

Figure-K.6 General plan flood prevention project for Badung River

Outline of Works

- 1 Riverbed Excavation (Length = 2500m Width = 22m)
- 2 Retaining Wall Placement (Length = 2500m Height = 8m)
- 3 Removement of Existing Ulun Tanjung Weir

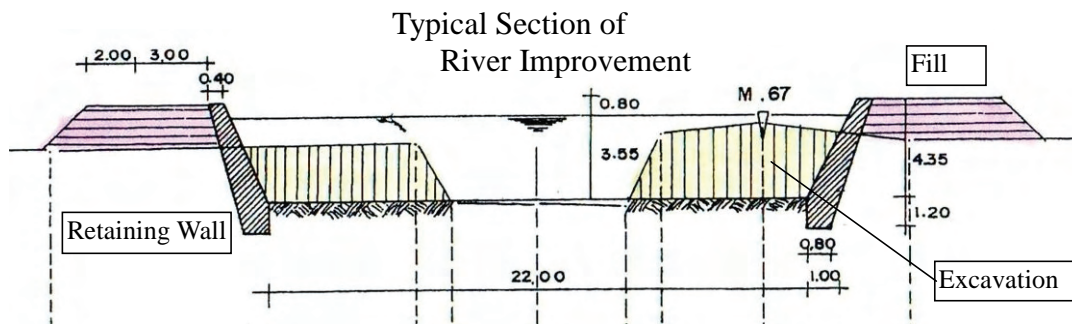


Figure-K.7 General Plan of Flood Prevention Project for Mati River

(4) Construction Cost.

The construction cost of Badung River Improvement and Mati River Improvement is shown in Table-K.40, Table-K.41.

Table-K.40 Construction cost of Badung River Improvement

Description	Work Item	unit	Quantities	unit price	Amount
River Facilities					
New Grand sill W=20m,L=28m	Earth Works (Excavation)	m ³	100	40,000	4,000,000
	Earth Works (Backfill)	m ³	0		0
	concrete	m ³	1,000	1,873,000	1,873,000,000
	Bed Protection Works (Block)	m ³	200	19,937,000	3,987,400,000
	Bed Protection Works (Flood Wall)	m ³	1,000	1,873,000	1,873,000,000
Sub total					7,737,400,000
Revetment for Low Flow Channel L = 5,680m, H=1.6m	Concrete Work	m ³	7,130	1,873,000	13,354,490,000
Sub total					13,354,490,000
Parapet Wall Works L=3410mH=0.3 - 1.7m	Concrete Work	m ³	1,190	1,873,000	2,228,870,000
Sub total					2,228,870,000
River bed Excavation L = 5,680m	Excavation (rock)	m ³	147,030	189,480	27,859,244,400
Sub total					27,859,244,400
Replacement for Bridges near JL. B. Tungal					
Removal for Existing Bridge	Steel	m ²	100	8,264,000	826,400,000
Placement New Bridge	Steel	m ²	120	20,660,000	2,479,200,000
Widening	Excavation	m ³	500	40,000	20,000,000
Revetment	Concrete	m ³	900	1,873,000	1,685,700,000
Sub total					5,011,300,000
Buagan Weir Improvement					
Flushing Gate Improvement		LS	1	83,000,000	83,000,000
Sub total					83,000,000
Ground Total					56,274,304,400

Table-K.41 Construction cost of Mati River Improvement

Description	Work Item	Unit	Quantities	Unit Price (Rp)	Amount (Rp)
River Facilities					
Removal Ulunanjung Weir	Concrete Work	m ³	200	1,873,000	374,600,000
				Sub-total	374,600,000
Revetment H=5.5m, L=2,109m	Concrete Work	m ³	19,200	1,873,000	35,961,600,000
				Sub-total	35,961,600,000
Riverbed Excavation					
Riverbed Excavation	Earth Works (Excavation)	m ³	62,500	189,820	11,863,750,000
Embankment					
	Earth Works (Embankment)	m ³	37,000	150,000	5,550,000,000
Sub-total					17,413,750,000
Ground Total					53,749,950,000

(5) Project Cost of River Improvement Works (Badung River , Mati River)

Project cost of the river improvement is shown in Table-K.42.

Table-K.42(1/2) Project Cost of River Improvement Works (Badung River, Mati River)

Badung River Improvement Works			Mati River Improvement Works		
Description	Work Item	Amount (Rp)	description	Item	Amount (Rp)
River Facilities	New Grand sill	7,737,400,000	River Facilities	Removal Weir	374,600,000
	Revetment for Low Flow Channel	13,354,490,000		Ulunanjung Weir	
	Parapet Wall Works	2,228,870,000		Revetment	35,961,600,000
River bed Excavation	Excavation Works	27,859,244,400	River bed Excavation		17,413,750,000
Removal for Existing Food Bridges (JL. B.Tungal)		5,011,300,000			

Table-K.42 (2/2) Project Cost of River Improvement Works (Badung River, Mati River)

Badung River Improvement Works			Mati River Improvement Works		
Description	Work Item	Amount (Rp)	description	Item	Amount (Rp)
Buagan Weir Improvement		83,000,000			
Total		56,274,304,400	Total		53,749,950,000
Direct Cost (million Rp)		56,274			53,750
Land Acquisition (2%)		1,125			1,075
Administration (5%)		2,814			2,687
Engineering Fee (10%)		5,627			5,375
Subtotal		65,840			62,887
Contingency (10%)		6,584			6,289
Total		72,424			69,176
Grand Total					141,600

(6) Construction Schedule

Construction Plan for Badung and Mati River improvement project shall be adopted as shown in Table-K.43 by taking into consideration with river and river side conditions such as bank, inspection road, housing density and river conditions, etc.

Table-K.43 Outline of Construction Plan for Flood Control Project

Subject River	Description	Work Item	Construction Method
Badung River	L= 5.7km to the Buagan dam on the lower reach from Maruti Street.	1) New Grand Sill (W20m×L25m×H2m)	(a) Because it is digging inside the river bed, execution is done in dry season when the volume of water is small.
		2) Revetment for Low Flow Channel Works (H=1.6m)	(b) The width of a river is small, and the execution of the time which both shores are the same as is difficult, and a settlement shore each does it at the half-river deadline.
		3) Parapet Wall Works (H=0.3 ~ 1.7m)	(c) Carry excavated sand from river bed by 4t truck on the temporary road at inside river dike width 6m between existing bridges. Because height from the bottom of the beam to River bed is low and the way of both shores is narrow.
		4) River bed Excavation Works and Revetment Works (L=5.7km)	(d) Excavation materials are changed to the truck 10 tons around the bridge beam and carried to disposal area.
		5) Removal for Existing Foot Bridge Works Steel Bridge(W3.5m×L27m)	
		6)Improvement of Flushing Gate Foundation (1m) (Buagan Weir Improvement)	
Mati River	L= 2.1km to the UlumTanJung dam on the lower reach from the Uma Duwi Weir.	1)Removal Existing Weir	(a) At same time excavate for retaining wall by make protecting coming water to trench for that wall.
		Uluntanjung Weir (H2.5m×W9m) 2)River bed Excavation Works and Revetment Works(L=2.1km)	(b) Carry excavated sand by 10t truck on temporary road at inside river dike. (c) Back sand behind retaining wall by bollow sand.

Work procedure for river improvement project is shown as Figure-K.8.