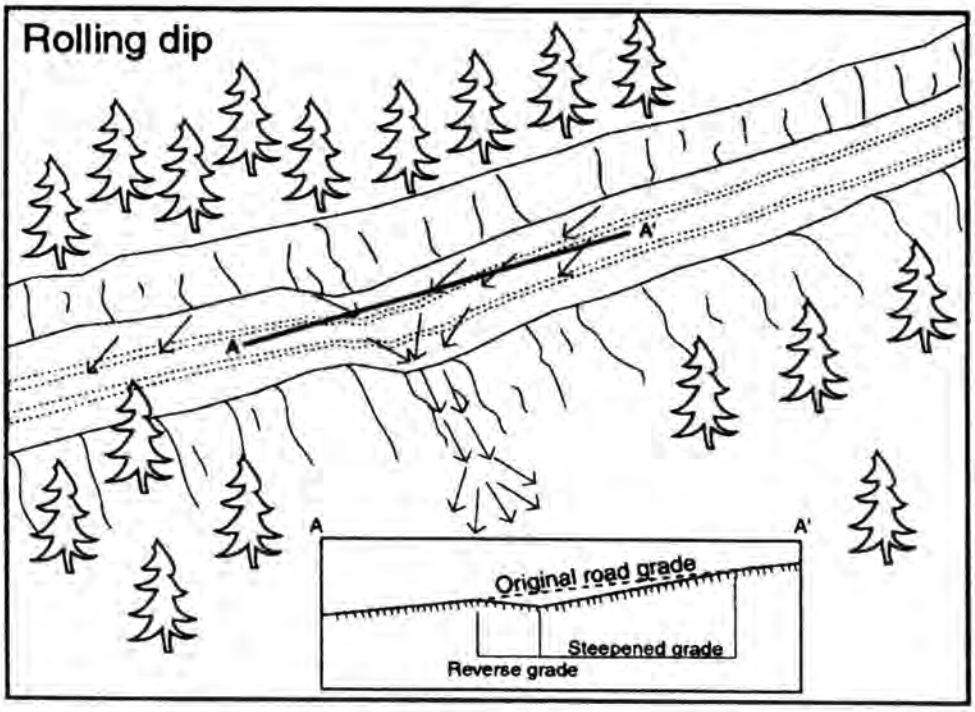


Figure X-21. Use of rolling dips to reduce ditch erosion and surface runoff.

The above figure can be found in the *California Salmonid Stream Habitat Restoration Manual* 4th edition (Flosi et al. 1998, 2003, 2006, 2009)

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Flosi, G, S. Downie, J. Hopelain, M. Bird, R. Coey, and B. Collins. 1998. *California Salmonid Stream Habitat Restoration Manual*. Fourth Edition. Calif. Fish and Game. The most current version of the manual is available at: http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp.

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Rosgen, D.L. 1996. A classification of natural rivers. Catena 22:169-199.

Kraebel, Charles J. and Arthur F. Pillsbury. 1934. Handbook of erosion control in mountain meadows. U.S. Department of Agriculture, Forest Service, California Forest and Range Experiment Station, Berkeley, California.

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