
CALIFORNIA SALMONID STREAM
HABITAT RESTORATION MANUAL

Stream Simulation Design Data Checklist

This is a guide and summary for design and review of a stream simulation road - stream crossing including the Low-Slope design approach. Data is summarized to show design milestones, assumptions, and conclusions. This is not likely all of the data required for a complete design. Other design data sheets are available for other design methods.

A plan view sketch and a long profile should be attached to this design data form. See the design guide for background for all data and details recommended on sketches.

Describe any additional details necessary for the design on additional sheets.

Project

Project name and ID		
Stream		
Road, location		
Lat / Long (d/m/s)		
Interdisciplinary Design Team members		
Date		

Brief description of project _____

Project type (new, retrofit, replacement) _____

Design approach (stream simulation, low-slope) _____

Does final design satisfy stream simulation design criteria? Explain deviations and limitations.

Y / N _____

Site characteristics (LS)

Is there an existing Culvert(s)?	Y/N	
Existing culvert perched:	Y/N	Height of perch _____
Downstream channel incised	Y/N	Depth of incision _____
Evidence of incision		_____
<hr/>		
Upstream backwater deposition	Y/N	
Evidence and extent		_____

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Date _____

2 – BASIS OF DESIGN

Reference Reach

Description of reference reach

Location of reference reach (e.g., “150’ upstream from crossing)

Show location of reference reach on plan view sketch and profile.

Length of reference reach _____

Describe reference reach channel types (e.g., 75% pool-riffle, 25% plane bed)

Key bed features, function, and spacing (e.g., debris, steps, bends, etc.)

Bed mobility and how it was determined (e.g., observation, model applied, etc.)

Hydrology

Watershed characteristics

Area _____ sq miles Mean elevation _____ ft above sea level

Mean annual precipitation _____ inches

Other hydrologic or flow characteristics (hydrologic province, area of lakes, northing, etc.)

Peak design flows	Derived flow (cfs)	Standard error (%)	Design flow (cfs)
2 - yr flow			
10 - yr flow			
25 - yr flow			
100 - yr flow			

Fish passage design flows

Species	Age class	High design flow (cfs)	Q7L2 (cfs)

Describe how hydrology was calculated and any assumptions (e.g., future conditions) made.

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3 - BASIS OF DESIGN

Reference reach cross sections

Cross section labels			
Locations			
Channel type (M&B classification)			
Bankfull width			
Bankfull depth			
Floodprone width			
Elevation of high water mark			

Reference reach slope Average _____ Range _____

Reference reach bed material

	Particle size (inches or mm)	How was particle size determined?
D ₉₅		
D ₈₄		
D ₅₀		
D ₁₆		
D ₅		
Fines		

Reference reach key features

	Size (inches or mm)	Function	Spacing	Drop supported by feature	Permanence, mobility, condition
Debris and live wood					
Colluvium					
Bedrock					
Steps, clusters					

Function: Profile control, Roughness, Confinement, Bank stability

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4 - DESIGN

Proposed Project Profile and Alignment

Proposed new channel within crossing Slope _____ Length _____
 Upstream channel within project Slope _____ Length _____
 Downstream channel within project Slope _____ Length _____

	Downstream end	Upstream end
Bed Elevation - project profile		
Bed Elevation - low potential profile		
Bed Elevation - high potential profile		

Stream simulation bed material

	Particle size (inches or mm)	How was particle size determined? (what model, observations)
D ₉₅		
D ₈₄		
D ₅₀		
D ₁₆		
D ₅		

Additional features if included in the design

	Describe material, particle size (inches or mm)	Frequency, spacing
Disrupters, bands		
Banklines		
Key features		

High flow hydraulics

Event	Flow (cfs)	Tailwater elevation	Roughness (n)	Water surface elevation upstream	HW depth (HW/culvert rise)
2 - yr flow					
10 - yr flow					
25 - yr flow					
100 - yr flow					

Describe methods and sources of data high flow hydraulic calculations.

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5 - DESIGN

**Culvert Description
Dimensions, Elevations**

	Existing Culvert	Proposed Culvert
Span	ft	
Rise	ft	ft
Upstream Invert Elevation		
Downstream Invert Elevation		
Culvert Length	ft	ft
Slope	%	%
Percent Embedded	%	%

Note: for bottomless structures, report elevations of tops of footings.

Description of proposed culvert; Choose one or more in each line

Shape: Round -Arch -Box
 Other _____

Material: Corrugated metal -Smooth metal -Concrete
 Corrugation dimensions: _____

Style Full pipe -Bottomless

Road and Alignment

Height of fill on upstream face: _____ ft.

Proposed culvert skew (parallel is 0 degrees)

Culvert to channel _____ degrees Road to culvert _____ degrees

Proposed alignment, transition changes _____

Describe permanent benchmark and elevation _____

Other special considerations, recommendations _____

