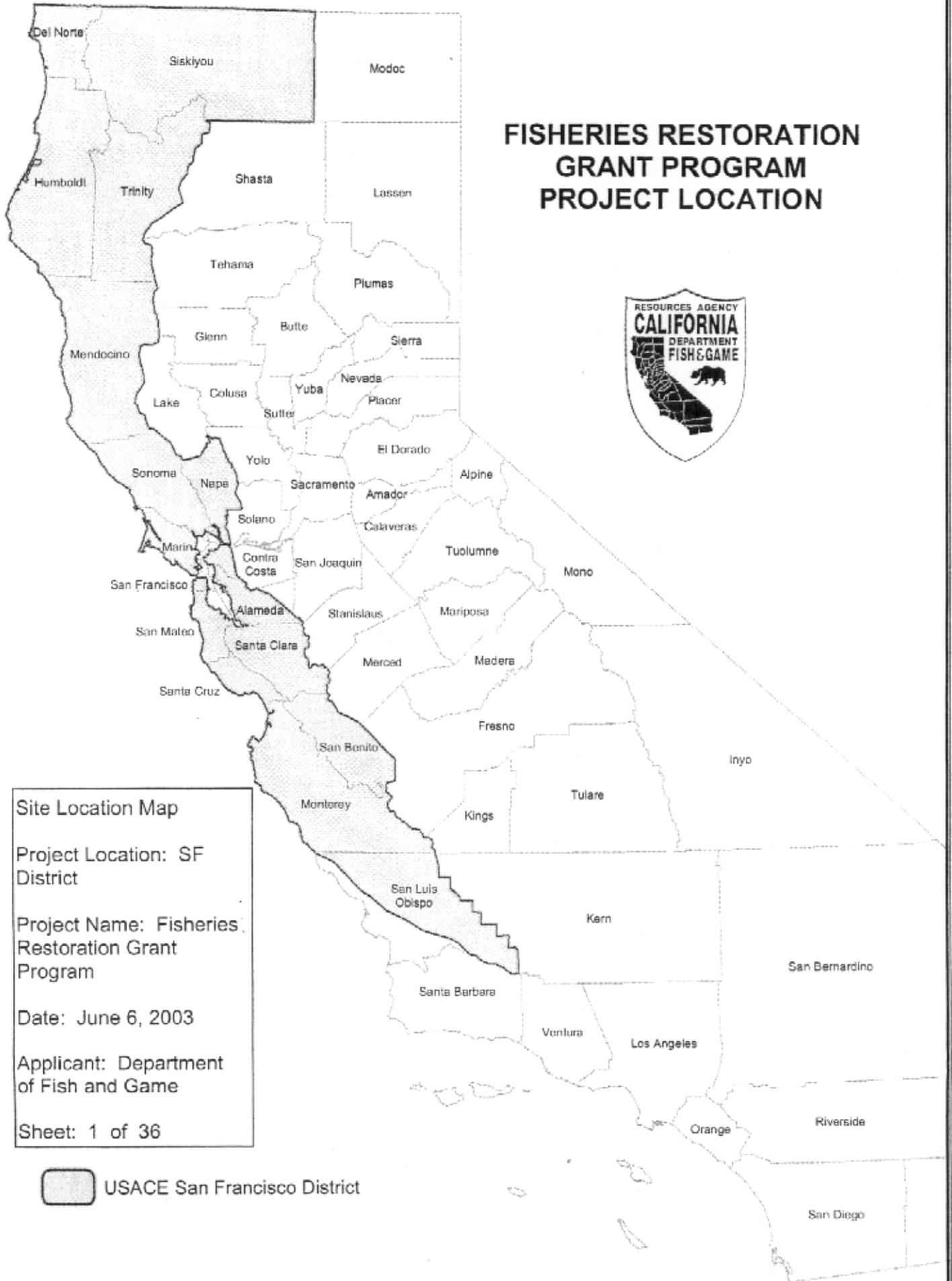


# FISHERIES RESTORATION GRANT PROGRAM PROJECT LOCATION



## Site Location Map

Project Location: SF District

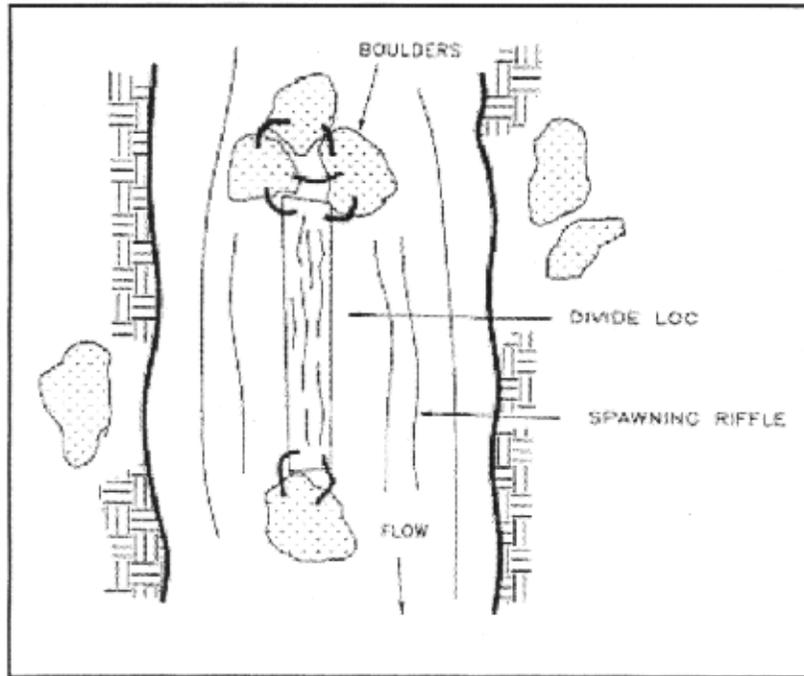
Project Name: Fisheries Restoration Grant Program

Date: June 6, 2003

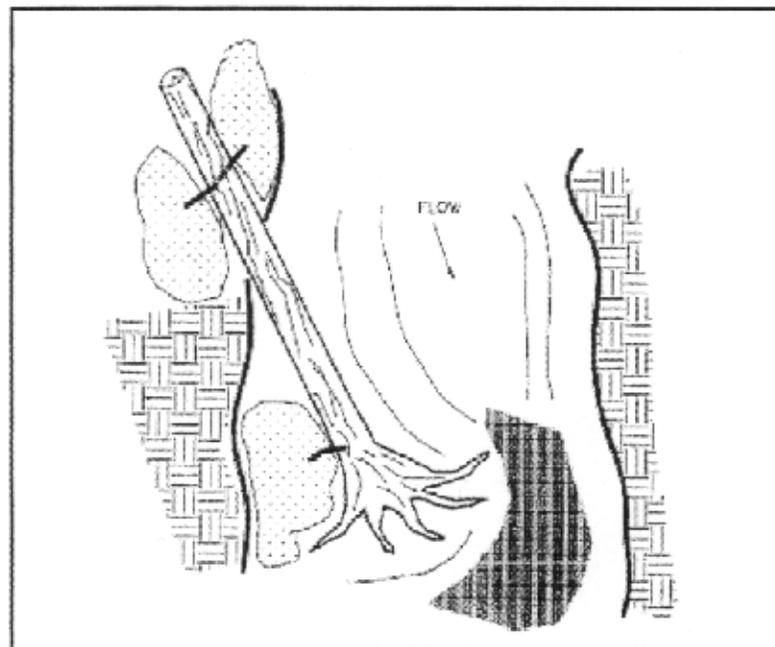
Applicant: Department of Fish and Game

Sheet: 1 of 36

 USACE San Francisco District



Divide Log

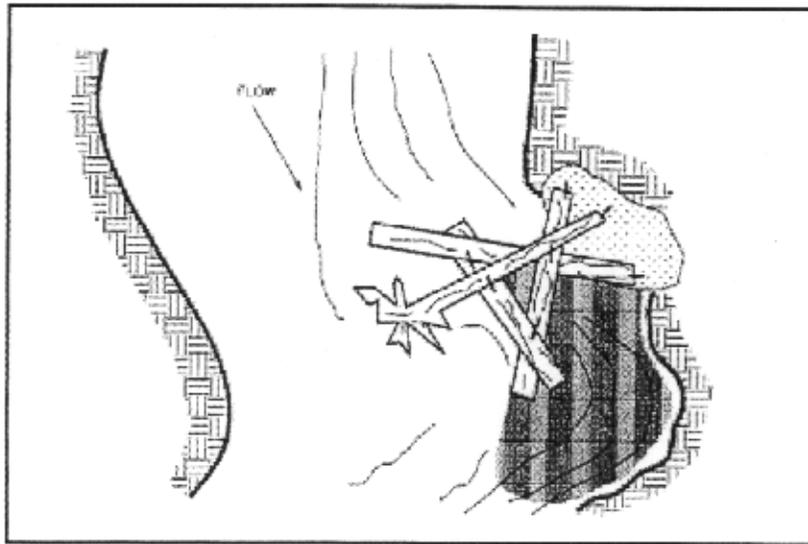


Digger Log

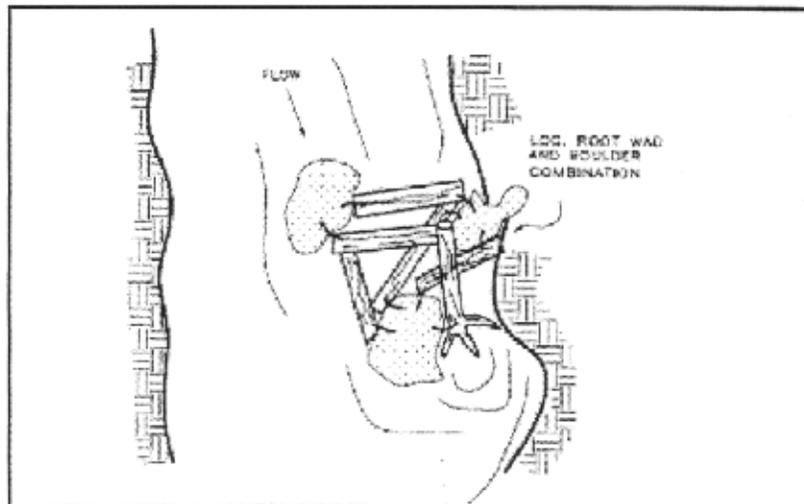
Sheet: 2 of 36  
Date: June 6, 2003

Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)



Spider Logs

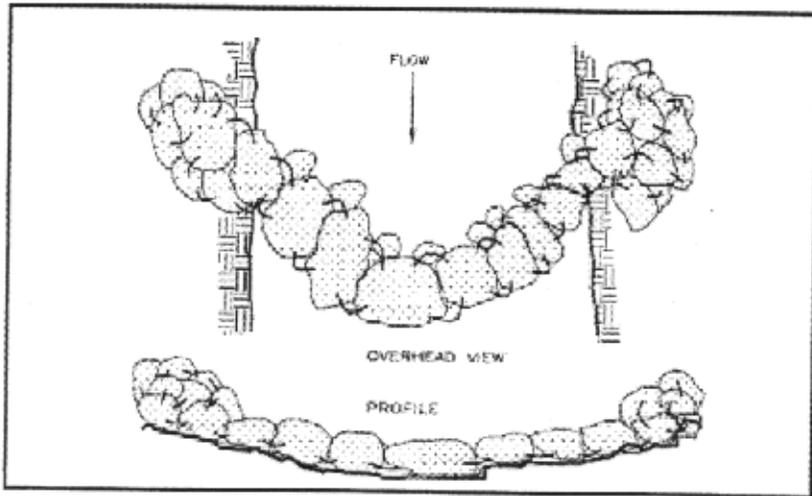


Log, root wad, and boulder combination

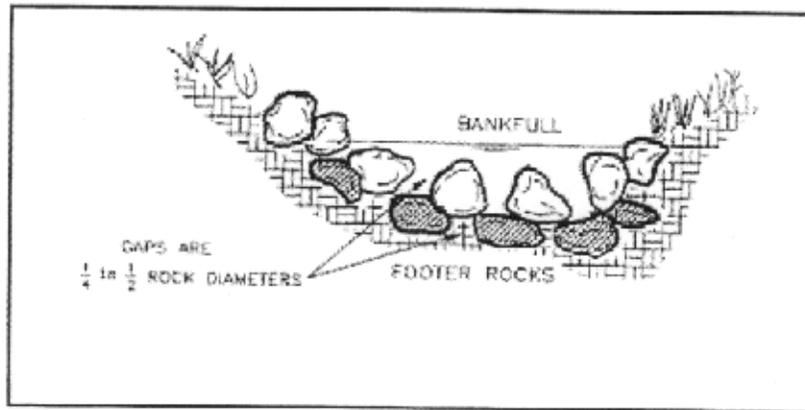
Sheet: 3 of 36  
Date: June 6, 2003

Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)



Downstream-V boulder weir

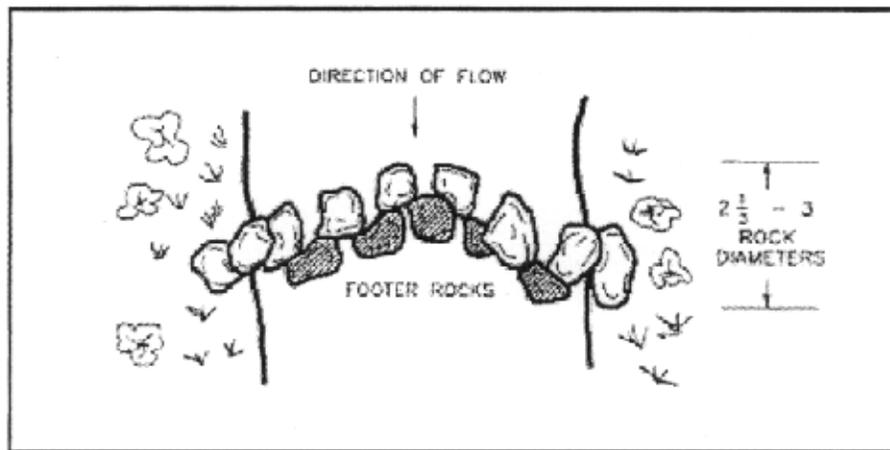


Vortex boulder weir, cross section view (Rosgen, 1993)

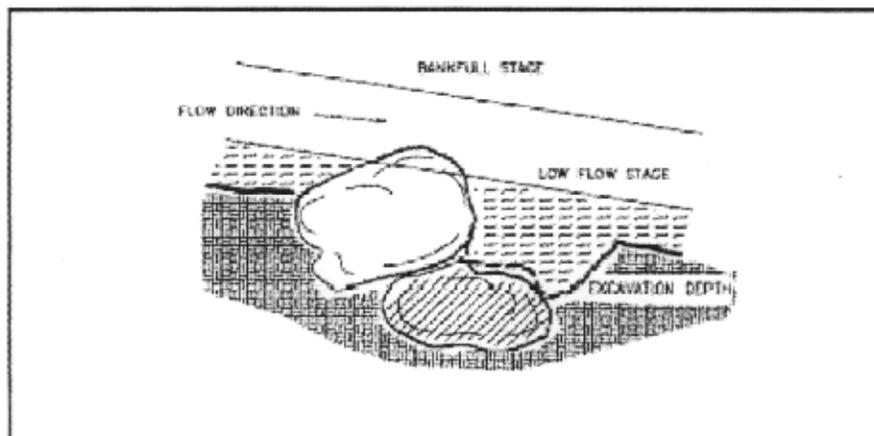
Sheet: 4 of 36  
 Date: June 6, 2003

Project Location: SF District  
 Project Name: Fisheries Restoration Grant Program  
 Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)



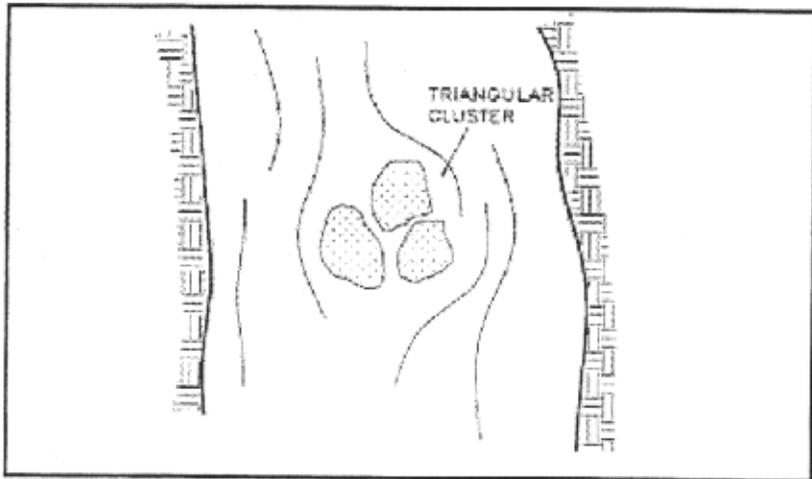
Vortex boulder weir, plan view (Rosgen, 1993)



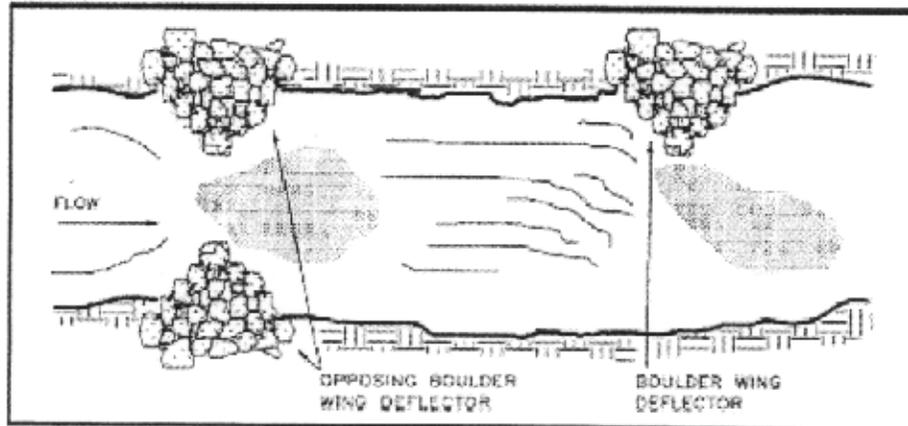
Vortex boulder weir, profile view (Rosgen, 1993)

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Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game



Boulder cluster

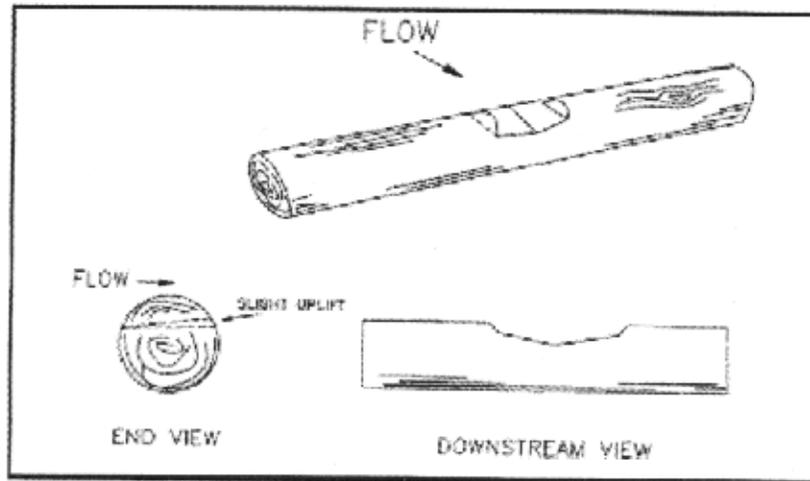


Single and opposing boulder wing-deflectors

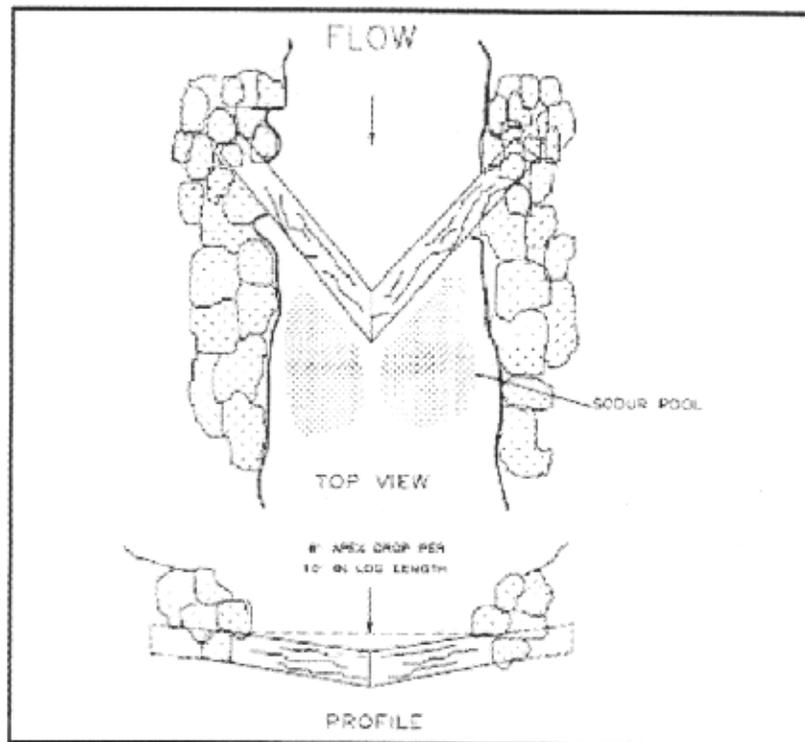
Sheet: 6 of 36  
 Date: June 6, 2003

Project Location: SF District  
 Project Name: Fisheries Restoration Grant Program  
 Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)



Straight log weir with low-flow notch

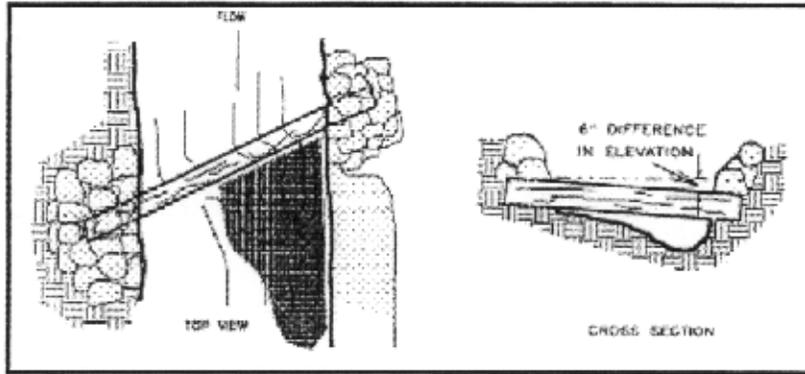


Downstream-V log weir

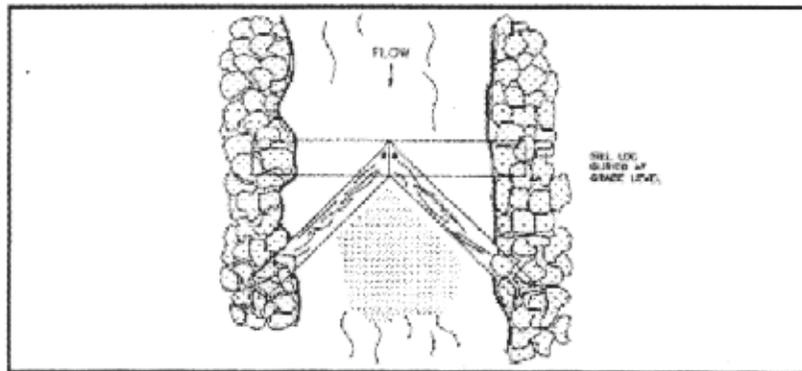
Sheet: 7 of 36  
Date: June 6, 2003

Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game

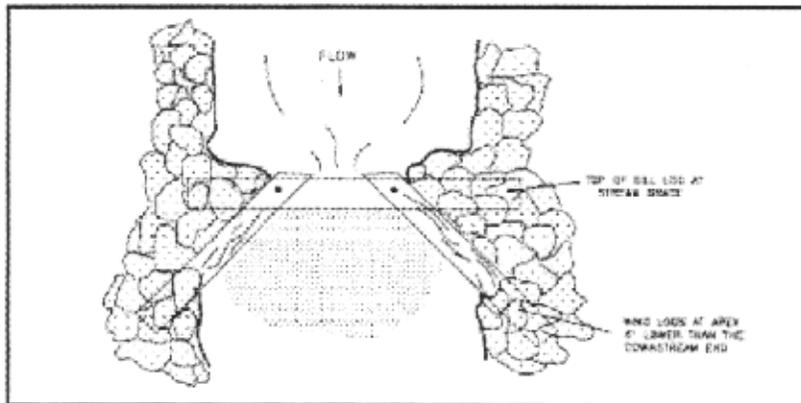
Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)



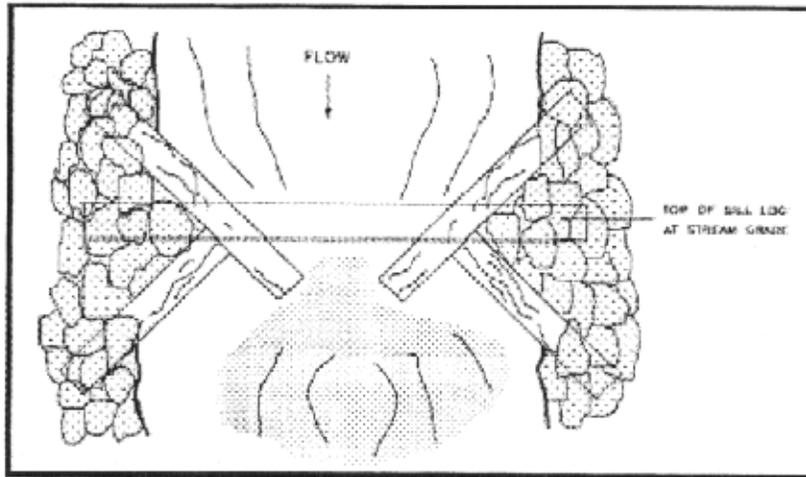
Diagonal log weir



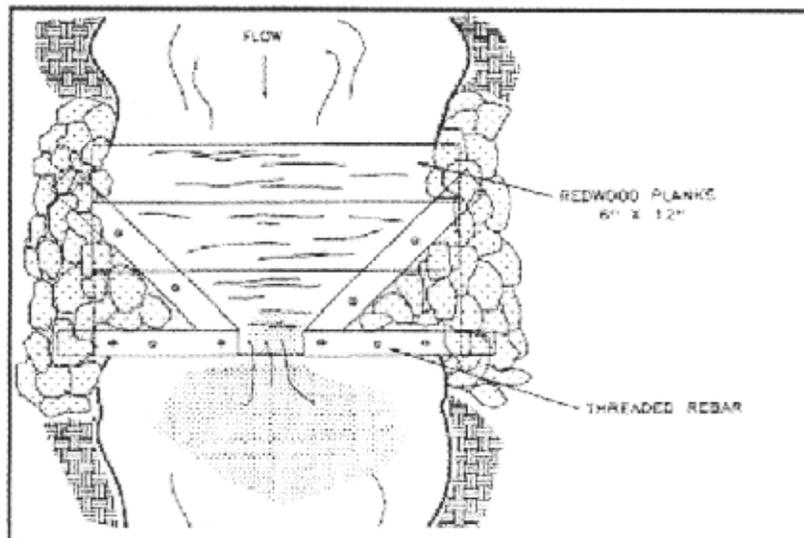
Upstream-V log weir



Upstream-V log weir with a low-flow notch



Opposing log deflectors over a sill log

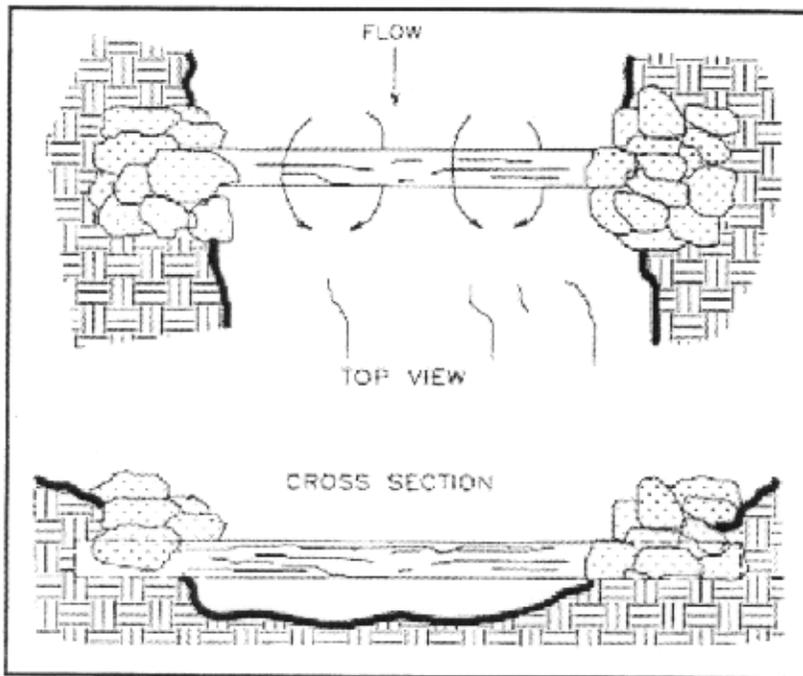


Log constrictors over planks

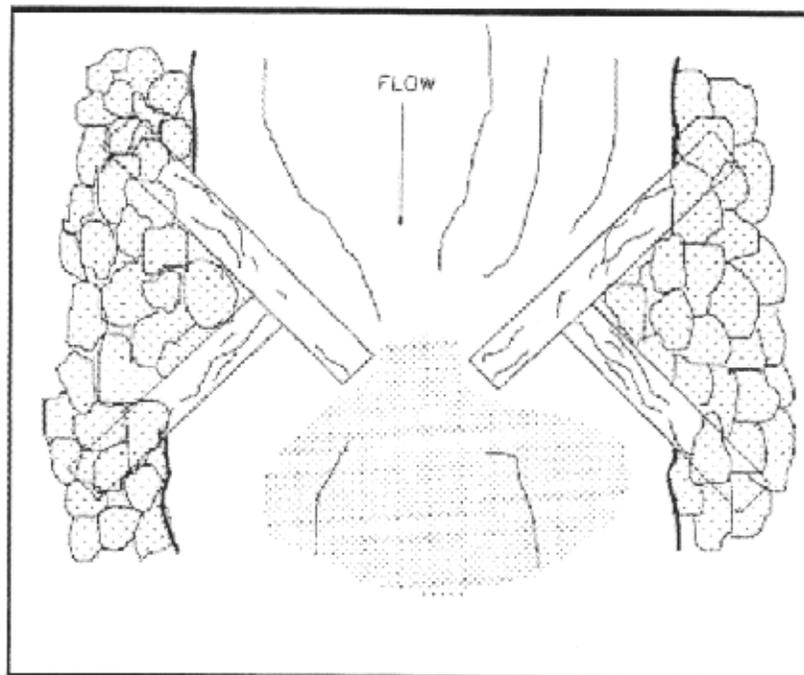
Sheet: 9 of 36  
 Date: June 6, 2003

Project Location: SF District  
 Project Name: Fisheries Restoration Grant Program  
 Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)



Upsurge weir

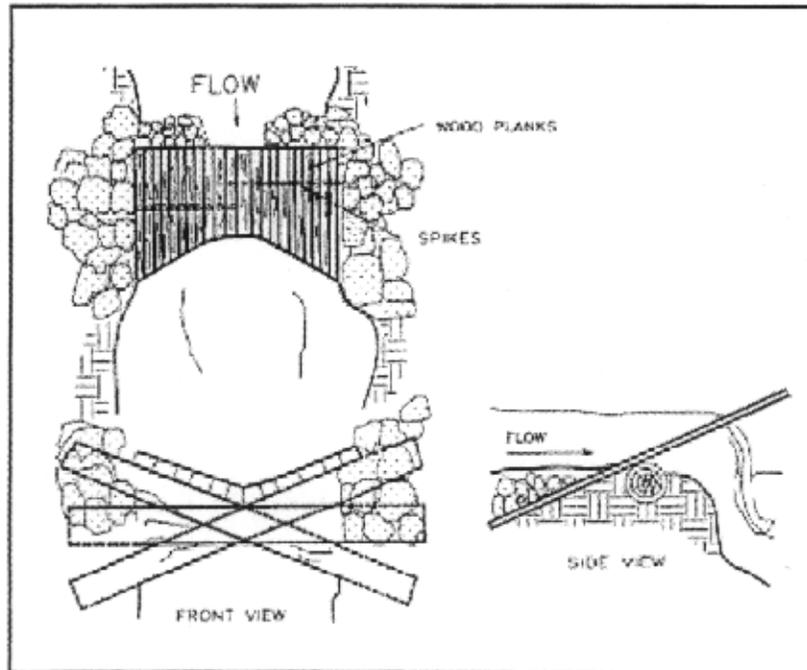


Opposing log wing-deflector

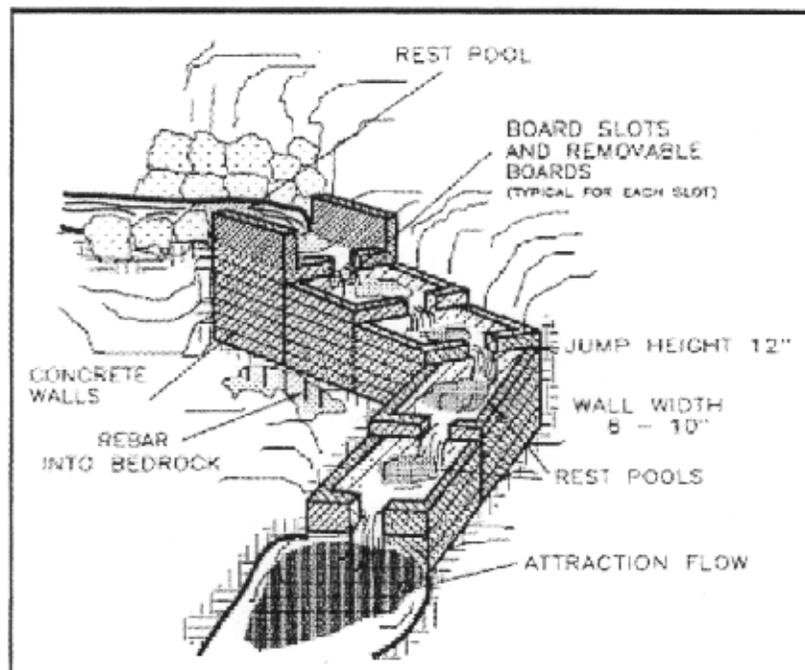
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Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)



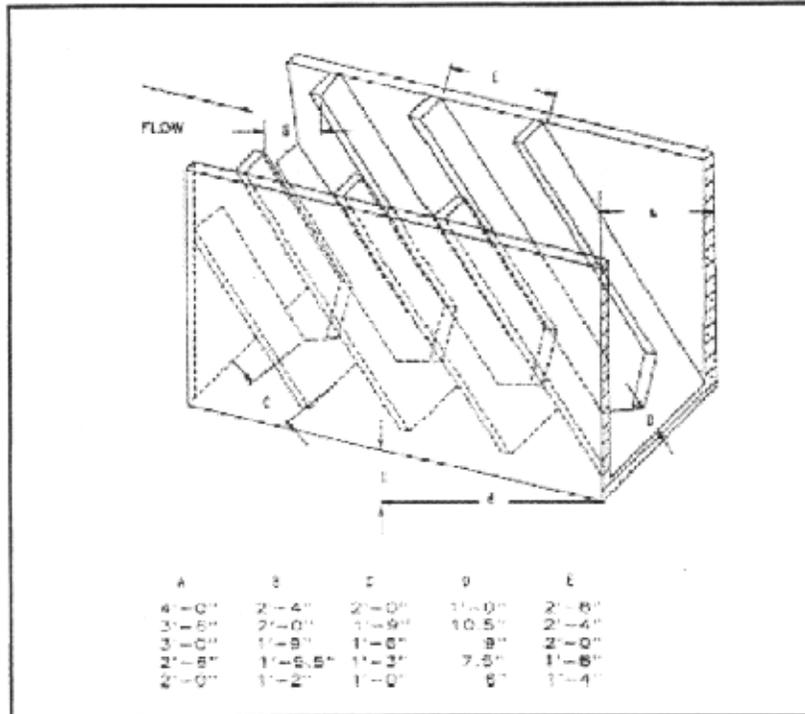
Hewitt ramp



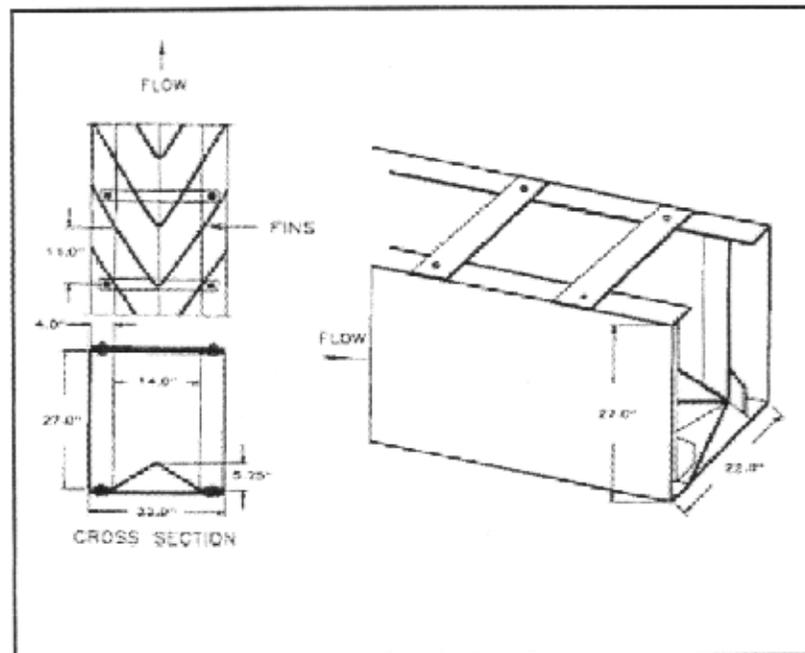
Step-and-pool fishway

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Date: June 6, 2003

Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game



Denil fishway

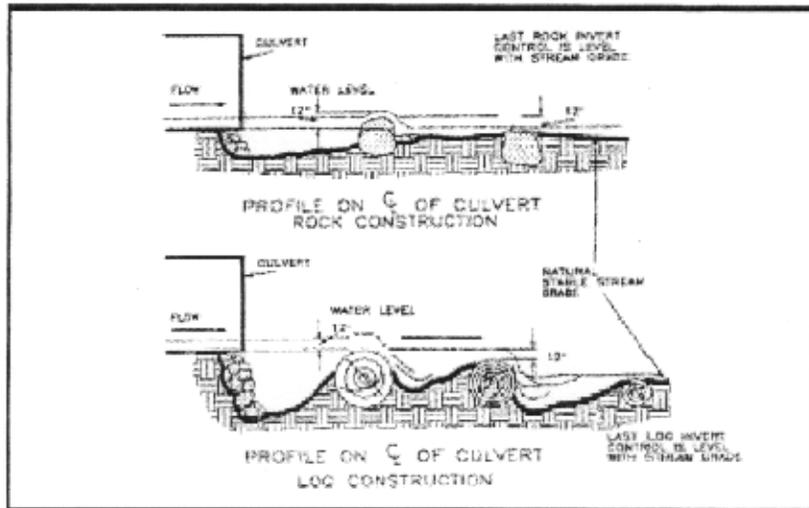


Alaskan steep-pass

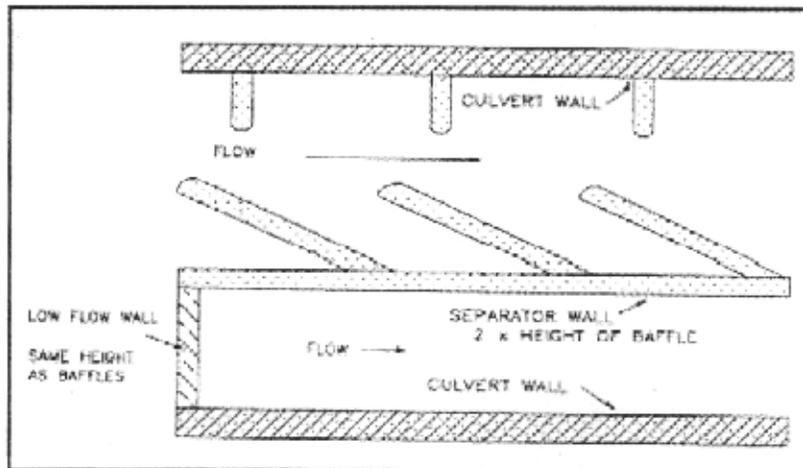
Sheet: 12 of 36  
Date: June 6, 2003

Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)

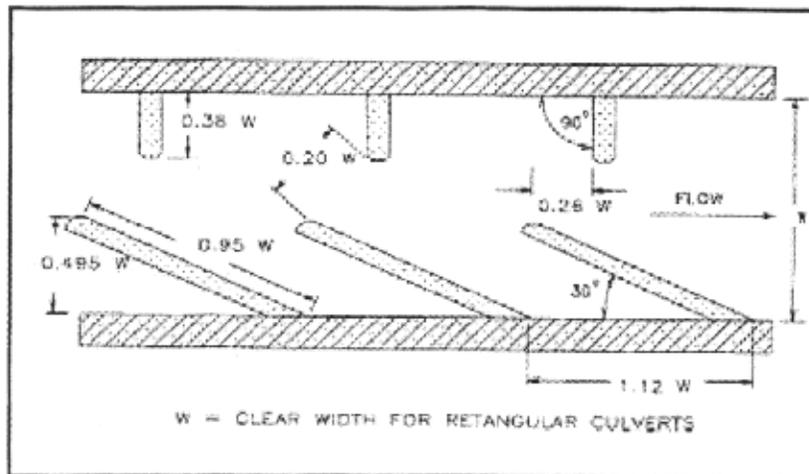


Back-flooding weirs



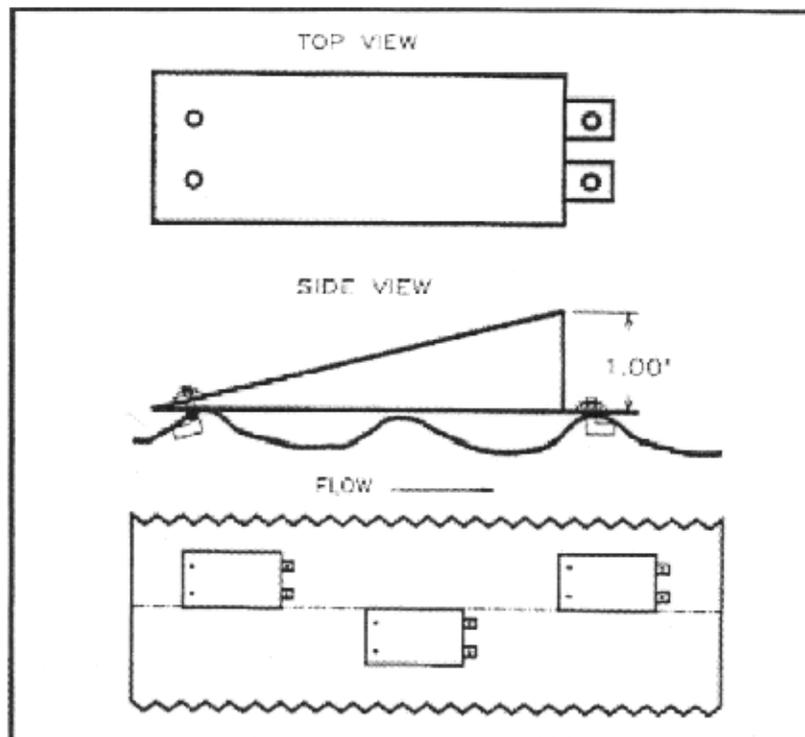
Washington baffles with a separator wall

(*Stream Enhancement Guide*, British Columbia Ministry of Environment, 1980, p. 42)



**Washington baffles**

(*Stream Enhancement Guide*, British Columbia Ministry of Environment, 1980, p. 42)

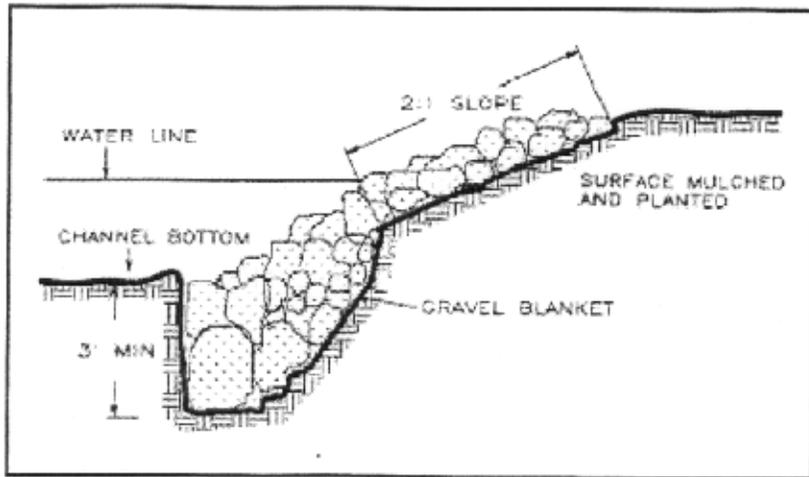


**Corrugated metal pipe steel ramp baffles**

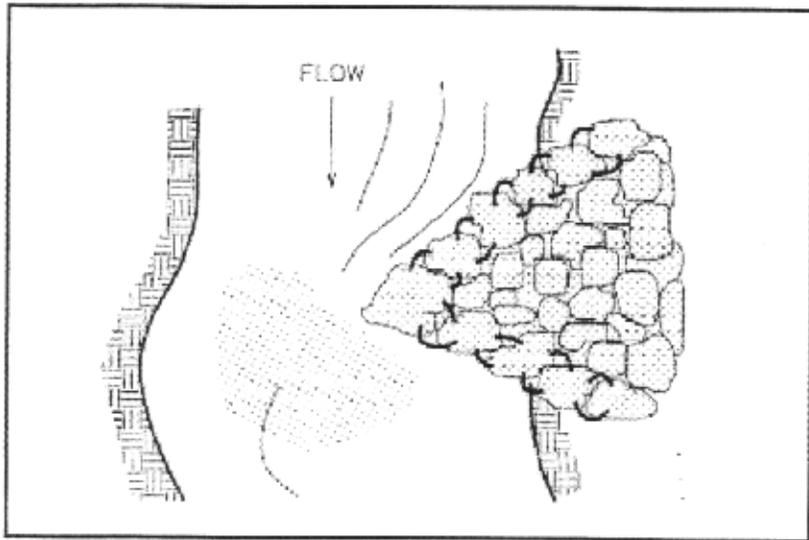
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Date: June 6, 2003

Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)



Riprap

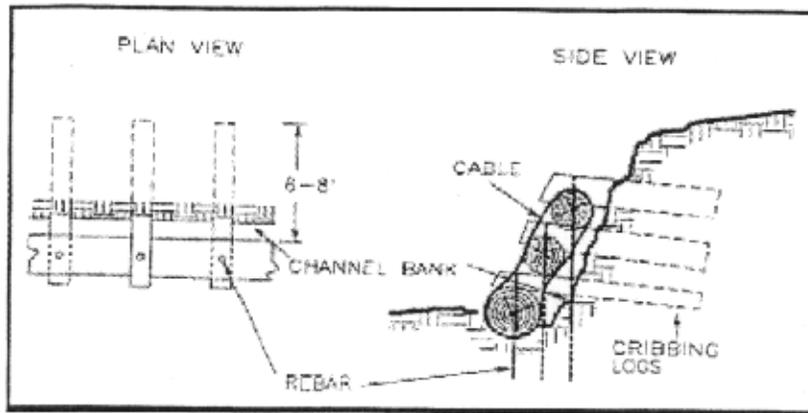


Boulder wing-deflector

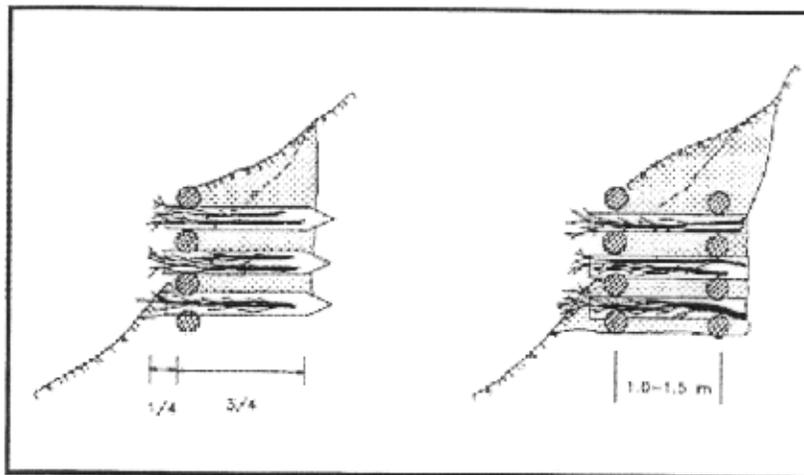
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Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)



Log Cribbing

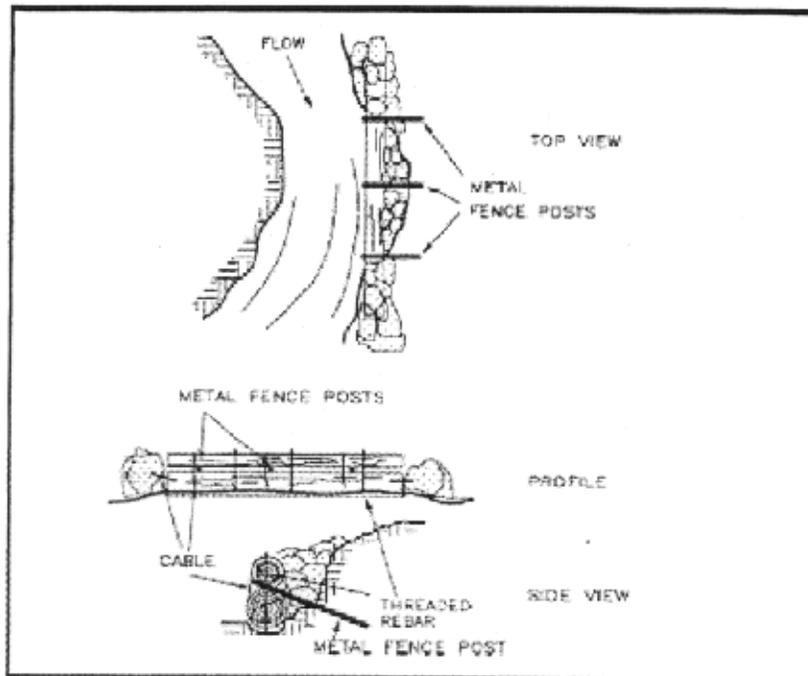


Live Vegetative Crib Wall (Scheichtl and Stern, 1996)

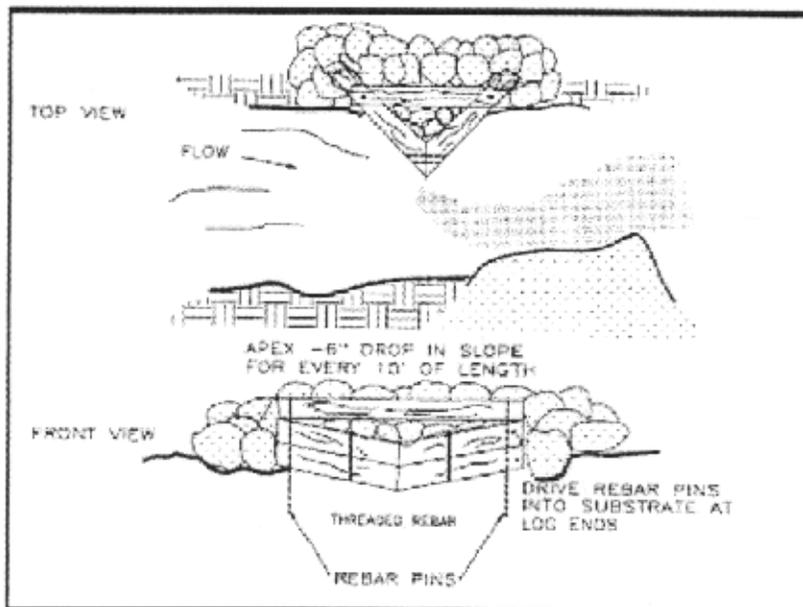
Sheet: 16 of 36  
Date: June 6, 2003

Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)



Log bank armor

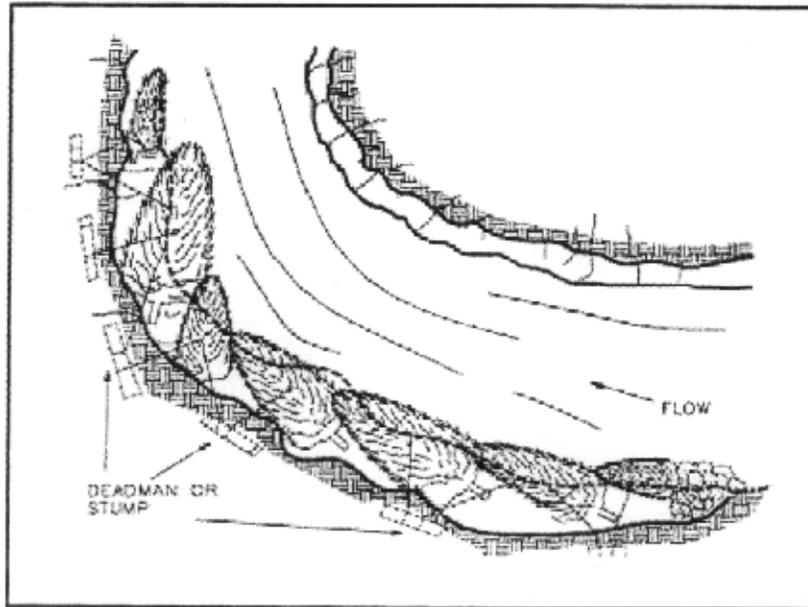


Log wing-deflector

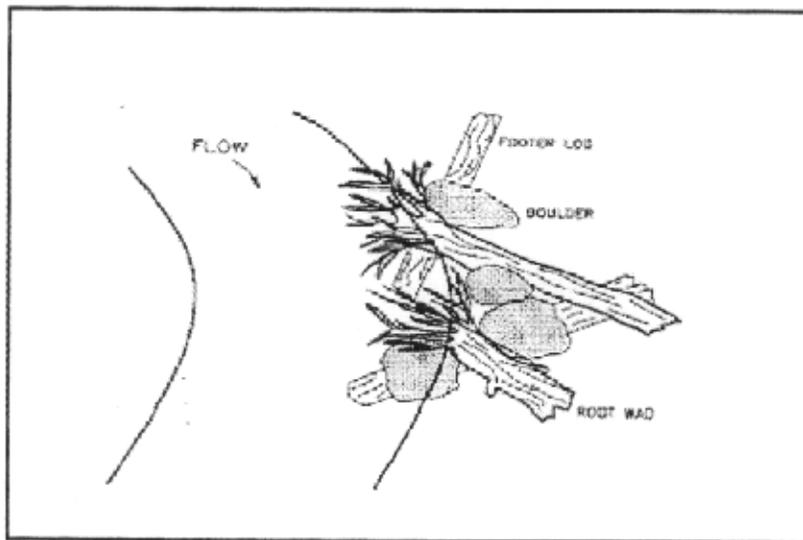
Sheet: 17 of 36  
 Date: June 6, 2003

Project Location: SF District  
 Project Name: Fisheries Restoration Grant Program  
 Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flosi et al., 1998)



Tree revetment

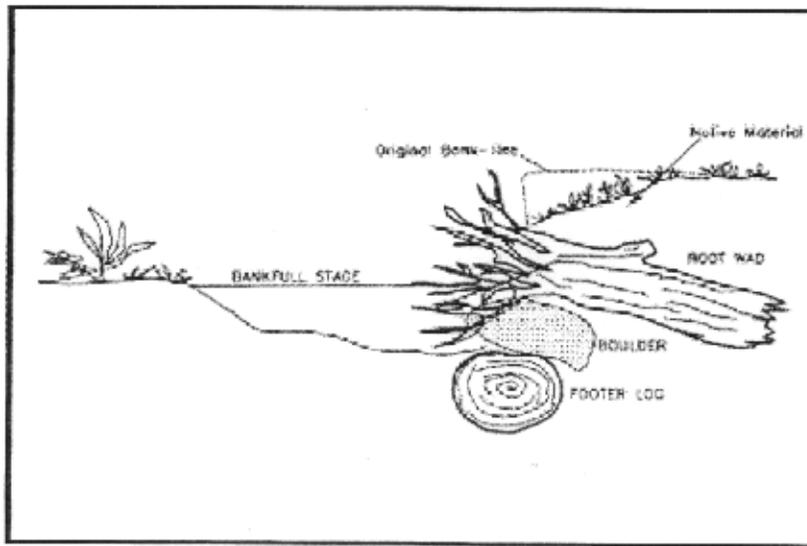


Plan view of native material revetment (Rosgen, 1993)

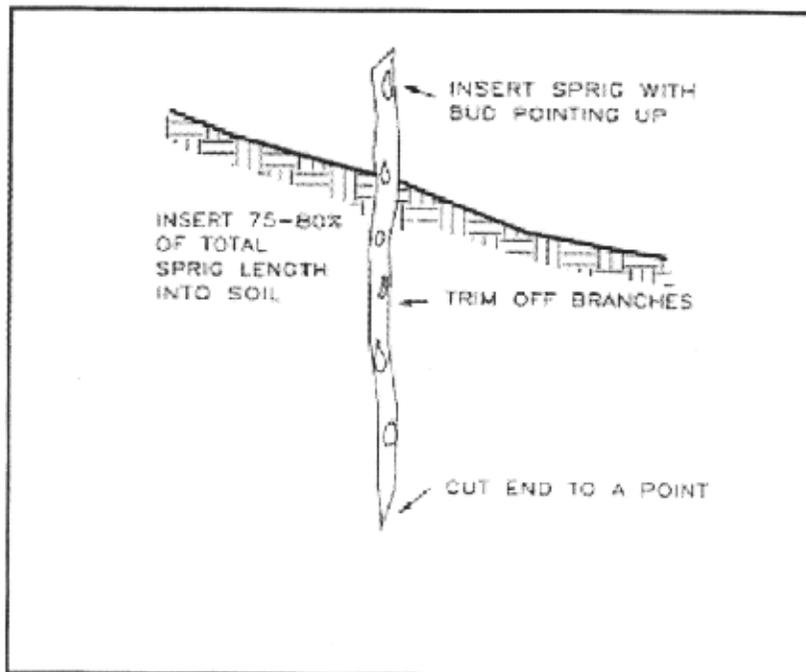
Sheet: 18 of 36  
Date: June 6, 2003

Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)



Native material revetment (Rosgen, 1993)

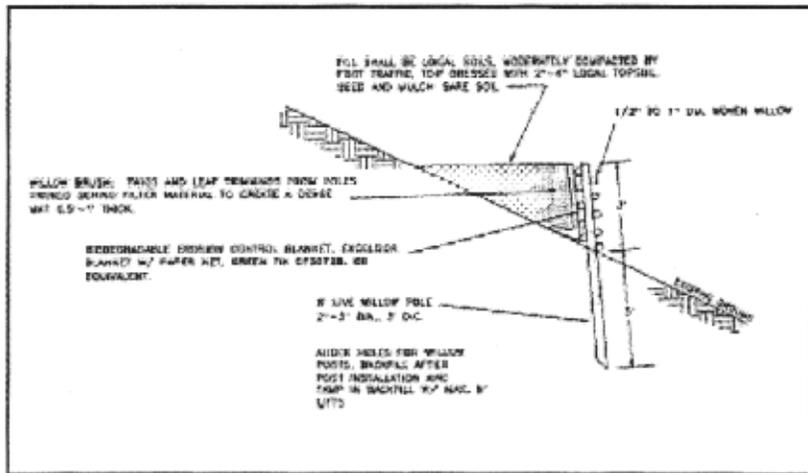


Willow sprigging (Prunuske, 1987)

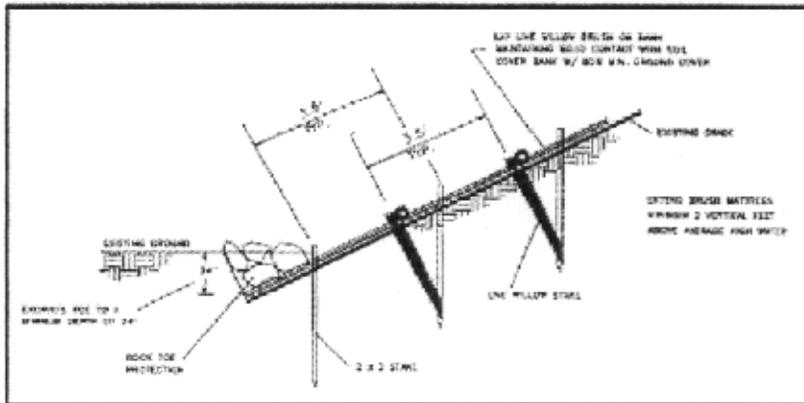
Sheet: 19 of 38  
Date: June 6, 2003

Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)



Willow Wall Revetment (L. Prunuske, 1997)

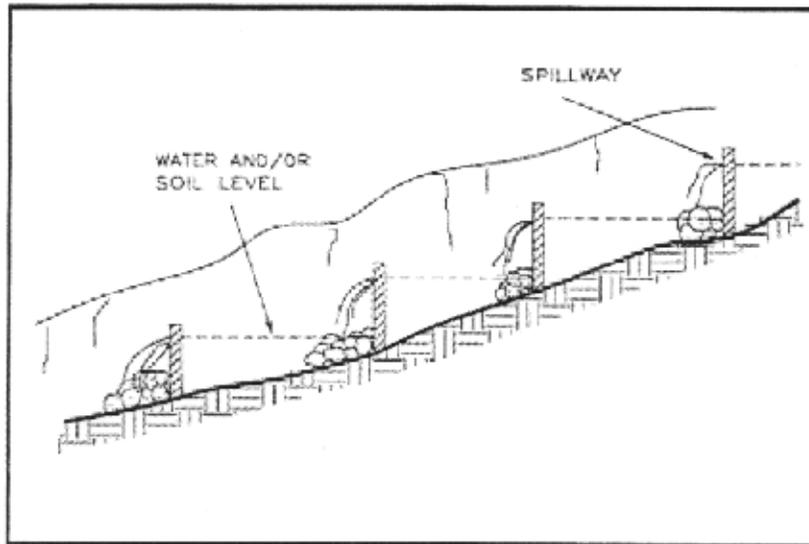


Brush Mattress Cross Section (L. Prunuske, 1997)

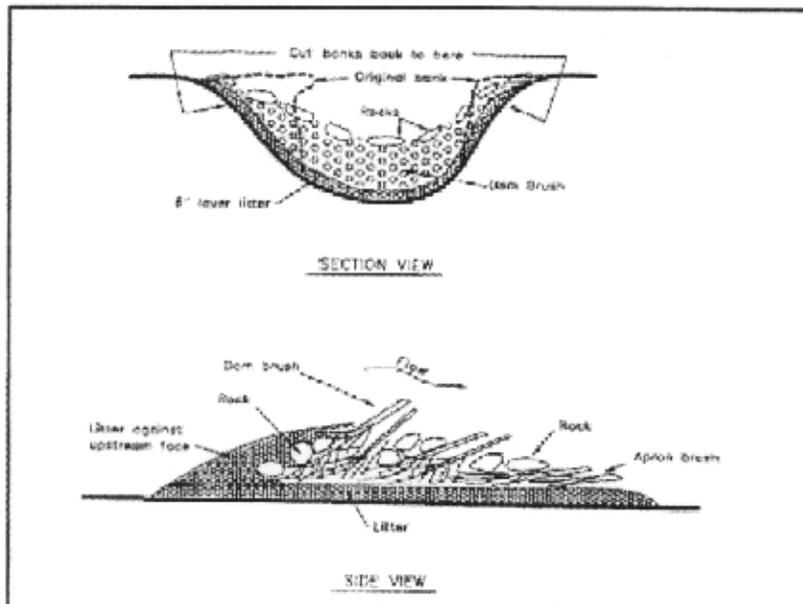
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Date: June 6, 2003

Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game

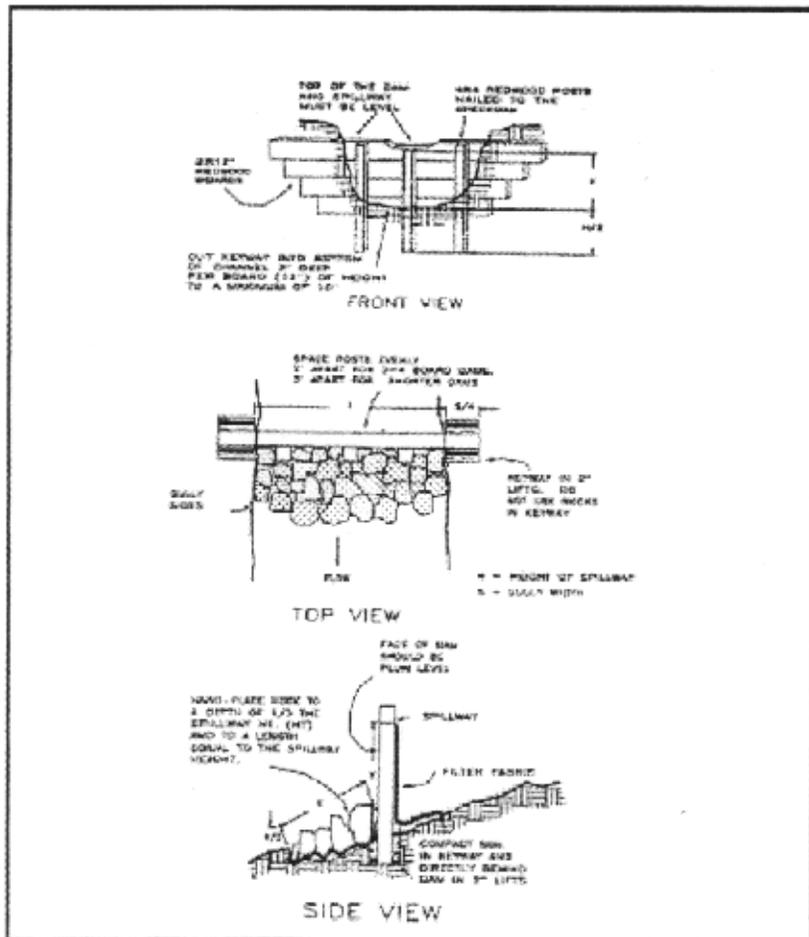
Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Fiosi et al., 1998)



Checkdam placement (Prunuske, 1987)



Brush and Rock Checkdam (Kraebel and Pilsbury, 1934)

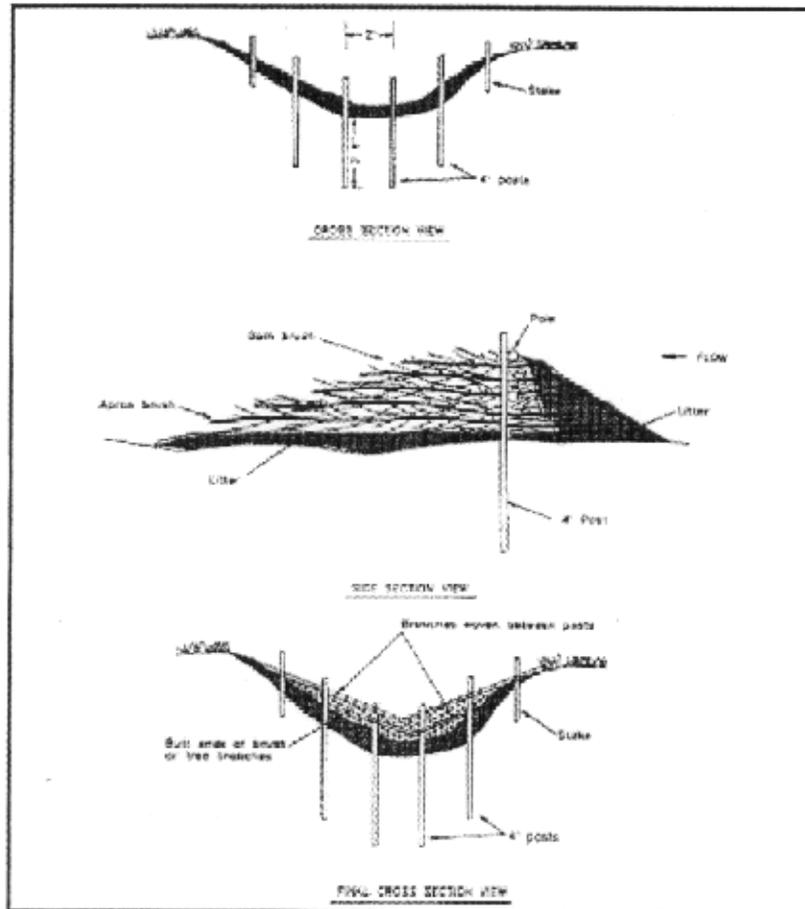


Redwood board checkdam (Prunuske, 1987)

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Date: June 6, 2003

Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flosi et al., 1998)

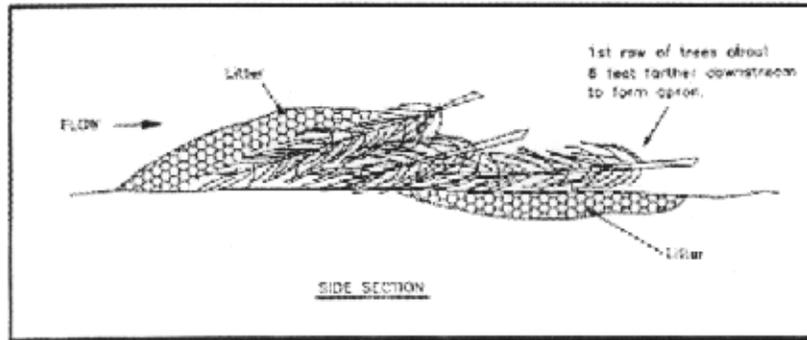


Post Checkdam (Kraebel and Pillsbury, 1934)

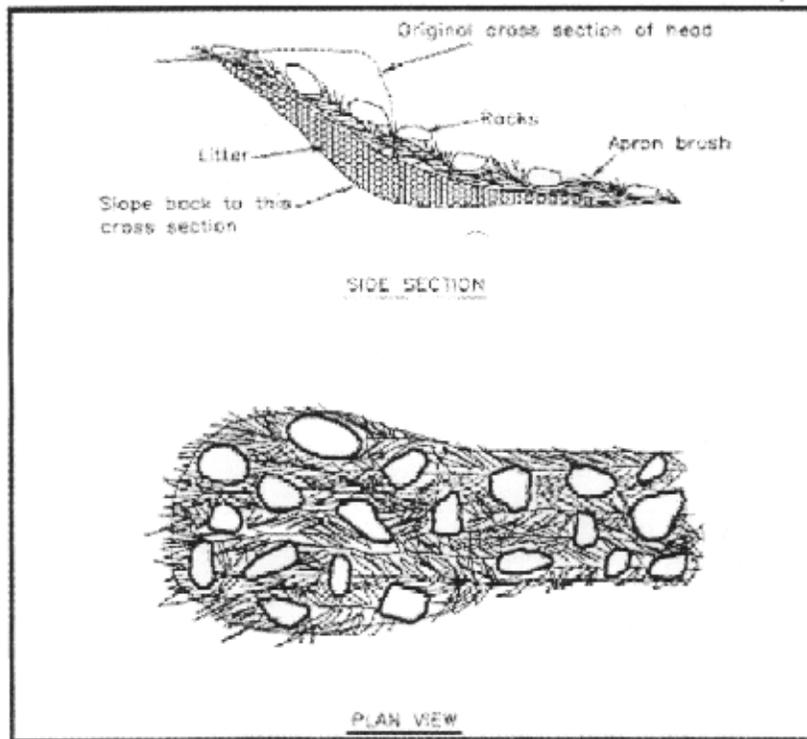
Sheet: 23 of 36  
 Date: June 6, 2003

Project Location: SF District  
 Project Name: Fisheries Restoration Grant Program  
 Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)



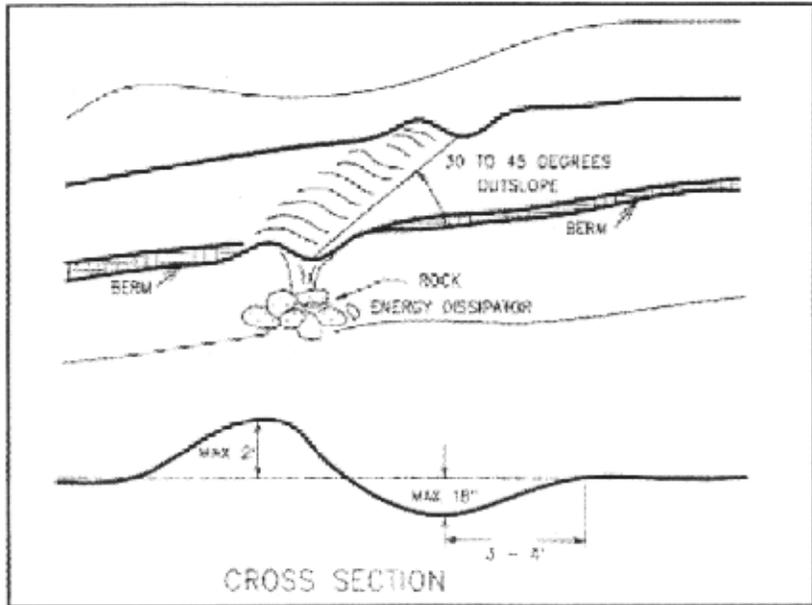
**Tree Checkdam (Kraebel and Pillsbury, 1934)**



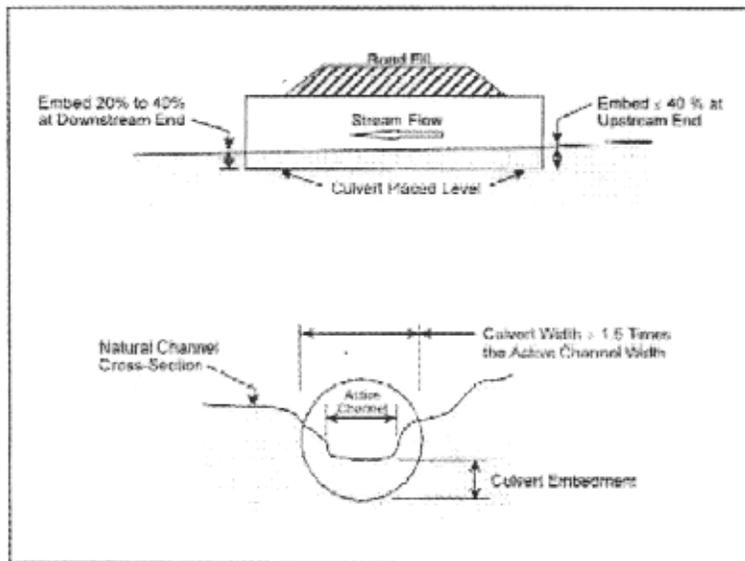
**Brush and Rock Mattress (Kraebel and Pillsbury, 1934)**

Sheet: 24 of 36  
 Date: June 6, 2003

**Project Location:** SF District  
**Project Name:** Fisheries Restoration Grant Program  
**Applicant:** Department of Fish and Game



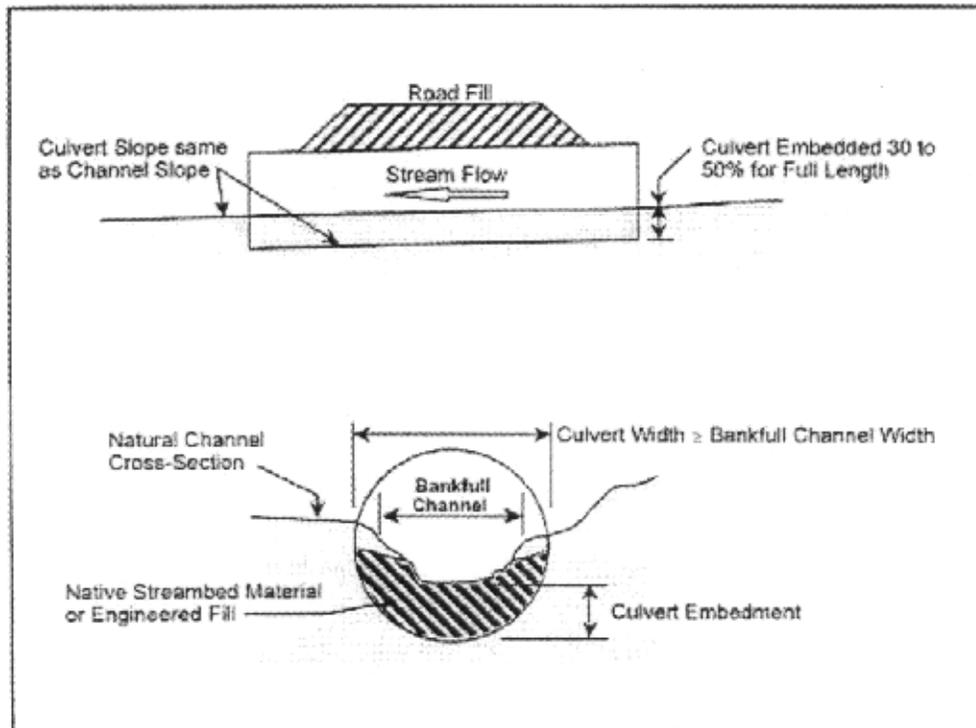
**Waterbar**



**Active channel design option**

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Date: June 6, 2003

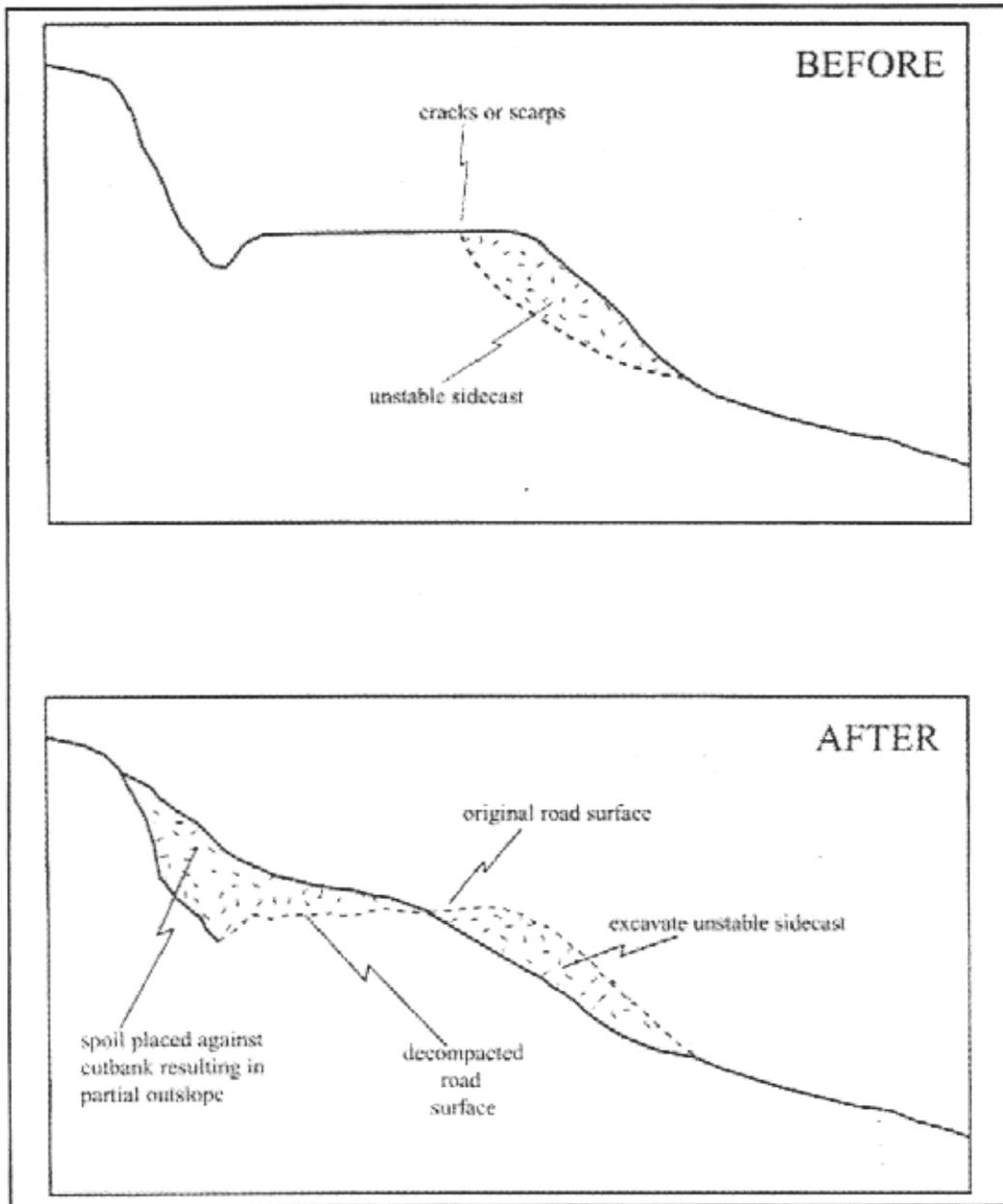
Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game



Stream simulation design option

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 Date: June 6, 2003

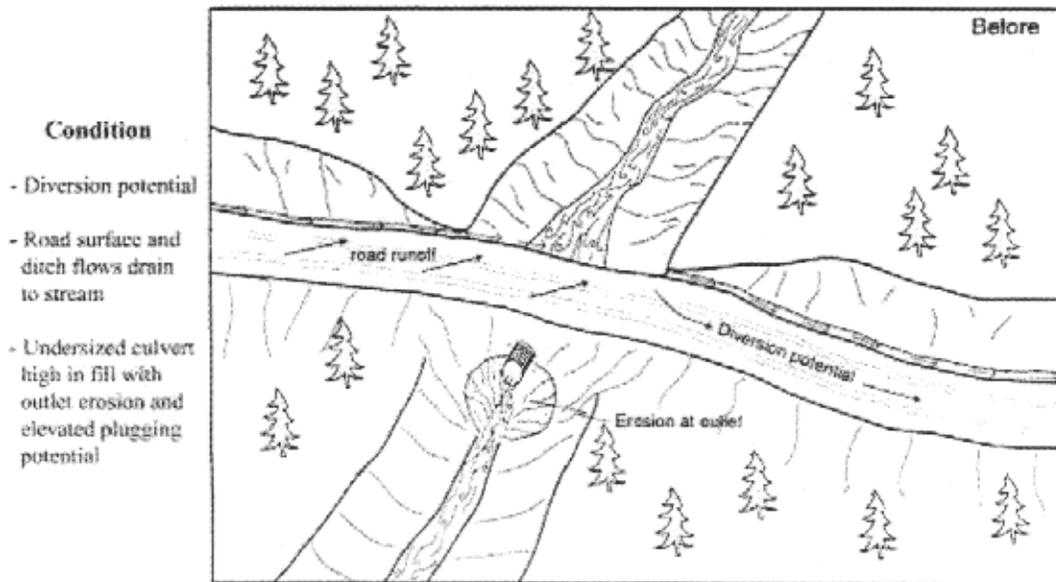
Project Location: SF District  
 Project Name: Fisheries Restoration Grant Program  
 Applicant: Department of Fish and Game



Ripping or decompaction of the road surface and outsloping to approximate original grade

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Date: June 6, 2003

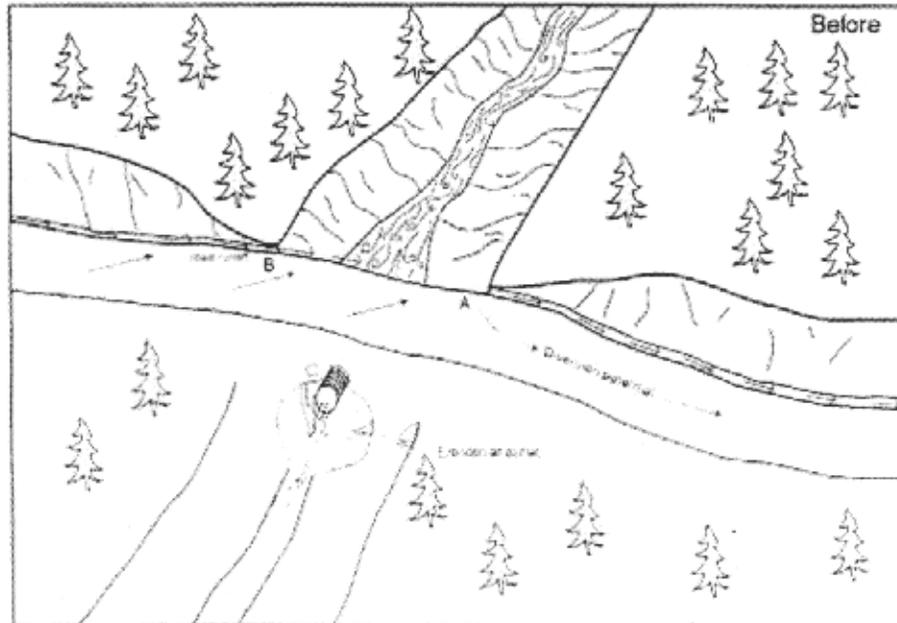
Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game



**Stream crossing excavations for decommissioning**

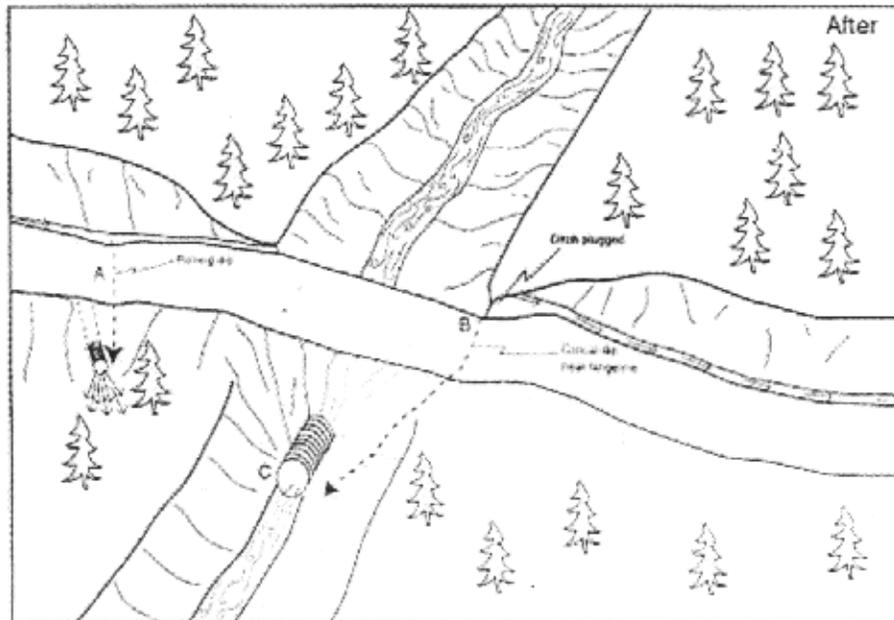
**Common Problems**

- A - Diversion potential
- B - Road surface and ditch flows drain to stream
- C - Undersized culvert high in fill with outlet erosion

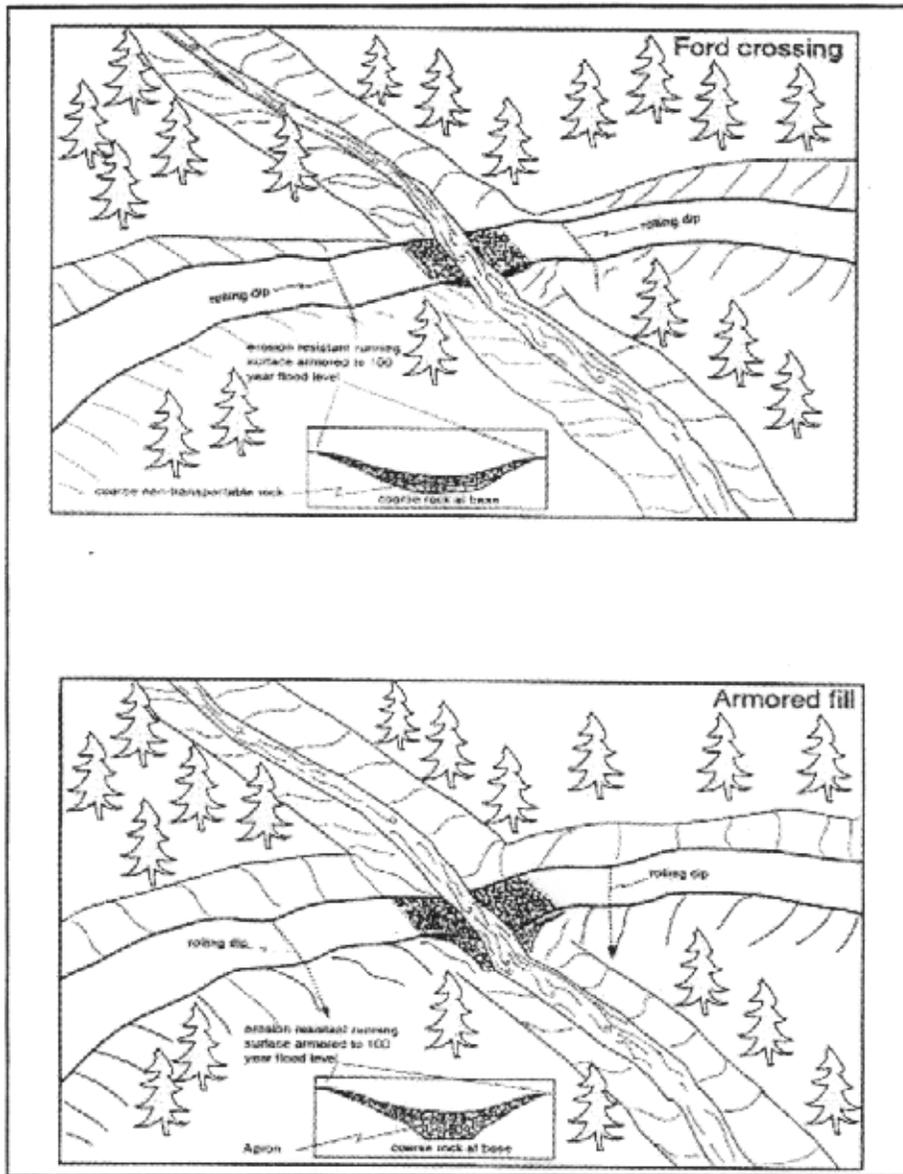


**General Standards**

- A - Road surface and ditch "disconnected" from stream
- B - No diversion potential
- C - 100 year culvert set at base of fill



**Typical upgraded stream crossing**

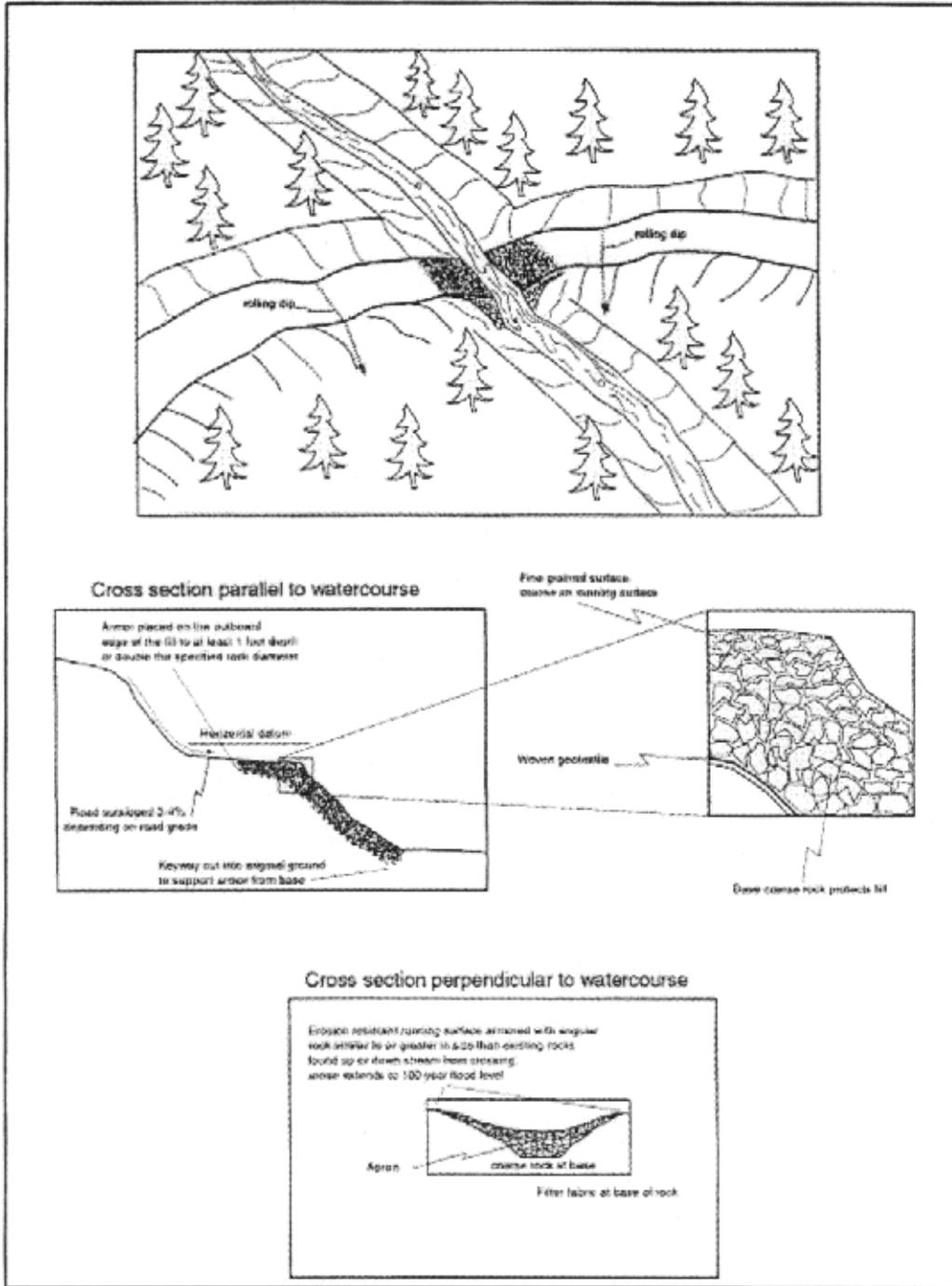


Typical armored fill stream crossing

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 Date: June 6, 2003

Project Location: SF District  
 Project Name: Fisheries Restoration Grant Program  
 Applicant: Department of Fish and Game

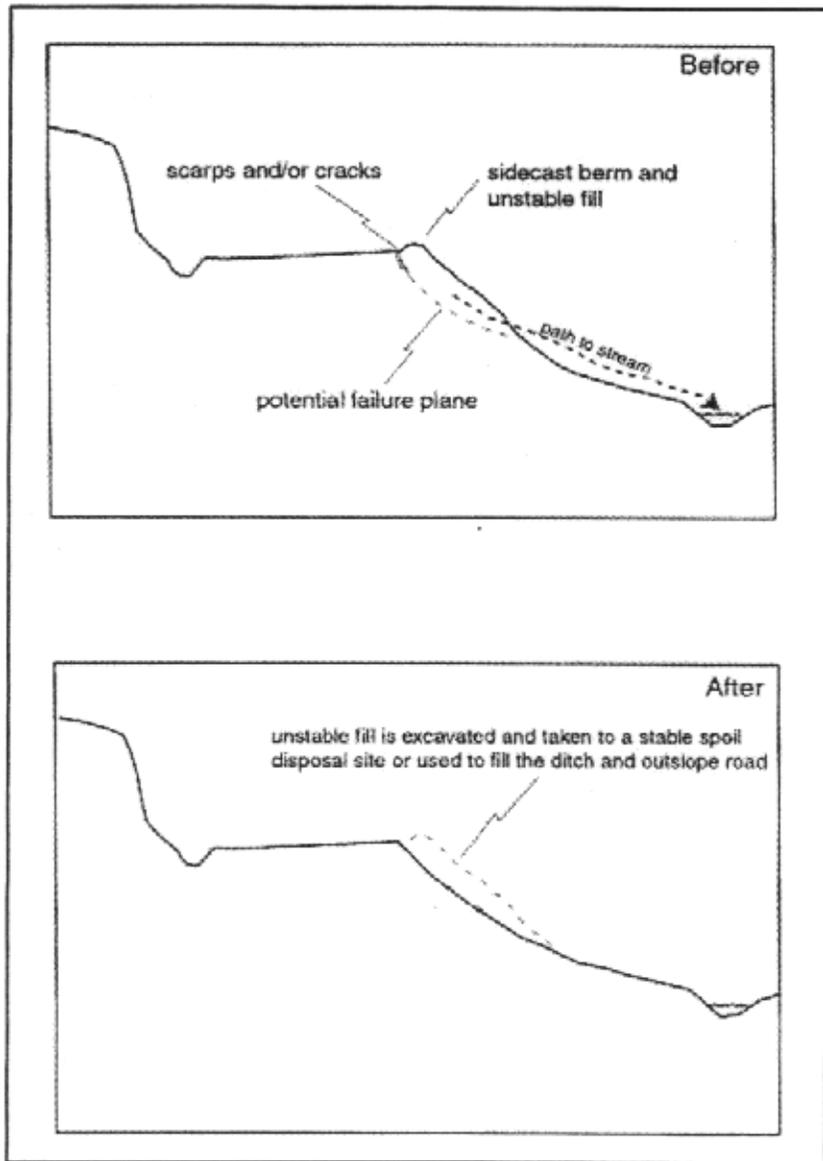
Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)



Installation and specification of typical armored fill crossing

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 Date: June 6, 2003

Project Location: SF District  
 Project Name: Fisheries Restoration Grant Program  
 Applicant: Department of Fish and Game

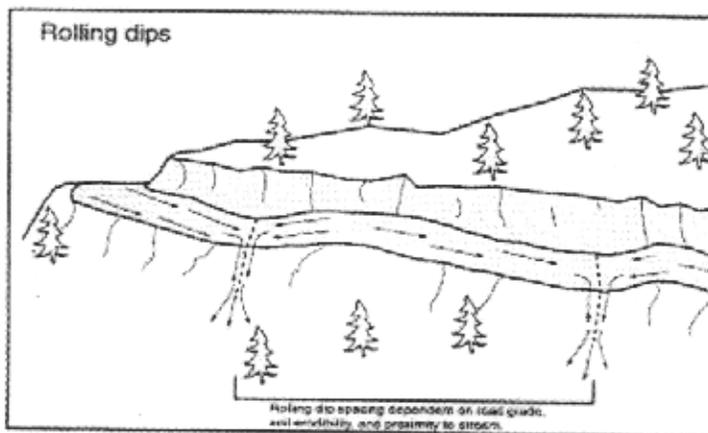
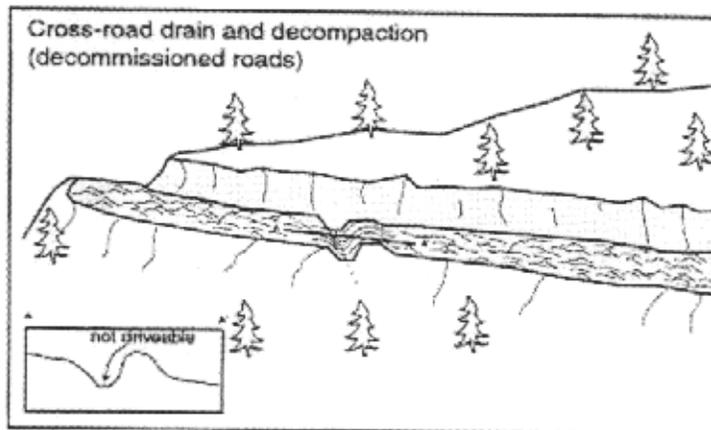
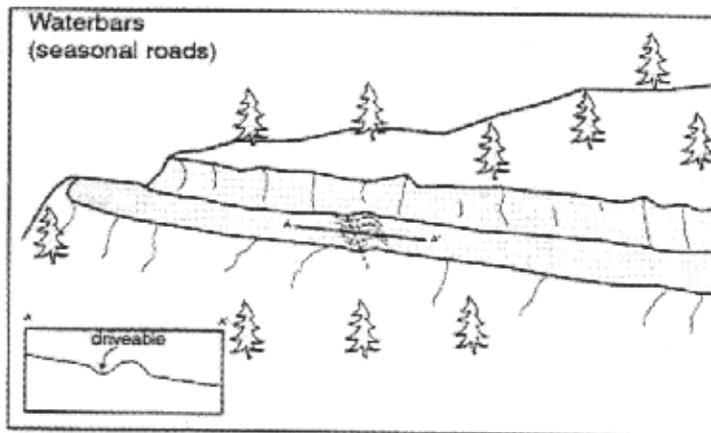


Removal of unstable sidecast materials

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 Date: June 6, 2003

Project Location: SF District  
 Project Name: Fisheries Restoration Grant Program  
 Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flosi et al., 1998)

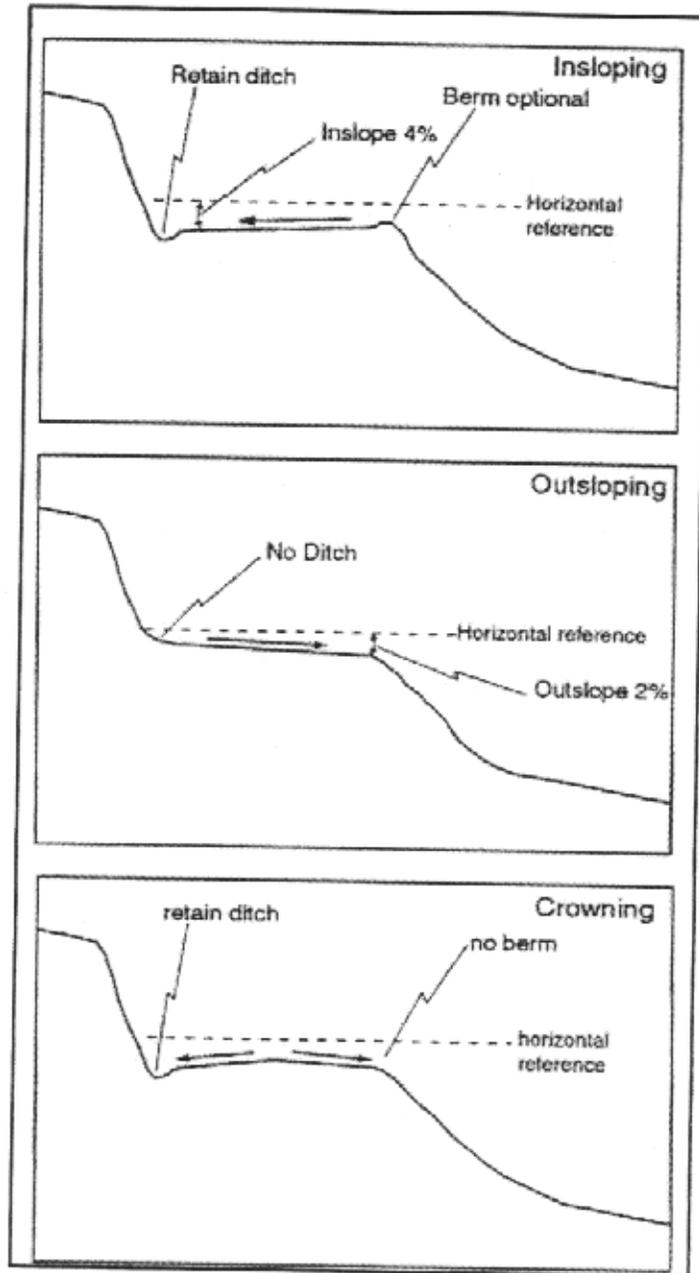


**Techniques for dispersing road runoff**

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Date: June 6, 2003

Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)

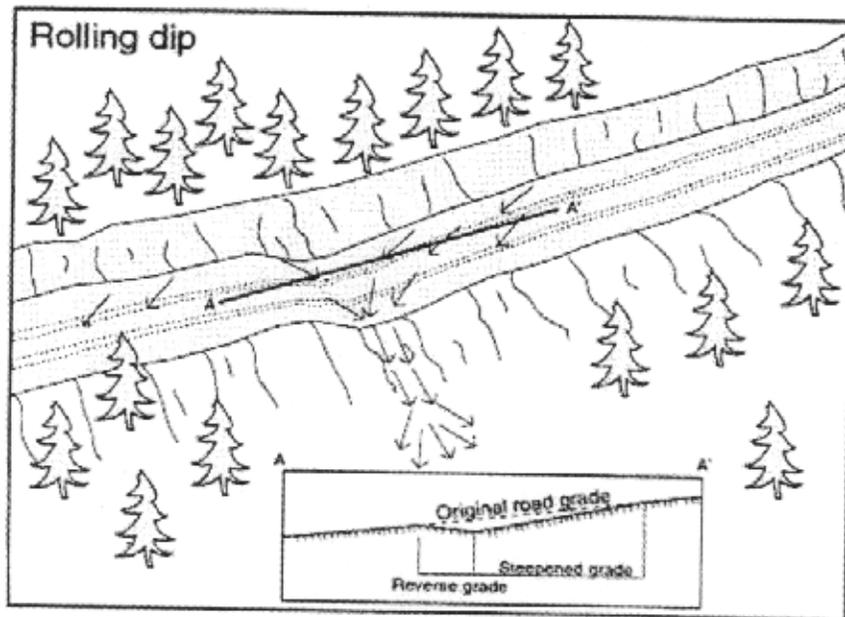


Utilizing road shape to reduce surface runoff rates

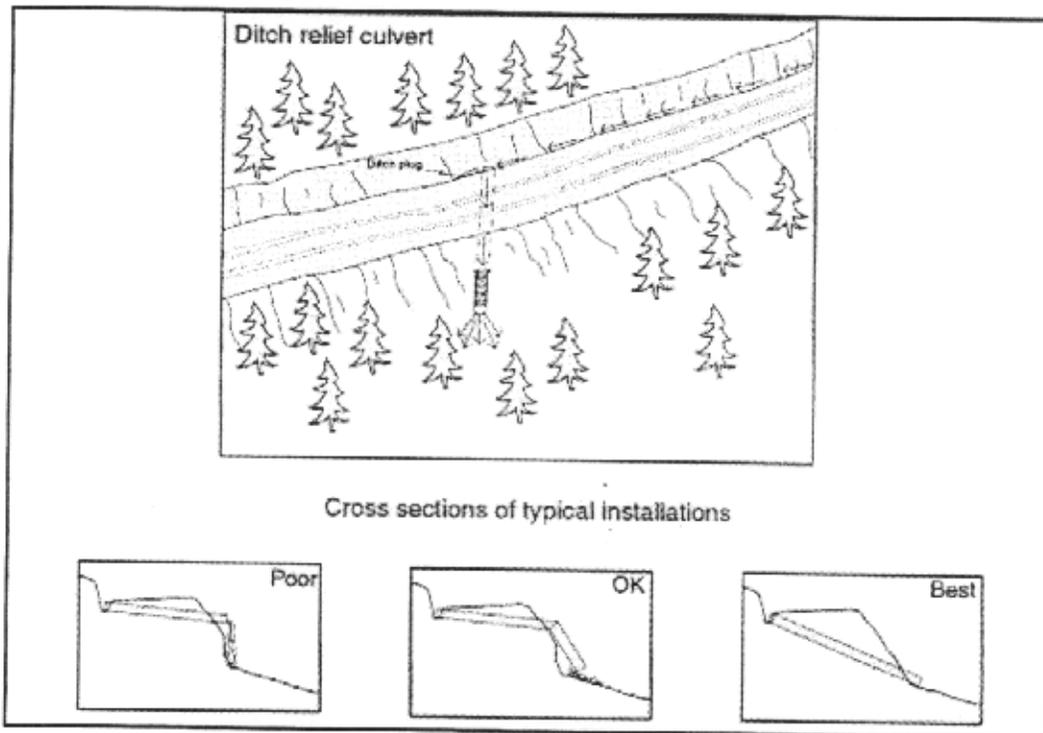
Sheet: 34 of 36  
 Date: June 6, 2003

Project Location: SF District  
 Project Name: Fisheries Restoration Grant Program  
 Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flosi et al., 1998)



Specifications and use of rolling dips to reduce ditch erosion and surface runoff

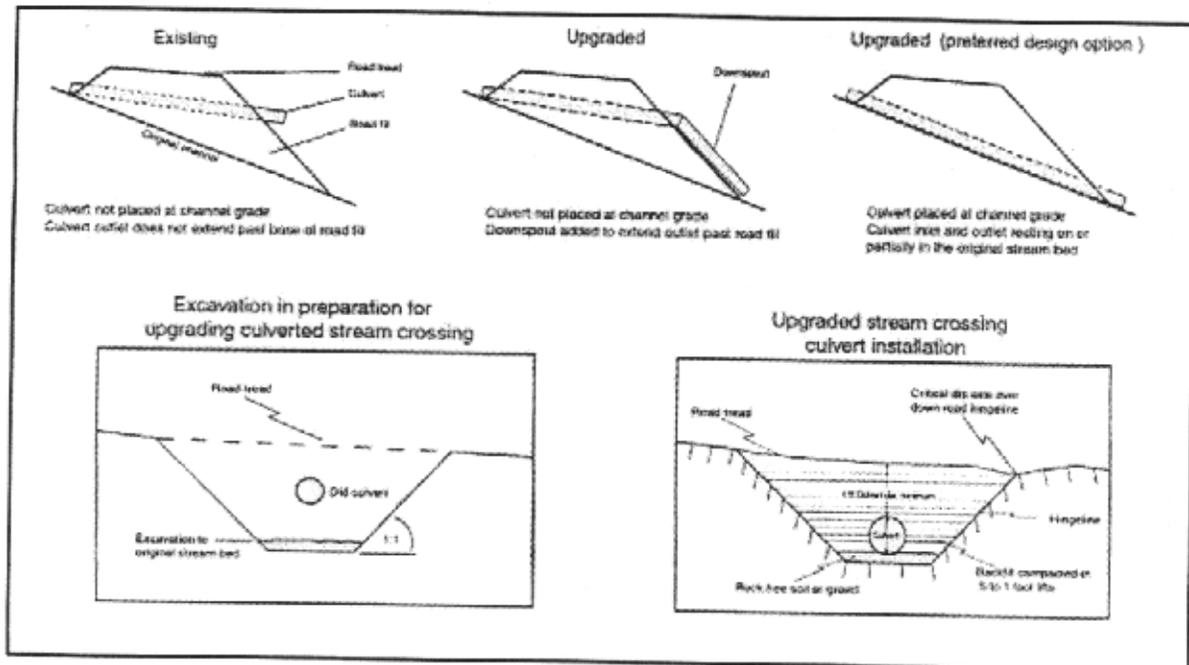


Typical ditch relief culvert installation

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Date: June 6, 2003

Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flosi et al., 1998)



Typical stream crossing culvert installation on non fish-bearing streams

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Date: June 6, 2003

Project Location: SF District  
Project Name: Fisheries Restoration Grant Program  
Applicant: Department of Fish and Game

Source of Drawings: California Salmonid Stream Habitat Restoration Manual, (Flossi et al., 1998)