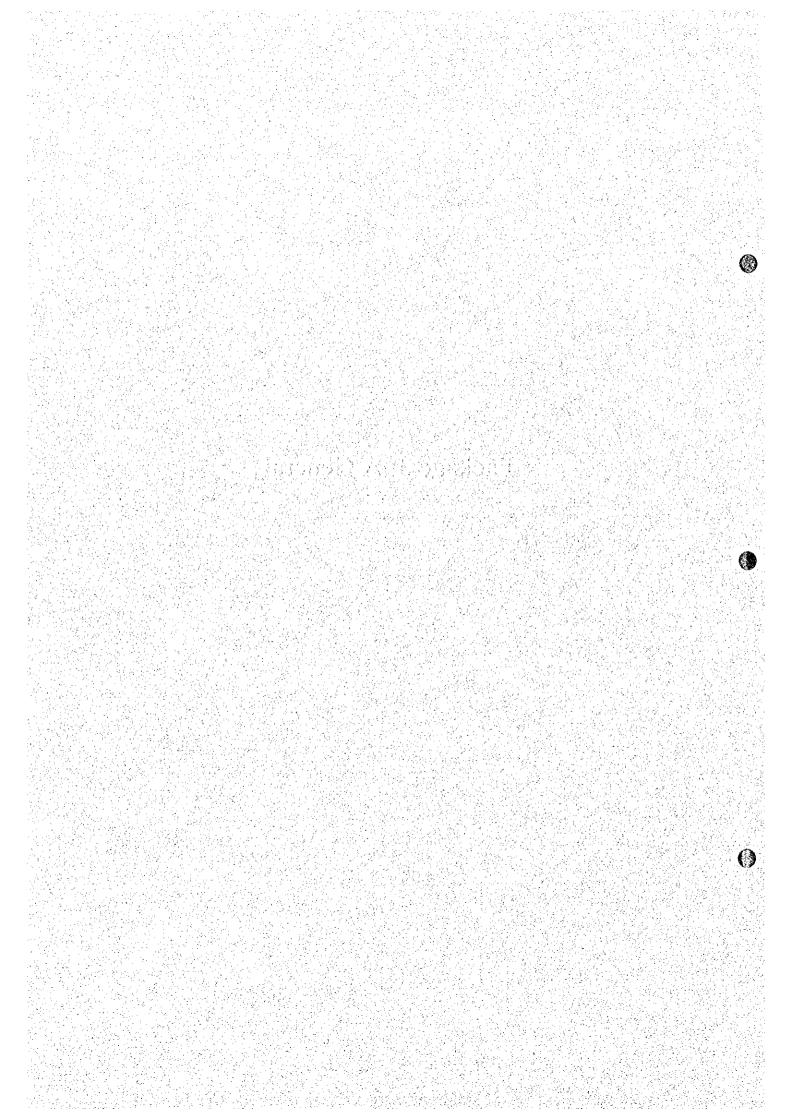
PACKAGE 3 BANDARHARJO DRAINAGE SYSTEM IMPROVEMENT Package 3: A General



FLO	OD CONTROL, URBAN DRAINAGE AND WATER IN SEMARANG	RESOL	JRCES DE	VELC	ЭРМ	ENT
Compo	onent: Urban Drainage System Improvement		T		-T	· · · · ·
Packag	3.07		<u> </u>	 	1	
i Kokuş	BILL OF QUANTITIES	ment			1	<u> </u>
<u> </u>		Т			<u> </u>	1
Item No	Description	Unit	Quantity			
Α	GENERAL				'	1 - 1
A.1	Mobilization and Demobilization	L.S.			1	+
A.2	Establishment					
A.2.1	Contractor's Site Office and Facilities	L.S.			-	
A.2.2	Engineer's Site Office and Facilities	L.S.	1 ,		 	-
A.3	Drawings	L.S.				7
A.4	Surveying	L.S.				
A.5	Relocation/Demolition of Existing Facilities					
A.5.1	Relocation of Existing Utilities	L.S.			1	
В	BARU RIVER IMPROVEMENT					
B.1	Preparatory Works	1				
· B.1.1	Coffering and Dewatering	L.S.				
B.1.2	Clearing of Garbage	L.S.			-	
B.1.3	Demolition of Existing Revetment	L.S.			 	
B.2	Earthwork	1.71	AND A	1		
B.2.1	Common Channel Excavation including Hauling	100			<u> </u>	
	and Treatment of Contaminated Soil	m ³	25,390	. :		
B.2.2	Channel Excavation below Water Level including		1.5			
B.2.3	Hauling and Treatment of Contaminated Soil	m ³	4,724	3	<u> </u>	
B.2.4	Stripping of Top Soil Embankment	m ³	1,436	•	ļ	
		m ³	2,703	-		
B.3	Revetment Type A-3 (wet masonry)					
B.3.1	Structural Excavation	m ³	11,324			
B.3.2	Backfill with Cobble	m ³	2,150	1.1	-	
B.3.3	Backfill with Gravel	m ³	3,400			
B.3.4	Backfill with Sandy Soil	m ³	495	25.	7.	1, 1,
B.3.5	Concrete, Type C1 including Formwork	m ³	1,440	•	۴.	
	formwork	m ²	7,156	1	.]	1 2
B.3.6	Concrete, Type E including Formwork	m ³	379	_	. 5	1.
D 2 7	formwork Defend Disk	m²	1,198			
B.3.7	Deformed Reinforcing Bars	kg	66,143		_	
B.3.8	Wet Stone Masonry	m ³	3,342	2,14 (
B.3.9 B.3.10	Pointing Weep Hole, Dia. 50 mm	m²	12,124	1. 3		٠
3.4	and the second s	No.	4,472			
	Revetment Type-C (concrete sheet pile)					
	Furnishing and Driving PC Sheet Pile(t=220 mm)	m	5,200			
	Concrete, Type C1 including Formwork formwork	m ³	8	: :		- 1
	Deformed Reinforcing Bars	m²	50			
4.5	Inspection Road	kg	2,500		\dashv	
	Sand Bedding	3				
	Concrete Block Pavement	m ³	492			
	Concrete Block Pavement Cement Mortar	m²	8,200			
	Concrete Kerb	m ³	20	-		
		m³	197			
4.25	Closing Structure of Baru River					
	Coffering and Dewatering	L.S.		32.5		
	Structural Excavation	m³	1			
B.6.3	Backfill	m ³	1		10.5	7,

B.6.4 Chipping of Existing Concrete Surface m² 10 B.6.5 Concrete, Type C1 including Formwork m³ 36 formwork m² 37 B.6.6 Concrete, Type E including Formwork m³ 1 formwork m² 1 B.6.7 Deformed Reinforcing Bars kg 2,078 B.6.8 Furnishing and Driving Steel Sheet Pile, Type II m >>√P B.7 Outlet Works of Baru Conveyance Channel B.7.1 Structural Excavation m³ 226 B.7.2 Backfill with Sandy Soil m³ 153 B.7.3 Concrete, Type C1 including Formwork, Scaffolding and Falsework m³ 33 formwork m² 127 scaffolding m² 106 falsework m³ 20 B.7.4 Concrete, Type E including Formwork m³ 2 formwork m² 2	
B.6.5 Concrete, Type C1 including Formwork formwork B.6.6 Concrete, Type E including Formwork formwork B.6.7 Deformed Reinforcing Bars B.6.8 Furnishing and Driving Steel Sheet Pile, Type II B.7 Outlet Works of Baru Conveyance Channel B.7.1 Structural Excavation B.7.2 Backfill with Sandy Soil B.7.3 Concrete, Type C1 including Formwork, Scaffolding and Falsework formwork m² 127 formwork m² 20 B.7.4 Concrete, Type E including Formwork m³ 20 m³ 20	
B.6.6 Concrete, Type E including Formwork m³ 1	
B.6.6 Concrete, Type E including Formwork m³ 1 formwork m² 1 B.6.7 Deformed Reinforcing Bars kg 2,078 B.6.8 Furnishing and Driving Steel Sheet Pile, Type II m 22/2 B.7 Outlet Works of Baru Conveyance Channel B.7.1 Structural Excavation m³ 226 B.7.2 Backfill with Sandy Soil m³ 153 B.7.3 Concrete, Type C1 including Formwork, Scaffolding and Falsework m² 33 formwork m² 127 scaffolding m² 106 falsework m³ 20 B.7.4 Concrete, Type E including Formwork m³ 2	
B.6.7 Deformed Reinforcing Bars kg 2,078 B.6.8 Furnishing and Driving Steel Sheet Pile, Type II m 22/2 B.7 Outlet Works of Baru Conveyance Channel B.7.1 Structural Excavation m³ 226 B.7.2 Backfill with Sandy Soil m³ 153 B.7.3 Concrete, Type C1 including Formwork, Scaffolding and Falsework m³ 33 formwork m² 127 scaffolding m² 106 falsework m³ 20 B.7.4 Concrete, Type E including Formwork m³ 20 B.7.4 Concrete, Type E including Formwork m³ 2	
B.6.7 Deformed Reinforcing Bars kg 2,078 B.6.8 Furnishing and Driving Steel Sheet Pile, Type II m 22/2 B.7 Outlet Works of Baru Conveyance Channel B.7.1 Structural Excavation m³ 226 B.7.2 Backfill with Sandy Soil m³ 153 B.7.3 Concrete, Type C1 Including Formwork, Scaffolding and Falsework m² 33 formwork m² 127 scaffolding m² 106 falsework m³ 20 B.7.4 Concrete, Type E including Formwork m³ 2	
B.6.8 Furnishing and Driving Steel Sheet Pile, Type II m 22/2 B.7 Outlet Works of Baru Conveyance Channel B.7.1 Structural Excavation m³ 226 B.7.2 Backfill with Sandy Soil m³ 153 B.7.3 Concrete, Type C1 including Formwork, Scaffolding and Falsework m³ 33 formwork m² 127 scaffolding m² 106 falsework m³ 20 B.7.4 Concrete, Type E including Formwork m³ 2	
B.7 Outlet Works of Baru Conveyance Channel B.7.1 Structural Excavation m³ 226 B.7.2 Backfill with Sandy Soil m³ 153 B.7.3 Concrete, Type C1 including Formwork, Scaffolding and Falsework m³ 33 formwork m² 127 scaffolding m² 106 falsework m³ 20 B.7.4 Concrete, Type E including Formwork m³ 2	
B.7.1 Structural Excavation m³ 226 B.7.2 Backfill with Sandy Soil m³ 153 B.7.3 Concrete, Type C1 including Formwork, Scaffolding and Falsework m³ 33 formwork m² 127 scaffolding m² 106 falsework m³ 20 B.7.4 Concrete, Type E including Formwork m³ 2	
B.7.2 Backfill with Sandy Soil m³ 153	
B.7.2 Backfill with Sandy Soil m³ 153	1
B.7.3 Concrete, Type C1 including Formwork, Scaffolding and Falsework m³ 33	
formwork m² 127	
scaffolding m² 106 falsework m³ 20 B.7.4 Concrete, Type E including Formwork m³ 2	
falsework m³ 20 B.7.4 Concrete, Type E including Formwork m³ 2	
B.7.4 Concrete, Type E including Formwork m ³ 2	
	-
	1 111
P.7.6. Wet Stone Manager	-
B.7.7 Weep Hole, Dia. 50 mm No. 14	
P. 7.9 Pointing	-
[11]	
Do 4 los	
111 219	1
B.8.2 Backfill m ³ 131	
B.8.3 Concrete, Type C1 including Formwork,	9
Scaffolding and Falsework m ³ 28	
formwork m ² 119	
scaffolding m ² 90	
falsework m ³ 31	2,1
B.8.4 Concrete, Type E including Formwork m ³ 2	
formwork m ² 4	
B.8.5 Deformed Reinforcing Bars kg 1,610	-
B.9 Secondary Channel Outlet Reconstruction	
B.9.1 Structural Excavation m ³ 766	+
B.9.2 Backfill m ³ 643	+
M. W. S. H. Onerolo, Tupo C. C. Carladia, C.	
formund	
R94 Congreto Time Fiest di F	
formunds III 0	
ROE Determed Driefs O	+
ROS Mot Stone Manage	
R 9.7 Gravel Podding	+
ROS Cobble Stone	1
R 9 9 Ween Hole Die 50 mm	
	1 1
R 9 11 Log Dilo Dio 450 mm L 0 0	1
R Q 12 IProceet Conserts Disc Disc Disc	1
B.9.12 Precast Concrete Pipe, Dia. 800 mm m 83	
B.9.12 Precast Concrete Pipe, Dia. 800 mm m 83 B.10 Bridge Protection	
B.9.12 Precast Concrete Pipe, Dia. 800 mm m 83 3.10 Bridge Protection B.10.1 Concrete, Type C1 including Formwork m ³ 5	
B.9.12 Precast Concrete Pipe, Dia. 800 mm m 83 B.10 Bridge Protection B.10.1 Concrete, Type C1 including Formwork m³ 5 formwork m² 34	
B.9.12 Precast Concrete Pipe, Dia. 800 mm m 83 B.10 Bridge Protection B.10.1 Concrete, Type C1 including Formwork m³ 5 formwork m² 34 B.10.2 Deformed Reinforcing Bars	
B.9.12 Precast Concrete Pipe, Dia. 800 mm m 83 B.10 Bridge Protection B.10.1 Concrete, Type C1 including Formwork m³ 5 formwork m² 34 B.10.2 Deformed Reinforcing Bars	
B.9.12 Precast Concrete Pipe, Dia. 800 mm m 83 B.10 Bridge Protection	1 1 1 1 1 1 1 1 1 1
B.9.12 Precast Concrete Pipe, Dia. 800 mm m 83 B.10 Bridge Protection B.10.1 Concrete, Type C1 including Formwork m³ 5 formwork m² 34 B.10.2 Deformed Reinforcing Bars kg 889 B.10.3 Furnishing and Driving PC Sheet Pile (t=220 mm) m 570 BARU PUMPING STATION	
B.9.12 Precast Concrete Pipe, Dia. 800 mm m 83 B.10 Bridge Protection	

Item No.	Description	Unit	Quantity			
C.2	Pumping Station			1.79		
C.2.1	Structural Excavation	m ³	855			
C.2.2	Backfill	m ³	151			
C.2.3	Embankment	m³	880			
	Concrete, Type C1 including Formwork,					
0.2	Scaffolding and Falsework	m³	948			
	formwork	m²	1,310			
	scaffolding	m²	1,040			
:	falsework	m ³	549			
C.2.5	Concrete, Type E including Formwork	m³	39			: 1
	formwork	m²	21			
C.2.6	Secondary Concrete, Type C2	m ³	83			
	Deformed Reinforcing Bars	kg	49,014	<u> </u>	- , .	_
	Water Stop, 200 mm Wide	m	30			
C.2.9	Furnishing and Driving PC Pile, Dia. 500 mm,		0.000	- 2		,
C 2 40	Type A	m	2,906			
C.Z.10	Furnishing and Driving PC Test Pile, Dia. 500 mm, Type A	m	20			
C.2.11	Furnishing and Driving Steel Sheet Pile, Type II	m	387			
C.2.12	Furnishing and Driving PC Sheet Pile (t=220 mm)	m	916			
C.2.13	Gabion Mattress t=500mm (Galvanized)	m ³	34			
C.2.14	Safety Hand Rail (Type-I)	kg	858			
	Safety Hand Rail (Type-II)	kg	481			
C.2.16	Dowel Bar. Dia. 19mm, 1.0m Long (round bar and	La.	119			
	PVC pipe) Wet Stone Masonry	kg m³	27			
	Weep Hole, Dia. 50 mm	No.	15	7.77.		-
	Pointing 1997 1997 1997 1997 1997 1997 1997 199	m ²	38	-5, 1		
C.3	Pump Mechanical Works	94° + 1	3 3 3			-:
	Furnishing and Installing Main Pump Units	set	2			
	Gear Boxes	set	2			<u> </u>
	Diesel Engine Units	set	2			
	Fuel Service Tank	set	1	3 2 2		
C.3.5	Fuel Transfer Pump	set	- 1	34,475		
	Auxiliary Drainage Pump System	L.S.			-	44
	Overhead Crane Piping System	set	1			
	Inspection and Test	L.S.	-	1.0	1	
	Spare Parts	L.S.		1		-
	Maintenance Tools	L.S.	Para C			1,11
C.4	Pump Electrical Works					,
C.4.1	Main Control Panel	L.S.	. 4			-
	Local Switch	L.S.	To grant to	. 1		
	Inspection and Test	L.S.		4.5		
	Spare Parts Maintenance Tools	L.S.	The Francisco			:
	Control Panel for Auxiliary Drainage Pump	L.S.				
	Generator System	L.S.	2.			
C.5	Inspection Bridges	-,1	N 1 1			
	Concrete, Type B including Formwork	m ³	55	1 2 2		7, 4
	formwork	m²	100			
	Deformed Reinforcing Bars	kg	2,968			
	Safety Hand Rail	kg	40	200		
	Commence of the commence of th	a	5,100	2 4 40		
	Fuel Tank	3	201	11		
	Structural Excavation	m ³	621	1 2 3 4		*
C.6.2	Backfill The Art Control of the	m ³	512			لنب

D.1.13 Ladder L.S. D.1.14 Window L.S. D.1.15 Door L.S. D.1.16 Roof Sealings L.S. D.2 Gate Mechanical Works Set D.2.1 Gate Leaf set D.2.2 Guide Frame set D.2.3 Hoist set D.2.4 Stop Log set D.2.5 Spare Parts L.S. E BUILDINGS E.1 Buildings L.S. E.1.1 Pump Control Building L.S. E.1.2 Management Office L.S. E.1.3 Garage L.S. E.1.4 Staff House L.S. E.1.5 External Works L.S. F BARU RETARDING POND	Item No	Description	Unit	Quantity		:11 :21	* ;
Scarlolding	C.6.3		m ³	49			1.7
Scalifolding							
Talsework	<u>.</u>						
C.6.4 Concrete, Type E including Formwork m³ 3 1							
C.6.5 Deformed Reinforcing Bars			111	I			
C.6.6 Deformed Reinforcing Bars Kg 6,810	C.6.4	Concrete, Type E including Formwork	m				
C.6.6 Fuel Tank and Accessories		formwork	m²				
C.6.7 Grounding	C.6.5	Deformed Reinforcing Bars		6,810			
C.6.7 Grounding	C.6.6	Fuel Tank and Accessories					
C.7.1 Structural Excavation m³ 8	C.6.7	Grounding	L.S.				<u> </u>
C.7.1 Structural Excavation m³ 8	C 7	Daranet Wall			- 15 m		٠.
C.7.2 Backfill with Sandy Soil m³ m³ m³ m³ m³ m³ m³ m			m ³	R	: :		
C.7.3 Wet Stone Masonry			3	<u> </u>			
D			-111				
D		Wet Stone Masonry	<u>m</u>				
D	C.7.4	Pointing	mf	50			
D.1.1 Structural Excavation m³ 336 D.1.2 Backfill with Sandy Soil m³ 138 D.1.3 Concrete, Type C1 including Formwork, Scalfolding and Falsework m³ 193 formwork m² 479 scalfolding m² 345 falsework m³ 202 D.1.4 Concrete, Type E including Formwork m³ 345 formwork m² 44 D.1.5 Secondary Concrete, Type C2 m³ 9 D.1.6 Deformed Reinforcing Bars kg (b.50) D.1.7 Water Stop, 200 mm Wide m m 19 D.1.8 Dowel Bar. Dia. 19mm, 1.0m long (round bar and PVC pipe) D.1.9 Furnishing and Driving PC Piles, Dia. 500 mm, m 339 D.1.10 Furnishing and Driving Steel Sheet Pile, Type II m 273 D.1.11 Gabion Mattress I=500mm (Galvanized) m³ 18 D.1.12 Safety Hand Rail (Type-I) kg 113 D.1.3 Ladder L.S. D.1.14 Window L.S. D.1.15 Door D.1.16 Roof Sealings L.S. D.2.1 Gate Leaf Set 1 D.2.2 Guide Frame Set 1 D.2.3 Hoist D.2.4 Stop Log Seal Seal Seal Seal Seal Seal Seal Seal	D	BARU PUMPING STATION GATE	1112	e to the			
D.1.1 Structural Excavation m3 336 D.1.2 Backfill with Sandy Soil m3 138 D.1.3 Concrete, Type C1 including Formwork, Scalfolding and Falsework m3 193 Formwork m4 479 Scalfolding m4 345 M5 M5 M5 M5 M5 M5 M5	D.1	Gate Pier and Foundation	14.2			• • •	-
D.1.2 Backfill with Sandy Soil m³ 138 D.1.3 Concrete, Type C1 Including Formwork, Scalfolding and Falsework m³ 193 Tormwork m² 479 scalfolding m² 345 falsework m³ 202 D.1.4 Concrete, Type E including Formwork m³ 9 formwork m² 4 D.1.5 Secondary Concrete, Type C2 m³ 9 D.1.6 Deformed Reinforcing Bars kg (6,50) D.1.7 Water Stop, 200 mm Wide m 19 D.1.8 Dowel Bar. Dia. 19mm, 1.0m long (round bar and PVC pipe) kg 156 D.1.9 Furnishing and Driving PC Piles, Dia. 500 mm, Tyme A m 339 D.1.10 Furnishing and Driving Steel Sheet Pile, Type II m 273 D.1.11 Gabion Mattress I=500mm (Galvanized) m³ 18 D.1.12 Safety Hand Rail (Type-I) kg 113 D.1.13 Ladder L.S. D.1.14 Window L.S. D.1.16 Roof Sealings L.S. D.2. Gate Mechanical Works D.2. Gate Leaf Set 1 D.2.2 Guide Frame Set 1 D.2.3 Hoist D.2.4 Stop Log Set 3 D.2.5 Spare Parts L.S. 1 E BUIL DINGS E.1. Pump Control Building L.S. E.1.1 Buildings L.S. External Works L.S. E.1.2 Management Office L.S. External Works L.S. E.1.3 Garage L.S. External Works L.S. E BARU RETARDING POND E.5. External Works E.5. External Works L.S. E.5. E BARU RETARDING POND E.5. External Works E.5. External Works E.5. External Works E.5. External Works E.5. E.5. External Works External Works External Works External Works External Works Ext			m ³	336			
D.1.3 Concrete, Type C1 including Formwork, Scalfolding and Falsework m² 479 479 500			3	4 1	. A.A		
Scaffolding and Falsework				138	 		
formwork m' 479	D.1.3		,			1	
Scaffolding		Scaffolding and Falsework	m³	1			
Talsework		formwork					
D.1.4 Concrete, Type E including Formwork m³ 9 1		scaffolding		345		<u>.</u>	
Tornwork	£. "	falsework		202			7 .
Tornwork	D 1.4	Concrete Type Eincluding Formwork	m ³	9			,
D.1.5 Secondary Concrete, Type C2			m ²	4		31.5	
D.1.6 Deformed Reinforcing Bars Rg 15.50	D 1 5	1	m ³	9			74.
D.1.7 Water Stop, 200 mm Wide						' -	• —
D.1.8 Dowel Bar. Dia. 19mm, 1.0m long (round bar and PVC pipe) kg 156					Γ.	_	Γ
D.1.9 Furnishing and Driving PC Piles, Dia. 500 mm, Tvne A m 273						ļ	1,20
D.1.9 Furnishing and Driving PC Piles, Dia. 500 mm, Tyne A D.1.10 Furnishing and Driving Steel Sheet Pile, Type II m 273 D.1.11 Gabion Mattress I=500mm (Galvanized) m³ 18 D.1.12 Safety Hand Rail (Type-I) kg 113 D.1.13 Ladder L.S. D.1.14 Window L.S. D.1.15 Door L.S. D.1.16 Roof Sealings L.S. D.1.16 Roof Sealings L.S. D.2.1 Gate Leaf set 1 D.2.2 Guide Frame set 1 D.2.3 Hoist set 1 D.2.4 Stop Log set 3 D.2.5 Spare Parts L.S. 1 E BUILDINGS E.1.1 Pump Control Building L.S. E.1.2 Management Office L.S. E.1.3 Garage L.S. E.1.4 Staff House L.S. E.1.5 External Works E.1	0.1.0	■	kg	156	100		-3
Tyne A	D.1.9			i describi			1
D.1.10 Furnishing and Driving Steel Sheet Pile, Type II m 273		Tyne A	m				
D.1.12 Safety Hand Rail (Type-I) kg 113 D.1.13 Ladder L.S. D.1.14 Window L.S. D.1.15 Door L.S. D.1.16 Roof Sealings L.S. D.2 Gate Mechanical Works D.2.1 Gate Leaf set 1 D.2.2 Guide Frame set 1 D.2.3 Hoist set 1 D.2.4 Stop Log set 3 D.2.5 Spare Parts L.S. 1 E BUILDINGS E.1 Buildings E.1.1 Pump Control Building L.S. E.1.2 Management Office L.S. E.1.3 Garage L.S. E.1.4 Staff House L.S. E.1.5 External Works L.S. E BARU RETARDING POND	D.1.10	Furnishing and Driving Steel Sheet Pile, Type II	<u> </u>	273	1		
D.1.13 Ladder L.S. D.1.14 Window L.S. D.1.15 Door L.S. D.1.16 Roof Sealings L.S. D.2 Gate Mechanical Works L.S. D.2.1 Gate Leaf set 1 D.2.2 Guide Frame set 1 D.2.3 Hoist set 3 D.2.4 Stop Log set 3 D.2.5 Spare Parts L.S. 1 E BUILDINGS Set 3 E.1 Buildings L.S. 1 E.1.1 Pump Control Building L.S. 1 E.1.2 Management Office L.S. 1 E.1.3 Garage L.S. 1 E.1.4 Staff House L.S. 1 E.1.5 External Works L.S. 1 F BARU RETARDING POND L.S. 1	D.1.11	Gabion Mattress t=500mm (Galvanized)	m ³				1
D.1.13 Ladder L.S. D.1.14 Window L.S. D.1.15 Door L.S. D.1.16 Roof Sealings L.S. D.2 Gate Mechanical Works D.2.1 Gate Leaf D.2.1 Gate Leaf set 1 D.2.2 Guide Frame set 1 D.2.3 Hoist set 1 D.2.4 Stop Log set 3 D.2.5 Spare Parts L.S. 1 E BUILDINGS E.1 Buildings L.S. 1 E.1.1 Pump Control Building L.S. E.1.2 Management Office L.S. E.1.3 Garage L.S. E.1.4 Staff House L.S. E.1.5 External Works L.S.	D.1.12	Safety Hand Rail (Type-I)	kg	113	1. 11.5%		
D.1.15 Door L.S. D.1.16 Roof Sealings L.S. D.2 Gate Mechanical Works Set 1 D.2.1 Gate Leaf set 1 D.2.2 Guide Frame set 1 D.2.3 Hoist set 1 D.2.4 Stop Log set 3 D.2.5 Spare Parts L.S. 1 E BUILDINGS L.S. 1 E.1 Buildings L.S. L.S. E.1.1 Pump Control Building L.S. L.S. E.1.2 Management Office L.S. L.S. E.1.3 Garage L.S. L.S. E.1.4 Staff House L.S. L.S. E.1.5 External Works L.S. F BARU RETARDING POND L.S. L.S.	D.1.13	Ladder			<u> 14 d</u>	<u> </u>	
D.1.16 Roof Sealings L.S. D.2 Gate Mechanical Works set 1 D.2.1 Gate Leaf set 1 D.2.2 Guide Frame set 1 D.2.3 Hoist set 3 D.2.4 Stop Log set 3 D.2.5 Spare Parts L.S. 1 E BUILDINGS L.S. 1 E.1 Buildings L.S. L.S. E.1.1 Pump Control Building L.S. L.S. E.1.2 Management Office L.S. L.S. E.1.3 Garage L.S. L.S. E.1.4 Staff House L.S. L.S. E.1.5 External Works L.S. L.S. F BARU RETARDING POND L.S. L.S.							
D.2 Gate Mechanical Works D.2.1 Gate Leaf set 1 D.2.2 Guide Frame set 1 D.2.3 Hoist set 1 D.2.4 Stop Log set 3 D.2.5 Spare Parts L.S. 1 E BUILDINGS E.1 Buildings E.1.1 Pump Control Building L.S. E.1.2 Management Office L.S. E.1.3 Garage L.S. E.1.4 Staff House L.S. E.1.5 External Works F BARU RETARDING POND						L	
D.2.1 Gate Leaf set 1 D.2.2 Guide Frame set 1 D.2.3 Hoist set 1 D.2.4 Stop Log set 3 D.2.5 Spare Parts L.S. 1 E BUILDINGS BUILDINGS L.S. 1 E.1.1 Pump Control Building L.S. L.S. E.1.2 L.S. E.1.3 Garage L.S. L.S. E.1.4 Staff House L.S. L.S. E.1.5 External Works L.S. L.S. E.1.5 External Works L.S. L.S. L.S. L.S. E.1.5 External Works L.S. L.S. L.S. L.S. L.S. E.1.5 External Works L.S.	D.1.16	Roof Sealings	L.S.	1 1 1 1		ξ.	
D.2.1 Gate Leaf set 1 D.2.2 Guide Frame set 1 D.2.3 Hoist set 1 D.2.4 Stop Log set 3 D.2.5 Spare Parts L.S. 1 E BUILDINGS L.S. 1 E.1 Buildings L.S. E.1.2 Management Office L.S. E.1.3 Garage L.S. E.1.4 Staff House L.S. E.1.5 External Works L.S. E.1.5 External Works E.S.	D.2	Gate Mechanical Works	13.	SWEET !			4 A. 2-4-4
D.2.2 Guide Frame set 1 D.2.3 Hoist set 1 D.2.4 Stop Log set 3 D.2.5 Spare Parts L.S. 1 E BUILDINGS Set 3 E.1 Buildings L.S. Set 3 E.1.1 Pump Control Building L.S. L.S. Set E.1.2 Management Office L.S. L.S. Set E.1.4 Staff House L.S. L.S. Set E.1.5 External Works L.S. L.S. Set F BARU RETARDING POND BARU RETARDING POND Set Set 3			ļ	1			1.0
D.2.3 Hoist set 1 D.2.4 Stop Log set 3 D.2.5 Spare Parts L.S. 1 E BUILDINGS BUILDINGS L.S. E.1 Pump Control Building L.S. L.S. E.1.2 Management Office L.S. L.S. E.1.3 Garage L.S. L.S. E.1.4 Staff House L.S. L.S. E.1.5 External Works L.S. L.S. F BARU RETARDING POND BARU RETARDING POND BARU RETARDING POND	3		 	 	1	1	
D.2.4 Stop Log set 3 D.2.5 Spare Parts L.S. 1 E BUILDINGS 3 E.1 Buildings L.S. E.1.1 Pump Control Building L.S. E.1.2 Management Office L.S. E.1.3 Garage L.S. E.1.4 Staff House L.S. E.1.5 External Works L.S. F BARU RETARDING POND				1 : 5 - 1	1		
D.2.5 Spare Parts L.S. 1 E BUILDINGS 3 E.1 Buildings L.S. E.1.1 Pump Control Building L.S. E.1.2 Management Office L.S. E.1.3 Garage L.S. E.1.4 Staff House L.S. E.1.5 External Works L.S. F BARU RETARDING POND						1	
E BUILDINGS E.1 Buildings E.1.1 Pump Control Building E.1.2 Management Office E.1.3 Garage E.1.4 Staff House E.1.5 External Works F BARU RETARDING POND					1		1.5
E BUILDINGS E.1 Buildings E.1.1 Pump Control Building L.S. E.1.2 Management Office L.S. E.1.3 Garage L.S. E.1.4 Staff House L.S. E.1.5 External Works L.S. F BARU RETARDING POND	0.2.3	Opaie Faits		- 	1	1	1
E.1.1 Pump Control Building E.1.2 Management Office E.1.3 Garage E.1.4 Staff House E.1.5 External Works F BARU RETARDING POND	E	BUILDINGS		1 1 2 1 1 1			3
E.1.1 Pump Control Building L.S. E.1.2 Management Office L.S. E.1.3 Garage L.S. E.1.4 Staff House L.S. E.1.5 External Works L.S. F BARU RETARDING POND	E.1	Buildings					1
E.1.2 Management Office L.S. E.1.3 Garage L.S. E.1.4 Staff House L.S. E.1.5 External Works L.S. F BARU RETARDING POND	E 1 1	Pump Control Building	L.S		14 1 1 N		
E.1.3 Garage L.S. E.1.4 Staff House L.S. E.1.5 External Works L.S. F BARU RETARDING POND						 	1
E.1.4 Staff House E.1.5 External Works E.1.6 External Works E.1.7 External Works E.1.8 L.S.					1	T	1-
E.1.5 External Works F BARU RETARDING POND						†	1
F BARU RETARDING POND					4	+	1
		Control of the Contro	1.0.	nang p	1 14 14		1, 7
IC 4 IDvanagetoni Wagte	F F.1	BARU RETARDING POND Preparatory Works	+-		1 250	111 - 1	

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ltem No	Description	Unit	Quantity	1.1		
F.1.1	Coffering and Dewatering	L.S.				
F.2	Earth Work					
F.2.1	Common Excavation including Hauling and		 			ł
1 .2., 1	Spoiling	m ³	30,411		ļ	
			00,711		 	
F.3	Revetment Type A-4					!
F.3.1	Structural Excavation	m³	2,832			
F.3.2	Backfill with Cobble	m ³	605		<u> </u>	
F.3.3	Backfill with Gravel	m³	822			
F.3.4	Backfill with Sandy Soil	m ³	241			
F.3.5	Wet Stone Masonry	m ³	822		<u></u>	
F.3.6	Concrete, Type C1 including Formwork	m ³	320			
	formwork	m²	1,540			<u> </u>
F.3.7	Concrete, Type E including Formwork	m ³	100			
	formwork	m ²	288	1.7	:	· ·
F.3.8	Deformed Reinforcing Bars	kg	12,948			- ()
	Pointing	m²	3,215	100		į.
	Weep Hole, Dia. 50 mm	No.	482			
F.3.11	Log Pile, Dia. 150 mm L=3.0 m	m	723			
F.3.12	Sodding	m²	668			
F.4	Outlet Works of Bandarharjo West Secondary	Channe				
F.4.1	Structural Excavation	m ³	1,120			
F.4.2	Backfill	m ³	271			-
F.4.3	Backfill with Gravel	m ³	31	7 7 8 3		
F.4.4	Cobble Stone	m ³	12	4 17 3		-
F.4.5	Concrete, Type C1 including Formwork and		- 12			-
• • • • • • • • • • • • • • • • • • • •	Falsework	3	0.7			
		m ³	37			
	formwork	m ²	94			
=	falsework	m ³	77			
F.4.6	Concrete, Type E including Formwork	m ³	5			
	formwork	m²	18	See	1	
F.4.7	Deformed Reinforcing Bars	kg	2,292	200	f	
	Wet Stone Masonry	m ³	258		,	
F.4.9	Log Pile, Dia. 150 mm L=2.0 m	m	144			
F.4.10	Weep Hole, Dia. 50 mm	No.	48			
	Pointing	m _s	141			
1.4.12	Stop Log (wood)	L.S.	_ 11			
5_	Inlet Works of Baru Conveyance Channel					
F.5.1	Structural Excavation	m ³	328	3-		
F.5.2	Backfill	m ³	220		:	•
F.5.3	Backfill with Gravel	m ³	42			
F.5.4	Cobble Stone	m ³	6			
F.5.5	Concrete, Type C1 including Formwork,					
	Scaffolding and Falsework	m ³	56		- :	19
	formwork	m ²				
5 - 5-15	scaffolding	111 m ²	227	1,000		
13.5	falsework	1111	150	3		
F.5.6	Deformed Reinforcing Bars	m ³	35		}	
		kg	3,618			
	Concrete, Type E including Formwork	m ³	5			
	formwork Aller and the second and th	m ²	9	3.7		:
F.5.8	Wet Stone Masonry	m ³	93			
	Log Pile, Dia. 150 mm L=2.0 m	m	90			
	Weep Hole, Dia. 50 mm	No.	140			
F.5.11	Pointing	m²	112			5 I
.6	Outlet Works of Future Secondary Channel		2006	S. 6		Ŧ,
!						
	Structural Excavation	m ³	370'	- 1		
F.6.1	Structural Excavation Backfill	m ³	378 209			<u> </u>

F.6.4 Cobble Stone	Item No	Description	Unit	Quantity			
F.6.5 Concrete, Type C1 including Formwork and Falsework	F.6.4	Cobble Stone		<u> L</u>	<u> </u>		
Falsework	F.6.5				<u>-</u>	- -	
Commwork	<u></u>	Falsework	m ³	15			
falsowork		formwork	m ²	 	<u> </u>	+	+
F.6.6 Concrete Type E including Formwork m³ 2 formwork m² 5 5 5 6.7 F.6.7 Deformed Reinforcing Bars kg 837	-	falsework	m ³				
F6.7 Deformed Reinforcing Bars Rg 837 F6.8 Wet Stone Masonny m³ 137 F6.9 Log Pile, Dia. 150mm L=2 om m 156 F5.10 Weep Hole, Dia. 50 mm No. 26 F6.11 Pointing m² 149 F7.1 Inspection Road m³ 1,517 F7.2 Imspection Road m³ 1,517 F7.3 Aggregate Class A m³ 403 403 F7.4 Aggregate Class A m³ 403 F7.7 F7.3 Aggregate Class B m³ 555 F7.5 Sand Bedding m³ 1,555 F7.6 Concrete Block Pavement m³ 7 7 7 7 7 7 7 7 7	F.6.6	Concrete, Type E including Formwork	m ³			-	-
F.6.7 Deformed Reinforcing Bars	100		m ²			-	+
F.6.8 Wet Stone Masonry	F.6.7					-	
F.6.10 Veep Hole, Dia. 150mm E.2.0 m m 156 F.6.11 Veep Hole, Dia. 50 mm No. 28 F.6.11 Pointing m² 149 F.7 Inspection Road F.7.1 Stripping of Top Soil m³ 3.75 F.7.2 Embankment m³ 1,517 F.7.3 Aggregate Class A m³ 403 F.7.4 Aggregate Class B m³ 555 F.7.5 Sand Bedding m³ 156 F.7.6 Concrete Block Pavement m² 2,600 F.7.7 Cement Mortar m³ 7 7 F.7.8 Concrete Block Pavement m² 2,600 F.7.9 Sodding m³ 63 F.7.9 Sodding m³ 63 F.7.9 Sodding m² 958 G.11 Coffering and Dewatering L.S. Concrete Rectar L.S. Concrete Rectar G.1.1 Coffering and Dewatering L.S. G.2.1 Structural Excavation with Shoring m³ 8,544 G.2.2 Structural Excavation with Shoring m³ 8,544 G.2.3 Backfill with Sandy Soil m² 10,990 scaffolding and Falsework m³ 2,768 G.2.4 Concrete, Type C1 including Formwork, Scaffolding and Falsework m³ 2,768 G.2.5 Concrete, Type E including Formwork m³ 2,768 G.2.5 Concrete, Type E including Formwork m³ 2,768 G.2.5 Concrete Reinforcing Bars kg 25,220 G.2.7 Water Stop, 200 mm Wide m 382 G.3.1 Embankment m³ 7,944 G.3.2 Aggregate Class A m³ 225 G.3.3 Concrete Reinforcing Bars kg 25,220 G.3.4 Concrete Block Pavement m³ 7,944 G.3.5 Cement Mortar m³ 3 3 3 3 3 3 3 3 3	F.6.8					-	
F.6.10 Weep Hole, Dia. 50 mm	F.6.9	Log Pile, Dia. 150mm L=2.0 m					
F.6.11 Pointing	F.6.10	Weep Hole, Dia. 50 mm	1			-	+-
F.71 Stripping of Top Soil m³ 3.75 F.72 Embankment m³ 1,517 F.73 Aggregate Class A m³ 403 F.74 Aggregate Class B m³ 555 F.7.5 Sand Bedding m³ 156 F.76 Concrete Block Pavement m² 2,600 F.7.7 Cement Mortar m³ 7 7 F.78 Concrete Block Pavement m³ 7 7 F.78 Concrete Broke Pavement m³ 7 7 F.79 Sodding m³ 63 F.7.9 Sodding m³ 63 F.7.9 Sodding m² 958 F.7.9 Sodding m³ 958 F.7.9 Sodding m³ 958 F.7.9 Sodding m³ 8.544 F.7.9 Sodding Sanuting Concrete Broke Pavement F.7.9 Sodding Sanuting Concrete Broke Pavement Sanuting Concrete Broke Pavement F.7.9 Sodding F.7.9	F.6.11	Pointing	m²	— i		T	
F.7.1 Stripping of Top Soil	F.7	Inspection Road					1
F.7.2 Embankment		† · · · · · · · · · · · · · · · · · · ·	3	076			
F.7.4 Aggregate Class A m³ 403 F.7.4 Aggregate Class B m³ 555 F.7.5 Sand Bedding m³ 156 F.7.6 Concrete Block Pavement m² 2,600 F.7.7 Cement Mortar m³ 7 F.7.8 Concrete Kerb m³ 63 F.7.9 Sodding m² 958 F.7.9 Sodding m² 958 F.7.9 Sodding m² 958 F.7.9 Sodding F.7.7 Cement Works F.7.9 Concrete Kerb F.7.9 Sodding F.7.9 So			3	<u>_</u>		 	
F.7.4 Aggregate Class B m³ 555 F.7.5 Sand Bedding m³ 156 F.7.6 Concrete Block Pavement m² 2,600 F.7.7 Cement Mortar m³ 7 7 F.7.8 Concrete Kerb m³ 63 F.7.9 Sodding m² 958 F.7.9 Sodding m² Sodding S	 		m 3	-	<u> </u>	-	-
F.7.5 Sand Bedding						 	-
F.7.6 Concrete Block Pavement m² 2,600 F.7.7 Cement Mortar m³ 7 F.7.8 Concrete Kerb m³ 63 F.7.9 Sodding m² 958 F.7.9 Sodding M² Sodding M³ Sodding M³ Sodding M³ Sodding Soddi					 -	1	
F.7.7 Cement Mortar	}				- 12 - 12 + 12 -	<u> </u>	ļ
F.7.8 Concrete Kerb							
F.7.9 Sodding					. 1345°		1
BARU CONVEYANCE CHANNEL					· ., :	<u> </u>	
G.1 Preparatory Works C.1.1 Coffening and Dewatering C.S.	F.7.9	Sodding	m²	958	- :		
G.1 Preparatory Works C.1.1 Coffening and Dewatering C.S.	G	BARU CONVEYANCE CHANNEL					
G.1.1 Coffering and Dewatering L.S. G.2 Channel Works	G 1						
G.2 Channel Works						<u>. </u>	
G.2.1 Structural Excavation m³ 14,030 G.2.2 Structural Excavation with Shoring m³ 8,544 G.2.3 Backfill with Sandy Soil m³ 16,110 G.2.4 Concrete, Type C1 including Formwork, Scaffolding and Falsework m³ 2,982 formwork m² 10,990 scaffolding m² 6,574 falsework m³ 2,768 G.2.5 Concrete, Type E including Formwork m³ 241 formwork m² 166 G.2.6 Deformed Reinforcing Bars kg 225,220 G.2.7 Water Stop, 200 mm Wide m 382 G.3 Inspection Road m³ 1,944 G.3.1 Embankment m³ 1,944 G.3.2 Aggregate Class A m³ 225 G.3.3 Sand Bedding m³ 79 G.3.4 Concrete Block Pavement m² 1,315 G.3.5 Cement Mortar m³ 3 H.1 Prepa	2.3		L.S.				
G.2.2 Structural Excavation with Shoring m³ 8,544 G.2.3 Backfill with Sandy Soil m³ 16,110 G.2.4 Concrete, Type C1 including Formwork, Scaffolding and Falsework m² 10,990 scaffolding md Falsework m³ 2,982 formwork m³ 10,990 scaffolding m² 6,574 falsework m³ 2,768 G.2.5 Concrete, Type E including Formwork m³ 2,411 formwork m² 1666 G.2.6 Deformed Reinforcing Bars kg 225,220 G.2.7 Water Stop, 200 mm Wide m 382 G.3 Inspection Road m³ 1,944 G.3.2 Aggregate Class A m³ 225 G.3.3 Sand Bedding m³ 79 G.3.4 Concrete Block Pavement m² 1,315 G.3.5 Cement Mortar m³ 3 G.3.6 Concrete Kerb m³ 32 H BANDARHARHO WEST SECONDARY CHANNEL H.1 Preparatory Works H.1.1 Coffering and Dewatering L.S. H.2.1 Common Excavation including Hauling and Spoiling m³ 1,968 H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849	G.2	Channel Works					
G.2.2 Structural Excavation with Shoring m³ 8,544 G.2.3 Backfill with Sandy Soil m³ 16,110 G.2.4 Concrete, Type C1 including Formwork, Scaffolding and Falsework m² 10,990 scaffolding md Falsework m³ 2,982 formwork m³ 10,990 scaffolding m² 6,574 falsework m³ 2,768 G.2.5 Concrete, Type E including Formwork m³ 2,411 formwork m² 1666 G.2.6 Deformed Reinforcing Bars kg 225,220 G.2.7 Water Stop, 200 mm Wide m 382 G.3 Inspection Road m³ 1,944 G.3.2 Aggregate Class A m³ 225 G.3.3 Sand Bedding m³ 79 G.3.4 Concrete Block Pavement m² 1,315 G.3.5 Cement Mortar m³ 3 G.3.6 Concrete Kerb m³ 32 H BANDARHARHO WEST SECONDARY CHANNEL H.1 Preparatory Works H.1.1 Coffering and Dewatering L.S. H.2.1 Common Excavation including Hauling and Spoiling m³ 1,968 H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849	G.2.1	Structural Excavation	m ³	14 030			
G.2.3 Backfill with Sandy Soil m³ 16,110 G.2.4 Concrete, Type C1 including Formwork, Scaffolding and Falsework m² 10,990 scaffolding m² 6,574 falsework m³ 2,768 G.574 falsework m³ 2,768 G.2.5 Concrete, Type E including Formwork m³ 241 formwork m² 1666 G.2.6 Deformed Reinforcing Bars kg 225,220 G.2.7 Water Stop, 200 mm Wide m 382 G.3.1 Embankment m³ 1,944 G.3.2 Aggregate Class A m³ 225 G.3.3 Sand Bedding m³ 79 G.3.4 Concrete Block Pavement m² 1,315 G.3.5 Cement Mortar m³ 3 3 G.3.6 Concrete Kerb m³ G.3.6	G.2.2	Structural Excavation with Shoring	m ³	-		-	
G.2.4 Concrete, Type C1 including Formwork,				1			1.3
Scaffolding and Falsework m³ 2,982			m	16,110			
formwork		Scaffolding and Falsowerk	3				
Scaffolding							1
Falsework							
G.2.5 Concrete, Type E including Formwork m³ 241 formwork formwork m² 166 m² 16			m [*]			· ·	
Formwork			m		. :		10.0
G.2.7 Water Stop, 200 mm Wide m 382 G.3 Inspection Road G.3.1 Embankment m³ 1,944 G.3.2 Aggregate Class A m³ 225 G.3.3 Sand Bedding m³ 79 G.3.4 Concrete Block Pavement m² 1,315 G.3.5 Cement Mortar m³ 3 G.3.6 Concrete Kerb m³ 32 H BANDARHARHO WEST SECONDARY CHANNEL H.1 Preparatory Works H.1.1 Coffering and Dewatering L.S. H.2 Channel Works H.2.1 Common Excavation including Hauling and Spoiling m³ 11,240 H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849			m ³	241		*.	14.
G.2.7 Water Stop, 200 mm Wide m 382 G.3 Inspection Road G.3.1 Embankment m³ 1,944 G.3.2 Aggregate Class A m³ 225 G.3.3 Sand Bedding m³ 79 G.3.4 Concrete Block Pavement m² 1,315 G.3.5 Cement Mortar m³ 3 G.3.6 Concrete Kerb m³ 32 H BANDARHARHO WEST SECONDARY CHANNEL H.1 Preparatory Works H.1.1 Coffering and Dewatering LS. H.2 Channel Works H.2.1 Common Excavation including Hauling and Spoiling m³ 11,240 H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849			m²				
G.3 Inspection Road G.3.1 Embankment m³ 1,944 G.3.2 Aggregate Class A m³ 225 G.3.3 Sand Bedding m³ 79 G.3.4 Concrete Block Pavement m² 1,315 G.3.5 Cement Mortar m³ 3 G.3.6 Concrete Kerb m³ 32 H BANDARHARHO WEST SECONDARY CHANNEL H.1 Preparatory Works H.1.1 Coffering and Dewatering L.S. H.2 Channel Works H.2.1 Common Excavation including Hauling and Spoiling m³ 11,240 H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849						;	
G.3.1 Embankment m³ 1,944 G.3.2 Aggregate Class A m³ 225 G.3.3 Sand Bedding m³ 79 G.3.4 Concrete Block Pavement m² 1,315 G.3.5 Cement Mortar m³ 3 G.3.6 Concrete Kerb m³ 32 H BANDARHARHO WEST SECONDARY CHANNEL H.1 Preparatory Works H.1.1 Coffering and Dewatering L.S. H.2 Channel Works H.2.1 Common Excavation including Hauling and Spoiling m³ 11,240 H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849			m	382			
G.3.2 Aggregate Class A m³ 225 G.3.3 Sand Bedding m³ 79 G.3.4 Concrete Block Pavement m² 1,315 G.3.5 Cement Mortar m³ 3 G.3.6 Concrete Kerb m³ 32 H BANDARHARHO WEST SECONDARY CHANNEL H.1 Preparatory Works H.1.1 Coffering and Dewatering L.S. H.2 Channel Works H.2.1 Common Excavation including Hauling and Spoiling m³ 11,240 H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849						<u></u>	
G.3.3 Sand Bedding m³ 79 G.3.4 Concrete Block Pavement m² 1,315 G.3.5 Cement Mortar m³ 3 G.3.6 Concrete Kerb m³ 32 H BANDARHARHO WEST SECONDARY CHANNEL H.1 Preparatory Works H.1.1 Coffering and Dewatering L.S. H.2 Channel Works H.2.1 Common Excavation including Hauling and Spoiling m³ 11,240 H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849	`		m ³	1,944	5.15.		
G.3.3 Sand Bedding m³ 79 G.3.4 Concrete Block Pavement m² 1,315 G.3.5 Cement Mortar m³ 3 G.3.6 Concrete Kerb m³ 32 H BANDARHARHO WEST SECONDARY CHANNEL H.1 Preparatory Works H.1.1 Coffering and Dewatering L.S. H.2 Channel Works H.2.1 Common Excavation including Hauling and Spoiling m³ 11,240 H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849			m ³	225			1.0
G.3.5 Cement Mortar m³ 3 G.3.6 Concrete Kerb m³ 32 H BANDARHARHO WEST SECONDARY CHANNEL H.1 Preparatory Works H.1.1 Coffering and Dewatering L.S. H.2 Channel Works H.2.1 Common Excavation including Hauling and Spoiling m³ 11,240 H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849	-		m ³	79		-	7.
G.3.5 Cement Mortar m³ 3 3 G.3.6 Concrete Kerb m³ 32 H BANDARHARHO WEST SECONDARY CHANNEL H.1 Preparatory Works H.1.1 Coffering and Dewatering L.S. H.2 Channel Works H.2.1 Common Excavation including Hauling and Spoiling m³ 11,240 H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849				1,315		-	- T _{ed}
H BANDARHARHO WEST SECONDARY CHANNEL H.1 Preparatory Works H.1.1 Coffering and Dewatering H.2 Channel Works H.2.1 Common Excavation including Hauling and Spoiling m³ 11,240 H.2.2 Structural Excavation H.2.3 Backfill with Sandy Soil m³ 7,849					1 1	Fi. 1	
H.1 Preparatory Works H.1.1 Coffering and Dewatering H.2 Channel Works H.2.1 Common Excavation including Hauling and Spoiling m³ 11,240 H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849	G.3.6	Concrete Kerb		32			
H.1.1 Coffering and Dewatering H.2 Channel Works H.2.1 Common Excavation including Hauling and Spoiling H.2.2 Structural Excavation H.2.3 Backfill with Sandy Soil H.2.4 Coherents M.3 11,240 M.3 1,968 M.3 7,849		BANDARHARHO WEST SECONDARY CHANNEL					
H.2 Channel Works H.2.1 Common Excavation including Hauling and Spoiling m³ 11,240 H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849					\Box	` .	
H.2 Channel Works H.2.1 Common Excavation including Hauling and Spoiling m³ 11,240 H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849	H.1.1	Coffering and Dewatering	LS.	<u>-</u>			3 3
H.2.1 Common Excavation including Hauling and Spoiling m³ 11,240 H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849				İ			
Spoiling m³ 11,240			1 12				
H.2.2 Structural Excavation m³ 1,968 H.2.3 Backfill with Sandy Soil m³ 7,849		Spoiling Spoiling	Ém	11,240	4 (c.)	1	1 4
11.2.3 Backlin with Sandy Soil m3 7,849	H.2.2		m ³			-	
1104 10-1-1-0	H.2.3		m³				
	H.2.4		m³	232			

F						
Item No	Description	Unit	Quantity			
H.2.5	Wet Stone Masonry	m ³	3,753		 	
	Cement Mortar Plastering	m ³	16		┼	
	Pointing	m²	2,399		+	
H.2.8	Weep Hole, Dia. 50 mm	No.	1,433		-	
H.2.9	Water Stop, 200 mm Wide	m	198			·
H.2.10	Log Pile, Dia. 150mm L=2.0 m	m	6,864	_	<u> </u>	
H.3	Inspection Road		- 0,000			
H.3.1	Stripping of Top Soil	m ³	347			<u> </u>
H.3.2	Embankment	m ³	1,144			
H.3.3	Aggregate Class A	m ³	478			
	Aggregate Class B	m ³	596	-		
	Sand Bedding	m ³				
	Concrete Block Pavement	m ²	174		 - 	
1	Cement Mortar		2,886			
	Concrete Kerb	m ³	7			
11.0.0	Courtele Velb	m³	63		<u> </u>	
<u> </u>	BANDARHARJO EAST SECONDARY CHANNEL					:
1.1	Preparatory Works					
1.1.1	Coffering and Dewatering	L.S.	- i			
1.2	Channel Works					
1.2.1	Structural Excavation	m ³	3,136			
	Backfill with Sandy Soil	m ³	2,455			
	Concrete, Type C1 including Formwork,		2,700		-	
	Scaffolding and Falsework	m ³	439			
	formwork	m²	1,555			
	scaffolding	m²	1,166		-1	
	falsework	m³	491			
	Concrete, Type E including Formwork	m³	36			
	formwork	m²	25		\neg	
	Deformed Reinforcing Bars	kg	32,875		\neg	
1.2.6	Water Stop, 200 mm Wide	m	65			
J	MISCELLANEOUS WORKS					
J.1	Tree Planting	L.S.			+	
J.2	Staff Gauge	L.S.				
κ	MAINTENANCE EQUIPMENT	-				
K.1	Supplying Maintenance Equipment				-	
	Supply of Backhoe, 0.35m ³	No.	1			
	Supply of Dump Truck, 8t	No.	1		一十	
	Supply of Truck Crane, 2.2t	No.	1	7 .		
K.1.4	Supply of Garbage Container, 6m ³	No.	2		\dashv	-

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Package 3: B Baru River Improvement

Name of Structure	BARU RIVER	Category Calculation	WORK VOLUME	Page	1/11
	SUMI	MARY OF EART	H WORK		:

25,390 m³ **Common Channel Excavation** ı. 2. 7,724 m³ Channel Excavation below water 3. 2,703 m³ Embankment

Name of Structure	BARU RIVER	Category Calculation	WORK YOLUME	Page	2/11
	·		I :		

Cross Section	Cut Area	Fill Area	Distance	Volume Cut	Volume Fill (m²)
BA 21	12.856	0.000	0.000		
BA 22	17.294	0.000	20.790	313.409	0.000
BA 23	25.534	0.000	19.205	411.273	0.000
BA 24	31.278	0.000	20.239	577,474	0.000
BA 25	12.637	0.000	18.778	412.318	0.000
BA 26	33.171	0.000	21.341	488.793	0.000
BA 27	35.080	0.000	19.926	680.004	0.000
BA 28	35.645	0.000	20.291	717.543	0.000
BA 29	45.825	0.000	19.325	787.219	0.000
BA 29+8	34.068	0.000	8.399	335.522	0.000
					0.000
SUB TOTAL	283.389	0.000		4723.554	0,000
BA 30	29.055	0.000	12.219	385.630	0.000
BA 31	41.668	0.000	17.444	616.840	0.000
BA 32	39.258	0.000	17.863	722.787	0.000
BA 32+11	45.187	0.000	7.793	329.056	0.000
BA 33	33.853	10.389	17.831	704.665	92.623
BA 34	32.098	7.800	23.573	777.327	214.382
BA 35	32.726	6.641	20.534	665.556	148.261
BA 36	35.687	7.262	19.716	674.405	137.056
BA 37	0.000	9.653	20.305	362.310	171.732
BA 38	0.000	0.000	19.968	0.000	96.375
BA 39	0.000	0.000	21.501	0.000	0.000
BA 40	0.000	0.000	19.688	0.000	0.000
BA 41	0.000	0.000	19.918	0.000	0.000
BA 42	33.083	6.428	21.311	352.519	68.494
BA 43	34.371	5.958	21.030	709.266	130.232
BA 44	34.220	5.576	20.862	715.480	120.308
BA 15	34.787	3.641	20.997	724.470	96.763
BA 46	36.287	6.336	19.628	697.533	97.918
BA 47	36.517	5.261	20.565	748.589	119.246
BA 48	36.032	4.506	19.278	699.292	
BA 49	36.490	5.207	20.103	728.958	94.142 97.627
BA 50	3.422	5.415	21.457	428.186	
BA 51	41.305	6.258			113.953
BA 52	41.763	4.097	20.464	457.649	119.445
BA 53	39.216	4.983	21.568 20.807	895.816	111.676
BA 54	43.694	3.594	20.636	842.473 855.451	94.470
BA 55					88.499
BA 56	34.960 44.764	3.284	21.631	850.672	74.392
BA 57	42.125	2.876	19.996	797.059	61.586
BA 58		3.004	18.870	819.803	55.476
BA 59	48.020	4.097	20.770	936.169	73.743
BA 60	46.766	2.813	20.870	989.095	72.105
	50.439	1.128	22.108	1074.484	43.563
BA 61 BA 62	46.762	0.000	19.324	939.135	10.896
	37.463	0.943	20.335	856.366	9.591
BA 63	24.945	2.287	19.690	614.409	31.804
BA 64	24.984	0.556	19.635	489.293	27.931
BA 65	24.179	0.611	19.916	488.661	11.641
BA 66	20.679	0.422	21.409	480.182	11.062
BA 67	23.573	0.103	19.171	424.178	5.036
BA 68	30.250	0.000	19.382	521.594	1.000
· MA AU	26.119	0.000	20.265	571.162	0.000
BA 69 BA 70	13.314	0.000	22.4755	443.125	0.000

 SUB TOTAL
 1279.970
 131.132
 25389.642
 2703.029

 TOTAL
 1563.358
 131.132
 30113.196
 2703.029

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Name of Structure	BARU RIVER REVETMENT	Category Calculation	VOLUME CALCULATION	Page	3/11

SUMMARY OF BARU RIVER REVETMENT TYPE A - 3 / WET MASONRY

1.	STRUCTURE EXCAVATION =	11,324	m ³
2.	BACK FILL WITH COBBLE ==	2,150	m ³
3.	BACK FILL WITH GRAVEL =	3,400	m ³
4.	BACK FILL WITH SANDY SOIL =	495	m^3
5.	CONCRETE TYPE C1 =	1440	m ³
6.	FORM WORK FOR TYPE C1 =	7,156	m²
7.	LEVELING CONCRETE TYPE E =	379	m³
8.	FORM WORK FOR TYPE E	1,198	m ²
9.	REINFORCING BAR =	66,143	Kg
10.	WET STONE MASONRY =	3,342	m ³
11.	WEEP HOLE PVC \$ 150	4,472	nos.
12.	POINTING =	12,124	m²

Name o Structur	-	BARU RIVER REVETMENT	Category Calculation	VOLUME CALCULATION	Page	4/1
	VETMENT					
	* .					
1.	Wet Stone i	· ·		va librações e	for the contra	, ,
	For left and	((0.70 + 6.93) + 0.2 Tright		$= 2.575 \mathrm{m}^2$		
		i rignt Revetment Type A-3		$= 5.27 \text{m}^2$		
		Wet Masonry		= 634 m (From P ₃₉		. i
			en e	$= 5.27 \times 634 = 3.3$	42.02 m ³	
2.	Back Filling	g with Boulder				
	1. (0.5 x 1))/2	=	= 0.25 m ²		
	2. 0.5 x 0.3	3	- -	= 0.15 m ²	構造 名言語2009 - 1200 年	\$
1	3. (0.3 x l.	$.1 + (1.1 \times 1.1)/2$		rate and ending outputs		
	4. (0.3 x 0.	.60 + (0.6 x 0.6) / 2	-			
	Sub Total		=	1.695 m ²		
	Total = 2 x 1	1.695		e e y hadalah	779 8 1 24.	
J	Length of R	evetment Type A-3				1 102 1 102
1	Volume of E	Back Filling with Bo	oulder			
	3.39 x 6.		=	2,150 m ³		
3. (Gravel Fillin	10				
				eright of the second of the se		
		0.7 + 6.93 + 0.25 x	$(0.70 \times 2.2) \times 2 =$	Section 1985		
		6) / 2 x 2 x 2		0.36 m ²		
	rotal			5.63 m²		
Y	volume of A	Gravel Filling = 5.63	x 634 =	3,399.09 m ³		
4. C	Concrete					
1	. Top Con	crete				
	(0.7×0.3)	3) x 2		0.42 m ²		
2	2. Base Cor	ncrete				
	((0.3 + 0.00))	$(.5)/2 \times 0.3 + 0.2 \times$	0.5) x 2 =	0.50 m ²		
	Total 1 &	And the second of the second of	=	0.92 m ²		
F	or Left and	$Right = 0.92 \times 2$		1.84 m ²		
L	ength of Str	ucture		634 m		
V	/olume = 63	4 x 1.84	=	1,166.85 m ³		

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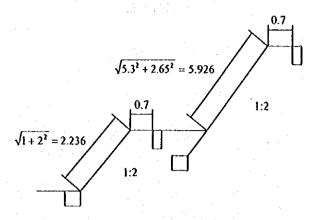
Name of Structure	BARU RIVER REVETMENT	Category Calculation	VOLUME CALCULATIO		5/11
3.	For Construction Joint			**	
	0.3 x 0.5 x 2		= 0.30	m ²	
Len	gth of Construction Joint				
	0.7 + 6.93 + 0.7 + 2.23		= 10.60	m	
Vol	ume of Construction Joint		• * • *	7 1 1 1	
	0.30 x 10.6		= 3.18	m^3	
For	Left and Right = 3.18 x 2		= 6.36	m ³	
Len	gth of Revelment		= 634	m	
Nun	nber of Construction Joint				
	634 / 15 + 1		= 43	nos.	
Tota	al Volume of Construction	ı Joint			
	6.36 x 43		= 273.48	m ³	
Tota	al Concrete C1				
	1,166.85 + 273.48		= 1,440.33	m ³	
	eling Concrete			i sam in litera. Note i de la Galera	
			randis III.		
	For Top Concrete				
	(0.1 x 0.5) x 2		= 0.10	m ²	
	For Base Concrete				
	(0.1 x 0.7) x 2		= 0.14	m ²	100
	Total 1 & 2		= 0.24		
For	Left and Right		= 0.48	m²	
Len	gth of Revetment		= 634	m	
Vol	ume Concrete				
	634 x 0.48		= 304.3	m ³ (100 100 100 100 100 100 100 100 100 10	
3.	For Construction Joint				
	0.1 x 0.82 x 10.60		= 0.869	m ³	
For	Left and Right = 0.869 x	2	= 1.738	m ³	
Len	gth of Revetment		= 634 m		
Nui	nber of Construction Join	t			
	634 / 15 + 1		= 43°	nos.	
Vol	ume Concrete			ears to be as a	
	43 x 1.738		= 74.75	m ³	e e e
Tot	al Volume of Leveling Co	oncrete			
	304.3 + 74.75		= 379.05	m ³	

Name of Structure	BARU RIVER REVETMENT	Category Calculation		VOLUME CALCULATI		Page	6/11
6. Rei	nforcing						
1.	For Top Concrete (per m)	•				1000	
	(6 D13) x 1.04 x 1 m		==	6.24	kg	Francisco	
·	(3.33 D10) x 0.56 x 1.7 m		=	3.2	kg	April 1999	
	Total		=	9.41	kg/i	m i i i i i i i i i i i i i i i i i i i	N.
	Length = 634×4		=	2,536	m		-
	Volume = 2,536 x 9.41		=	23,864.2	kg		
2.	For Base Concrete (per m)				*	(1) (1) (1) (1) (1)	
	(6 D13) x 1.04 x 1.00		==	6.24	kg		
	(3.33 D10) x 0.56 x 2.00		=	3.73	kg	1. 1944	
	Total	70	= !	9.97	kg/i	m in the second	Ü,
	Length = 634×4		=	2,536	m	d s skip	
	Volume = 2,536 x 9.97		=	25,282.91	kg		.i
3.	For Construction Joint (per 1	n)				1773	2
	(6 D13) x 1.04 x 1 m x 2		=	12.48	kg	ing the second	
	(3.33 D10) x 0.617 x 1.5 m x	2	==	6.164	kg		
	Total		==	18.644	kg/ı	n	
	Length of Construction Joint		==	10.60	m		
	Volume = 10.6 x 18.644 kg		==	197.63	kg		
	Number of Construction Join	$t = 43 \times 2$	=	86	nos		
	Volume = 86 x 197.63 kg		=	16,995.87	kg	66 章 超级数量 1000年	
Tota	nl Volume of Reinforcing		=	66,142.98	kg		
7. San	dy Soil		1	, 1 () () () () () () () () () (
						orio di Aribadia Tanàna	
•	$(0.80 + 0.2)/2 \times 0.6$		==	0.30	m²	ing Alling State Alling Alling Alling Alling Alling Alling	
1.00	$(0.40 + 0.2) / 2 \times 0.3$		=	0.09	m²	eli ak libeli bi Baran Turka	
Tota			=	0.39	m²		
	gth of Revetment		=		m		
ν =	0.39 x 634 x 2		=	495	m³		
8. Wee	ep Hole (52 holes / 15 m)						
Len	gth of Revetment		'	634			
	nber of hole = 2 x 634/15 x 52	2	==	4,472	nos.	o o do Ministe Sa Significações Significações	
				.,,,,,	103.	er i kilat (fage Erforskriverig i ki	

Name of Structure	BARU RIVER REVETMENT	Category Calculation	VOLUME CALCULATION	Page	7/11
9. Plaste	ring:				
1.	2 x 2 x 634		= 1,521.6 m ²		
	for Top of Revetment)				
	,				
		$\begin{array}{cccccccccccccccccccccccccccccccccccc$			
					v [*]
					* .
the second second					
			andria e e de de la companya da series. Característico		
•				1 de 181	
			(1) 10 x 1 的 x 1	3 € \$ 3 * 15 ± 15 ± 17 ± 17 ± 17 ± 17 ± 17 ± 17 ±	
				er per la la c	

Name of Structure	BARU RIVER REVETMENT	Category Calculation	FORM WORK VOLUME	Page	8/11

10. Pointing



Total Wide =
$$2.236 + 5.926 + 0.7 + 0.7$$
 = 9.562 m
Length of Revetment = 634 m
Area = $9.562 \times 2 \times 634$ = $12,124.6 \text{ m}^2$

11. Form work Type E

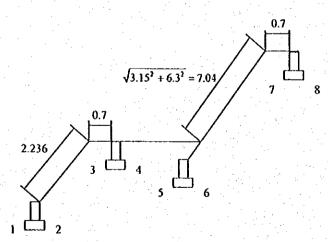
Form I

 $= 1.014 \text{ m}^2$

Form II

$$2 \times (634/15 + 1) \times (2.236 + 0.7 + 7.04 + 0.7) \times 0.1 \times 2$$

$$= 2 \times 43 \times 10.676 \times 0.1 \times 2 = 183.62 \text{ m}^2$$



Total =
$$1,014 + 183.62$$
 = 1197.63 m^2

12. Structural Excavation

Back Filling with Cobble =
$$2,150 \text{ m}^3$$

Back Filling with Gravel = $3,400 \text{ m}^3$
Wet Stone Masonry = $3,342 \text{ m}^3$
Concrete (C1) = $1,303 \text{ m}^3$

Name of BARU RIVER Category Structure REVETMENT Calculation	FORM WORK Page 9
Leveling Concrete (E)	= 350 m ³
Sandy Soil	= 495 m ³
Total	$= 11,040 \mathrm{m}^3$
13. Form work Type C1	vincial City
1. Top Concrete	San Alberta Barriera
$0.70 \times 2 \times 2$	$= 2.8 \mathrm{m}^2$
2. Base Concrete	
$(0.5 + 0.2 + \sqrt{0.2^2 + 0.3^2}) \times 2$	$= 2.12 \mathrm{m}^2$
Total	= 4.92 m ²
For Left and Right = $4.92 \times 2 \times 634$	= 6,238.5 m ²
3. Construction Joint	
$0.5 \times (0.7 + 2.236 + 0.7 + 7.04) \times 2$	$= 10.676 \mathrm{m}^2$
0.5 x 10.676 x 2	$= 10.676 \mathrm{m}^2$
For Left and Right = $10.676 \times 2 \times (634/15 + 1)$	$= 918.14 \mathrm{m}^2$
Total Form work Type $C = 6,238.5 + 918.14$	= 7,156.64 m ²

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Structure	INSPECTION ROAD OF BANDARHARJO DRAINAGE SYSTEM	Category Calculation	Volume Calculation	Page	174
	SUMM	ARY OF WORK	<u>VOLUME</u>	ide despuis des	
BARU I	RIVER				
l. SA	ND BEDDING			400	1
4.0	NCRETE CONBLOCK		==		n ³
	MENT MORTAR			Tara Matalana	n ²
	NCRETE KERB		=	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	n ³
			= '	197 r	n ³
l. BARU (CONVEYANCE CHANN	EL ,			
l. EM	BANKMENT		= 1	,944 n	1 3
2. SA	ND BEDDING			а в 79 -е а а п	n ³
3. CO	NCRETE CONBLOCK		₹.a. 1	,315 n	n ²
4. CE	MENT MORTAR			3 n	n ³
5. CO	NCRETE CURB			32 n	n ³
6. AG	GREGATE CLASS A	na santana Tanggaran	. 1965년 1971년 8월 등 1981년	225 n	
I. BARU R	RETARDING POND				
l. STF	RIPPING		F	375 n	13
2. EM	BANKMENT		= 1		13
3. SOI	DDING				1 ²
4. AG	GREGATE CLASS A			403 n	Jan William
5. AG	GREGATE CLASS B			and the second	1 ³
6. SAN	ND BEDDING			156 n	
7. CO	NCRETE CONBLOCK		= 2		1 ²
	MENT MORTAR		. 1919 - 1919 - 1919 - 1 1919 - 1919 -	, , , , , , , , , , , , , , , , , , ,	
	NCRETE CURB			63 m	
	RHARJO WEST SECON	DARY CHANNEL			•
1. STR	UPPING			347 n	.3
	BANKMENT		<u> </u>	,144 m	
and the state	GREGATE CLASS A			,144 II 438 n	
	GREGATE CLASS B			436 II 596 II	
of the second	ND BEDDING				2.14
	NCRETE CONBLOCK				400000
	MENT MORTAR		=	,885 m	
and the second	NCRETE CURB			7 m	18 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

The agraphy of the same of		y programa di salah di salah sa sa paga yang manaka salah sa			and the state of t
Name of Structure	INSPECTION ROAD OF BANDARHARJO DRAINAGE SYSTEM	Category Calculation	Volume Calculation	Page	2/4
l. BA	RU RIVER			e e l'annuaire	
Len	gth of Inspection Road, L	=1,640 m (both side	e).		
	Sand Bedding $= 5 \times 0$	•	+ 4		+ <u>1</u>
	Concrete Block = 5 x 1		$= 8,200 \text{ m}^2$		
1	Cement Mortar = 2 x (· .	•		
*	Concrete Kerb = 2 x 0		$= 196.8 \mathrm{m}^3$		
	RU CONVEYANCE CHA				
Α.	Sta. 0.00 to sta. 263.00 (C	Concrete Block Pav	ement)	Profession 1	
	A.1 Embankment (0.27 r	医多点 医二种乳头 医睫毛虫			1
	0.27 x 6.93 x 263 + 2				
•	and the second of the second o				
	A.2 Sand Bedding = 5	· · · · · · · · · · · · · · · · · · ·			
	A.3 Concrete Block = 5			10.1	
	A.4 Cement Mortar = 2				
100	A.5 Concrete Kerb = 2	化氯化物 医皮肤 多形型			
4.3	Sta. 263.00 to sta. 545.00		 Control of the second of the se		
	B.1 Embankment (0.55 n				area (1) Table (1)
	0.55 x 7.0 x 282 + 2				
	0.15 x 282		=1,176.65 m ³		
	B.2 Aggregate Class A =	Land St. St. Contraction	and the second second		
	Total of Baru Conveyance	er er bereit i de fatte	- 224.19 III		
	C.1 Embankment = 7		=1 043 56 m ³		
	C.2 Sand Bedding	00.91 1 1,170.03	= 78.90 m ³		
	C.3 Concrete Block		= 78.90 m² = =		
	C.4 Cement Mortar		$= 3.16 \mathrm{m}^3$		
	C.5 Concrete Kerb		$= 31.56 \mathrm{m}^3$		
The second second	C.6 Aggregate Class A		$= 224.19 \mathrm{m}^3$	zanilija.	
	C.o Aggregate Class A		- 224.19 m		
3. BAI	RU RETARDING POND				
Len	gth of Inspection Road, L	=520 m.			
Α.	Stripping (0.10 m thick)				
	0.10 x 7.2 x 520		= 374.4 m ³		
В.	Embankment (0.27 m thic	k)			
	0.27 x 6.93 x 520 + 2 x (1				
	0.43 x 520	and the second second	=1,516.32 m ³		
					100

Name of Structure	INSPECTION ROAD OF BANDARHARJO DRAINAGE SYSTEM	Category Calculation	Volume Calculation	Page	3/4
C.	Sodding				
	$(\sqrt{0.6^2+1.2^2}+0.5)\times520$	r Nasalah att	= 957.65 m ²		
D.	Aggregate Class A				
	0.15 x 5.16 x 520				
	Aggregate Class B	•			
	0.20 x 5.33 x 520				C.
	Sand Bedding = 5×0	· ·			
100	Concrete Block = 5×5		= 2,600 m ²	erte garata Tanan	
Н.	Cement Mortar = 2×0	A GREEN BY THE GOVERNMENT OF THE PARTY	and the service of the service of the service of		
	Concrete Kerb = 2 x 0		= 62.4 m ³		
4. BA	NDARHARIO WEST SEC	CONDARY CHAN	NEL		
Len	gth of Inspection Road, L=	=577 m. (1747 - 1447		locations.	**.
Α.	Stripping (0.10 m thick)		an e filological e		
	0.10 x 6.0 x 577		= 346.2 m ³		
В.	Embankment (0.27 m thic	k)			
•	0.27 x 6.0 x 520 + 1 x (1.0	+1.43)/2x		Marine.	
(0.43 x 577		=1,143.85 m ³		
C.	Aggregate Class A				
	0.15 x 5.06 x 577	=	= 437.94 m ³		
D	Aggregate Class B		等4.大名字等66.5。 2. 人名字等66.5		
•	0.20 x 5.16 x 577		= 595.46 m ³	Colonia (1)	
Е. :	Sand Bedding $= 5 \times 0$.	06 x 577 =	= 173.10 m ³	Age 100	
F. (Concrete Block = 5×57	17	= 2,885 m ²	treijs, typi i	
G. (Cement Mortar = 2×0 .	$2 \times 0.03 \times 577 =$	6.92 m ³		
Н. (Concrete Kerb $= 2 \times 0$.	3 x 0.2 x 577 =	69.24 m ³		
5. BAN	IDARHARJO WEST SEC	ONDARY CHAN	NEL	5.763	
	ection Pood includes Dans				

Inspection Road includes Baru River.

Name of Structure OF BARU RIVER Calculation VOLUME CALCULATION Page 1/4

RESUME OF VOLUME CALCULATION CLOSING OF BARU RIVER

1.	STRUCTURE EXCAVATION		: ., = .:	0.64 m ³
2.	BACK FILLING GRAVEL			0.19 m ³
· 3.	CONCRETE (C1)		=	36.192 m ³
4.	CONCRETE LEVELING		in the second	0.444 m ³
5.	REINFORCING BAR		=	2,078 Kg
6.	STEEL SHEET PILE (TYPE 2)		= 1	227.50 m'
7.	FORM WORK (TYPE CI)	1	=	37.12 m ²
8.	FORM WORK (TYPE E)		=	0.74 m ²

Name of Structure	CLOSING STRUCTURE OF BARU RIVER	Category Calculation	VOLUME CALCULATION	Page	2/4
	CLOSING	STRUCTURE OF	BARU RIVER		
1. ST	RUCTURE EXCAVATIO	N			
	ngth of excavation = lume = $0.80 \times 0.1 \times 8$ =	8.00 m 0.64 m ³	in encloses, and the		
2. BA	CKFILLING GRAVEL		Property (Parish Car	
Vo	lume = (0.2 x 0.3) / 2 x 7.4	x 0.1	= 0.185 m ³		
3. BA	CKFILLING GRAVEL	1.80			41
		0.4	O 10, 15, 15		
		6.4			
			②	0.80	
(0.4	3	0.80	
0.7	0.40 0.40 0.5 1.15 1.0 0.8		4.50 0.50		
0	0.5 x 2 x 6.40		= 6.400 m ³		
	0.8 x 6.4 x 5.00		= 25.60 m ³		
3	0.8 x 6.4 x 0.5		$= 2.56 \mathrm{m}^3$		
4	0.75 x 0.4 x 0.80 x 2		= 0.48 m ³		
⑤	& ⑥ 0.40 x 0.40 x 0.8 x 4		= 0.512 m ³		
0	0.4 x 0.5 x 1.6 x 2		= 0.64 m ³		
Tot	al Volume		= 36.192 m ³		
4. Cor	ncrete Leveling (Type E)				
	0 x 0.60 x 7.4	•	= 0.444 m ³		
	$m \text{ work} = 0.1 \times 7.4$		= 0.74		
5. Rei	nforcing Bar		= 2.078 kg		
6. Stee	ol Sheet Pile (Type 2)				
7/0	0.4 x 13		= 227.5 m'		

Name of Structure	CLOSING STRUCTURE OF BARU RIVER	Category Calculation	VOLUME CALCULATION	Page	3/4
7. FO	RM WORK		enin William		
. 1	0.80 x 7.20		= 5.76 m ²		
	2.00 x 6.40		$= 12.80 \text{ m}^2$		
the state of the state of			$= 12.80 \text{ m}^2$		
	2.00 x 6.40				
	0.80 x 7.20	*	$= 5.76 \mathrm{m}^2$	e e e e e e e e e e e e e e e e e e e	
To	tal Form work		$= 37.12 \text{ m}^2$		ers of the
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				en de la companya de La companya de la co	
		i satelije	zan zwezale, a	men sam	
			elo de Porto de Solo. Distribuir a de Eloc		
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					and the state of the

Name of Structure OF BARU CONVEYANCE CHANNEL CAlculation WORK VOLUME Page		ANCE	•	WORK VOLUME	Page	1/7
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WORK VOLUME OF OUTLET STRUCTURE OF BARU CONVEYANCE CHANNEL

0

1.	EXCAVATION STRUCTURE	,=	225.85	m³
2.	LEVELING CONCRETE (E)	=	2.07	m³
3.	CONCRETE (C1)	=	33.35	m³
4.	WET COBBLE MASONRY	· =	18.95	m³
5.	BACK FILL	=	152.90	m³
6.	STEEL REINFORCING	=	2,324	ton
7.	FORM WORK FOR CONCRETE TYPE E	=	2	m²
8.	FORM WORK FOR CONCRETE TYPE C1	=	127	m²
9.	SCAFFOLDING	<u>.</u> .= .	106	m²
10.	FALSE WORK	==	20	m ³

Name of Structure	OUTLET STRUCTURE O BARU CONVEYANCE CHANNEL	' I I OTOTOTO V OT	WORK VOLUME	Page	2 /
Excavation of	f structure				
a. Box Culv				•	
$\frac{2.9 + 5.6}{2}$	× 0.8 =	3.40	•		
$\frac{5.6 + 8.9}{2}$		21.03	er jed	ee grunde kronist	
	•	24.43 m ²		TERM (Company)	
1		2.5 + 3.14 + 1.5 =	7.14 m	i al fill	
V =		174.430 m ³			
b. Trench		in the part			
$\frac{3.7 + 5.6}{2}$	×1.4 =	7.14 m²		terania Postania	
=	7.2 m				
v =	7.14 x 7.2 =	51.41 m ³		:: · · · · · · · · · · · · · · · · · ·	
Excavation	on volume =	174.43 + 51.41	$= 225.84 \text{ m}^3$	y e	

3. Concrete K.225

$$2 \times 2.75 \times 0.35 = 1.925$$

$$2.0 \times 0.35 = 0.70$$

$$2.0 \times 0.4 = 0.80$$

$$4 \times \frac{0.15 + 0.15}{2} = 0.045$$

$$3.47 \text{ n}$$

$$\ell$$
 = 7.14 m
V = 3.47 x 7.14 = 24.78 m³

b. Wing wall

$$\frac{5+7}{2} \times 1 = 6.0$$

$$7 \times 3.6 = 25.2$$

$$\frac{31.2 \text{ m}^2}{7.425 \text{ m}^2}$$

$$23.775 \text{ m}^2$$

$$t = 0.35 \text{ m}$$
 $V = 0.35 \times 23.775 = 8.32 \text{ m}^3$

Name of	
Structure	

OUTLET STRUCTURE OF BARU CONVEYANCE CHANNEL

Category of calculation

WORK VOLUME

Page

3/7

$$\frac{0.25 \times 0.25}{2} \times (2 \times 2.75 + 2.7) = 0.25 \text{ m}^3$$
= 8.57 m³

$$= 24.78 + 8.57 = 33.35 \text{ m}^3$$

Masonry

a. Tranch

$$0.3 \times 2 \times \sqrt{1.1^{2} + 1.1^{2}} = 0.933 \text{ m}^{2}$$

$$0.3 \times 3.7 = 1.111 \text{ m}^{2}$$

$$0.3 \times (7 - 2 \times 1.1 - 3.7) = 0.33 \text{ m}^{2}$$

$$2.374 \text{ m}^{2}$$

$$\ell = 7.2 \text{ m}$$

$$V = 7.2 \times 2.374$$

$$7.2 \times 2.374$$
 = 17.09 m³

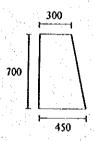
b. Edge Road

$$\frac{0.3 + 0.45}{2} \times 0.7 = 0.263 \text{ m}^2$$

$$\ell = 7 \text{ m}$$

$$V = 7 \times 0.263 = 1.84 \text{ m}^3$$

Total V =
$$17.09 + 1.84 = 18.93 \text{ m}^3$$



Back fill

$$V = 1 - V \cdot box - 4.a$$

$$V \cdot box = 2.7 \times 2.75 = 7.425 \text{ m}^2$$

$$2.9 \times 0.1 = 0.29 \text{ m}^2$$

$$7.715 \text{ m}^2$$

$$\ell = 7.14 \text{ m}$$

$$V = 7.14 \times 7.715 = 55.085 \text{ m}^3$$

 $225.84 - 55.85 - 17.09 = 152.90 \text{ m}^3$

- Steel Reinforcing
 - a. Normal Section (See Table) x (ℓ = 2.5 m)

$$V = 248.748 \times 2.5 = 621.87 \text{ kg}$$

b. Curve Section & wing wall

See Table
$$V = 1702.03 \text{ kg}$$

$$V = 621.87 + 1702.03 = 2323.90 \text{ kg}$$

	Name of Structure	OUTLET STRUCTURE OF BARU CONVEYANCE CHANNEL	Category of calculation	WORK VOLUME	Page	4/7
ı	i					

58.916 m²

7. Form Work

a. Wing Wall

$$7.0 \times 4.6 - (2.0 \times 2.0) = 28.20 \text{ m}^{2}$$

$$1.10 \times 7.0 + (2 \times 1.90 \times 3.5) = 21.00 \text{ m}^{2}$$

$$0.50 \times 3.20 = 1.60 \text{ m}^{2}$$

$$0.35 \times 7.0 + (2 \times 0.35 \times 3.7) = 5.04 \text{ m}^{2}$$

$$(\sqrt{0.25^{2} + 0.25^{2}}) \times (2 \times 2.875 + 2.95) = 3.076 \text{ m}^{2}$$

Total a
b. Box Culvert

$$(2 \times 1.5 + 2 \times 0.9 + 1.021 + 5.262) \times 2.75 = 30.478 \text{ m}^{2}$$

$$(2 \times 1.5 + 2 \times 0.9 + 1.571 + 4.712) \times 1.70 = 18.841 \text{ m}^{2}$$

$$(1.5 + 3.141 + 0.9) \times 1.70 = 9.420 \text{ m}^{2}$$

$$4 \times (2 \times 1.5 + 2 \times 0.9 + 1.57 + 4.712) \times \sqrt{0.15^{2} + 0.15^{2}} = 9.404 \text{ m}^{2}$$

$$\text{Total b} = 68.143 \text{ m}^{2}$$

$$\text{Total a \& b} = 127.059 \text{ m}^{2}$$

Form Work

Leveling Concrete (Type E)

$$0.1 \times (1.5 + 3.141 + 0.9) \times 3.4 = 1.88 \text{ m}^2$$

Pointing

$$(\sqrt{1^2 + 1^2} \times 5.2) \times 2$$
 = 14.71 m²
 $\frac{\sqrt{1^2 + 1^2} \times 2)}{2} \times 2$ = 2.82 m²
Total Pointing = 17.53 m²

Name of Structure	SCAFFOLDING AND FORM SUPPORT, FOR BANDAR- HARJO DRAINAGE SYSTEM	Category of calculation	WORK VOLUME	Page	5/7
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SUMMARY SCAFFOLDING AND FORM SUPPORT VOLUME, FOR BANDARHARJO DRAINAGE SYSTEM

No.	STRUCTURE	SCAFFOLDING (m²)	FORM SUPPORT (m³)
1	BARU PUMPING STATION	1,049	· 549 · · ·
2	BARU PUMPING STATION GATE	350	120
3	BARU CONVEYANCE CHANNEL	6,574	2,768
4	BARU CONVEYANCE CHANNEL INLET STRUCTURE	150	35
5	BARU CONVEYANCE CHANNEL OUTLET STRUCTURE	106	20
6	BANDARHARJO EAT SECONDARY CHANNEL	1,166	491
7	BANDARHARJO EAST SECONDARY CHANNEL OUTLET STRUCTURE	90	31
8	BARU RETARDING POND INLET STRUCTURE No. I		77
9	BARU RETARDING POND INLET STRUCTURE No. 2	•	42
10	FUEL TANK BOX FOR BARU PUMPING STATION	133	62
	TOTAL	9,618	4,195

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Name of Structure	BARU CONVEYANCE CH OUTLET STRUCTUCTURE, FOR SCAFOLDING & FROM SUPPORT	Category of calculation	WORK VOLUME	Page	6/7
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1. SCAFOLDING AREA

- a. Box Culvert = $\{(2 \times 2.75) + (2 \times 2.0)\} \times 5.541$ = 52.640 Sg.m
- b. Wing Wall

$$(7 \times 4.6 - 2 \times 2) + (2 \times 2.0 \times 4.6) + (3 \times 1.0) + (2 \times 0.35 \times 4.6) = 52.82 \text{ Sg.m}$$

 $(a) + (b) = 105.46 \text{ Sg.m}$

2. FORM SUPPORT

43,0400

as 沙斯士

 $2 \times 2.0 \times 5.0$; $\pm 7.0 \times 5.0$ cu.m

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Name of Structure

BANDARHARJO EAST Category CHANNEL OUTLET

Calculation

CALCULATION

Page 1/8

BANDARHARJO EAST SECONDARY CHANNEL OUTLET

SUMMARY OF WORK VOLUME

1.	CONCRETE, TYPE C1	=	28.307 m ³
2.	LEVELING CONCRETE, TYPE E	= .	2.37 m ³
3.	REINFORCING BAR	=	1,610 Kg
4.	EXCAVATION	= .	219.07 m ³
5.	BACK FILLING	= .	130.62 m ³
6.	FORM WORK FOR TYPE C1	=	122.82 m ²
7.	FORM WORK FOR TYPE E	=	4 m²

Name of Structure BANDARHARJO EAST SECONDARY CHANNEL OUTLET

Category Calculation

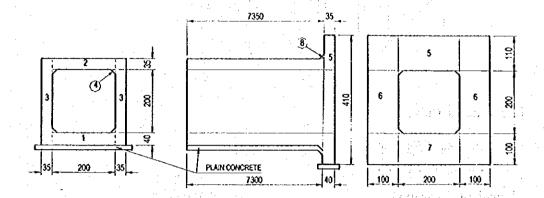
CONCRETE VOLUME CALCULATION

Page

2/8

BANDARHARJO EAST SECONDARY CHANNEL OUTLET

CONCRETE VOLUME



Concrete K 225

1. Bottom Slab	=	0.40 x 2.00 x 7.30
1. DOMOIII GIAU	•	0.30 A 2.00 A 1.30

= 5.84 m³

 $= 0.35 \times 2.00 \times 7.35$

= 5.145 m³

3. Side Wall

 $= 0.35 \times 2.75 \times 7.35 \times 2$

 $= 14.150 \text{ m}^3$

4. Footing

 $= 0.50 \times 0.15 \times 0.15 \times 7.30$

0.082 m³

5. Wing Wall =

 $= 0.35 \times 2.00 \times 1.10$

= 0.77 m³

6. Wing Wall = 0

 $1 = 0.35 \times 1.00 \times 4.10$

= 1.435 m³

7. Wing Wall = $0.40 \times 2.00 \times 1.00$

0.80 m³

8. Footing Wing = $0.15 \times 0.15 \times (2 \times 2.6 + 2 \times 2.75) \times 0.5 =$

0.080 m³

Total Concrete Volume

= 28.307 m³

PLAIN CONCRETE

1. At Bottom Culvert, t = 10 cm

Area of Bottom

 $= 2.9 \times 7.3$

= 21.17 m²

Volume of Plain Concrete

 $= 21.17 \times 0.10$

= 2.117 m³

2. At Bottom of Wing Wall

Area of Bottom Wall

 $= 4.20 \times 0.60$

2.52 m²

Volume of Plain Concrete

 $= 2.52 \times 0.10$

0.252 m³

Total of Volume of Plain Concrete

= 2.369 m³

Name of Structure

BANDARHARJO EAST SECONDARY CHANNEL OUTLET

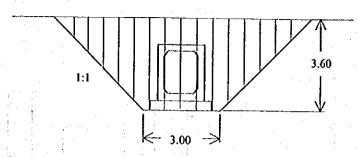
Category Calculation

EXCAVATION

Page

3/8

EXCAVATION



Excavation to Culvert

- Section Area of Excavation:

$$(3 + 10.2)/2 \times 3.60$$

 $= 23.76 \text{ m}^2$

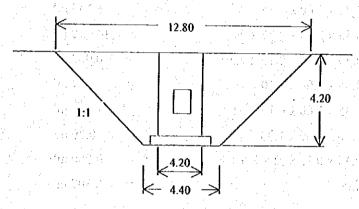
- Length of Excavation

= 7.700 m

- Volume of Excavation = 7.700×23.76

 $= 182.95 \,\mathrm{m}^3$

Excavation to Wing Wall



- Section Area of Excavation:

$$(12.80 + 4.40) / 2 \times 4.20$$

= ∫ 36.12 m²

- Length of Excavation

1.00 m

- Volume of Excavation = 36.12×1.00

= 36.12 m³

Total of Excavation

 $= 219.07 \,\mathrm{m}^3$

BACK FILLING

- Volume of Excavation

= 219.07 m³

- Volume of Box Culvert and Wing Wall

$$2.70 \times 2.85 \times 7.300 + 4.00 \times 4.20 \times 0.35 = 88.455 \text{ m}^3$$

Volume of Back Fill = 219.07 - 88.455

3.455 =130.615 m³

Name of Structure

| BANDARHARJO EAST | Category | REINFORCING | BAR VOLUME | Page | 4/8

1.30.00

REINFORCING BAR

	ТҮРЕ	DIA	LENGTH (m)	Number	WEIGHT per m (kg.f/m)	WEIGHT per bar (kg.f)	WEIGHT (kg)	REMARK
	SI	D13	5.380	32	1.040	5.595	179.04	
	S2	D13	2.520	62	1.040	2.621	162.50	
	S3	D13	0.970	64	1.040	1.001	64.064	
ļ	S4	D13	2.134	64	1.040	2.220	142.08	
Į	S 5	D13	1.000	20	1.040	1.040	20.80	
	S 6	D13	0.870	24	1.040	0.905	21.72	: :
						HV MAR		
	WI	D13	2.550	64	1.040	2.652	169.73	
	W2	D13	1.000	28	1.040	1.040	29,12	
	W3	D13	0.40	58	1.040	0.416	24.13	
		- 1 - 1	Tale 1		**	green Franklijk		
. [F1	D13	5.430	32	1.040	5.647	180.704	en e
•	F2	D13	2.520	62	1.040	2.630	163.06	
: [F3	D13	1.010	64	1.040	1.050	67.20	
. [F4	D13	2.102	64	1.040	2.186	139.904	
	F5	D13	1.000	20	1.040	1.040	20.80	
	F6	D13	0.920	28	1.040	0.95	26.60	
					+ (1) + (1)			
	WWI	D13	1.120	14	1.040	1.165	16.31	
	WW2	D13	1.020	28	1.040	1.061	29.71	
	WW3	D13	1.040	14	1.040	1.082	15.15	
	WW4	D13	3.820	18	1.040	3.973	71.514	
	WW5	D13	3.920	16	1.040	4.980	65.28	
:					11 N N 2 N		* * * * * * * * * * * * * * * * * * *	
. [TOTAL	1,610 kg	

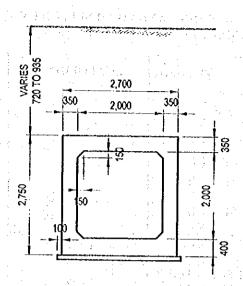
Name of Structure	BANDARHARJO EAST SECONDARY CHANNEL OUTLET	Category Calculation		FORM WORK VOLUME	Page	5/8
FORM V	WORK					
3 v	Vall: 2.75 x	7.35 x 2	: =	40.425 m²		· · · · · · · · · · · · · · · · · · ·
	1.70 x	7.75 x 2	=	26.35 m ²		
	0.45 x	7.78 x 4	=	13.95 m²		. <i>5</i>
	Total of Wa	11	=	80.725 m ²		na series de la companya de la comp La companya de la co
② 1	`op Slab: 1.75 x	7.75 x 1	=	13.563 m²		
Win	g Wall: ⑤ 1.10 x	2.00 x 2		4.40 m ²		
		4.10 x 4	· : :	16.40 m ²		
		2.00 x 2	= "	4.0 m ²		
	Total of Wi	State of the state of the state of	· =	24.80 m ²		
Dist	n Concrete:					
riag	0.10 x 7.35 x 2 + 0) 10 v 2 70 v 2	= -	2.01 m²		
	$0.10 \times 7.53 \times 2 + 0.$	Association of the second	=	2.01 m ²		
	Total of Plain Con		=	3.73 m ²		
Tota	l Form Work		=	122.818 m²		
Tota	l Form Work (Type C)		=	119.08 m²		
	l Form Work (Type E)		= }	3.73 m²		
in the second of	[A.A.] [A.A.]					
			2 P.	and the second of		
			. át			
	温度形式管理学 医多克氏结膜炎					

Name of Structure	SCAFOLDING AND FROM SUPPORT, FOR BANDAR HARJO DRAINAGE SYSTEM	Category of calculation	WORK VOLUME	Page	6/8
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SUMMARY OF SCAFOLDING AND FORM SUPPORT VOLUME, FOR BANDARHARJO DRAINAGE SYSTEM

No.	VOLUME STRUCTURE	SCAFOLDING (m²)	FORM SUPPORT (m³)
1	BARU PUMPING STATION	1,049	549
2	BARU PUMPING STATION GATE	350	120
3	BARU CONVEYANCE CHANNEL	6,574	2,768
4	BARU CONVEYANCE CHANNEL INLET STRUCTURE	150	35
5	BARU CONVEYANCE CHANNEL OUTLET STRUCTURE	106	20
6	BANDARHARJO EAST SECONDARY CHANNEL	1,166	491
7	BANDARHARJO EAST SECONDARY CHANNEL OUTLET STRUCTURE	90	31
8	BARU RETARDING POND INLET STRUCTURE No. 1		77
9	BARU RETARDING POND INLET STRUCTURE No. 2	* * * * * * * * * * * * * * * * * * *	42 gagaga
10	FUEL TANK BOX FOR BARU PUMPING STATION	, 133	62
	FOR TOTAL	9,618	4,195

				_	
Name of Structure	BANDARHARJO EAST S.C. SCAFOLDING AND FORM SUPPORT	Category Calculation	Work Volume	Page	7/8



GENERAL CROSS SECTION

Length of Box Culvert

- 1. Scaffolding Area = $(2 \times 2.75 + 2 \times 2.0) \times 122.70 = 1165.65 \text{ m}^2$
- 2. Support Area = $2.0 \times 2.0 \times 122.70$ = 490.80 m^3

Name of Structure OF SECONDARY CHANNEL Category CALCULATION Page	1/5
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SUMMARY OF WORK VOLUME SECONDARY CHANNEL OUTLET FOR BARU RIVER RIGHT BANK (5 LOCATIONS)

			The second secon
1.	EXCAVATION STRUCTURE	=	765.6 m ³
2.	LEVELING CONCRETE (TYPE E)	#	6.00 m ³
3.	CONCRETE (TYPE C1)	=	21.50 m ³
4.	WET COBBLE MASONRY	=	137.10 m ³
5.	BACK FILL	=	643.40 m ³
6.	REINFORCING STEEL	=	713.81 Kg
7.	ROAD PAVEMENT (STANDARD)	=	125 m²
8.	GRAVEL BEDDING	=	94.1 m ³
9.	COBBLE STONE	=	3 m ³
10.	WEEP HOLE φ 50 (PVC)	= .	70 nos.
11.	WOODEN PILE φ 150, L=2,000	=	10 m'
12.	PRECAST CONCRETE PIPE \$ 80 cm	==	82,50 m'

Name of	 OU
Structure	

OUTLET STRUCTURE OF SECONDARY CHANNEL

Category Calculation

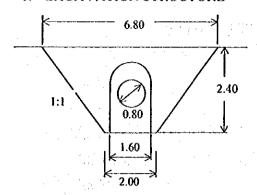
WORK VOLUME

Page

2/5

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1. EXCAVATION STRUCTURE



Area of Excavation =
$$(6.80 + 2)/2 \times 2.40 = 10.56 \text{ m}^2$$

Length of Excavation =
$$12.5 + 4/2$$
 = 14.5 m

Volume of Excavation =
$$10.56 \times 14.5$$
 = 153.12 m^3

For 5 locations =
$$5 \times 153.12$$
 = 765.6 m^3

2. LEVELING CONCRETE

For Base Concrete =
$$0.7 \times 0.10 \times 5 \times 2$$
 = 0.70 m^3

For Top Concrete =
$$0.5 \times 0.10 \times 5 \times 2$$
 = 0.50 m^3

Total =
$$1.20 \text{ m}^3$$

For 5 locations =
$$5 \times 1.20$$
 = 6.00 m^3

3. CONCRETE K 225

For Base Concrete
$$= ((0.3 + 0.5)/2 \times 0.3 +$$

$$(0.2 \times 0.5)) \times 5 \times 2 = 2.20 \text{ m}^3$$

21.50 m³

For Top Concrete =
$$(0.3 \times 0.70) \times 5 \times 2$$
 = 2.10 m^3

Total
$$= 4.30 \,\mathrm{m}^3$$

For 5 locations
$$= 5 \times 4.30$$

4. WET COBLE MASONRY

a. Pack of Precast Concrete Ø 800:

$$(1.60 \times 0.7 + 0.5 \times 0.25 \times 3.14 \times 1.2^2 -$$

$$0.25 \times 3.14 \times 0.18^2$$
) x 14.50 = 34.69 m³

b.
$$0.3 \times \sqrt{6^2 + 2.7^2} + (1 \times 0.3)) \times 5 = 5.924 \text{ m}^3$$

c.
$$0.3 \times 6.00 \times 5$$
 = 9.00 m^3

d.
$$(1 \times 0.3 + 0.3 \times \sqrt{2^2 + 1^2}) \times 5$$
 = 4.85 m³

e.
$$(0.3 \times 0.6 + 0.3 \times (2.3 + 0.6)) \times 5$$
 = 5.25 m³

Total =
$$27.42 \text{ m}^3$$

For 5 locations =
$$5 \times 27.42$$
 = 137.10 m^3

Name of Structure	OUTLET STRUCTURE OF SECONDARY CHANNEL	Category Calculation	WORK VOLUME	Page	3/5
5. BA	CK FILL				. :
Vol	ume Excavation - Volume	e Construction		÷	÷
153.	.12 - (1.60 x 0.7 + 0.5 x 0	.25 x 3.14 x 1.2²) x	(14.50 = 128.68 m	13	4 · · · ·
For	5 locations = 128.6	58 x 5	= 643.4 m	13	
6. STE	EL REINFORCING				
	For Base Concrete:		in the second		
	$6D13 \times 5 = 6 \times 1$.04 x 5	= 31.2 k	Ω	1 2
	D10 - 300 = 1.7 x			~	
	Total		= 46.31 k		
	For two Base Concrete	$e = 2 \times 46.31$	= 92.61 k	g	in the second
	For Top Concrete:			44.14.17	
	$6D13 \times 5 = 6 \times 1$.04 x 5	= 31.2 k	g	
•. •	D10 - 300 = 1.10	x 0.503 x (500/30	()+1) = 9.22 k	g	
	Total		= 40.422 k	g	
	For two Base Concrete	= 2 x 40.422	= 80.843 k	g	
Tota	l Reinforcing Concrete		=142.763 kg	g	
For	$5 \text{ locations} = 5 \times 10^{-1}$	42.763	= 713.81 kg	g	
7. GRA	AVEL BEDDING			Ş.	
b. 0.	$25 \times (\sqrt{6^2 + 2^2} + 1.00) \times 5$		= 9.156 m	3 1 1 1 1 2	
	25 x 435 x 5		= 5.625 m	1800	, I or ending the second
	$.25 \times 1 + 0.25 \times \sqrt{2^2 + 1^2})$	(1) (1) (1) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	= 4.04 m		
Tota			= 18.82 m		
10000	5 locations = 5 x 1	8 82	= 94.10 m		
		0.02			
8. BOU	JLDER FILLING				
(0.6	+ 0.2) / 2 x 0.6 x 5 x 2		= 0.60 m	3	
For	$5 \text{ locations} = 5 \times 0$.60	= 3.00 m	3	
9. WE	EP HOLE PVC Ø 50				
14 x	5		= 70 Nos		
		2000			
10. WO	ODEN PILE Ø 15 cm, L	= 2000			

€

Name of Structure	OUTLET STRUCTURE OF SECONDARY CHANNEL		WORK VOLUME	Page	4/5
11. Inst	pection Road			Thirty is) ,
5 x	5	and the street of	= 25 n	1 ² : ::::::::::::::::::::::::::::::::::	
12. PRI	ECAST CONCRETE Ø	80 cm			?
16.5	5 m x 5		= 82.5 n		
13. FOI	RM WORK TYPE E				, :
8 x	0.1 x 5 x 5			0	
14. FOI	RM WORK TYPE C1	ing and the state of the state		*	
	7 x 4 + 2 x 0.5 + 2 x 0.2 +	+ 2 x 0.36} x 5 x 5	= 12	1 3	
15. POI			Mark Control	N. C. S.	
			e syfair Chirair — il	•	
		0.7			
		6.03		biyle, .	
	5.8				1.
2.23			on the perception and the first of the		
(2.2	3 + 5.8 + 6.03 + 0.7) x 5				re e i
	The second second second second	x 0.8 x 5)	= 369 m = -4 m		
Tota			= 365 m		
			en de la companya de La companya de la co		
i e e Ten					
				ing Palasa Ngjarang	
100					

SUMMARY OF WORK VOLUME SECONDARY CHANNEL OUTLET FOR BARU RIVER RIGHT BANK (5 LOCATIONS)

1.	EXCAVATION STRUCTURE =	765.6 m ³
2.	LEVELING CONCRETE (TYPE E) =	6.00 m ³
3.	CONCRETE (TYPE CI) ==	21.50 m ³
4.	WET COBBLE MASONRY =	137.10 m ³
5.	BACK FILL =	643.40 m ³
6.	REINFORCING STEEL =	713.81 Kg
7.	ROAD PAVEMENT (STANDARD) =	125 m²
8.	GRAVEL BEDDING =	94.1 m ³
9	COBBLE STONE =	3 m^3
10.	WEEP HOLE φ 50 (PVC)	70 nos.
11.	WOODEN PILE φ 150, L=2,000 =	
12.	PRECAST CONCRETE PIPE \$ 80 cm	

A. 3.5.43.

 Name of Structure

OUTLET STRUCTURE OF SECONDARY CHANNEL

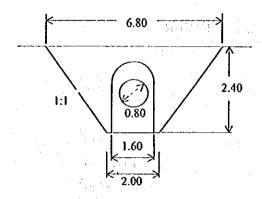
Category Calculation

WORK VOLUME

Page

2/7

1. EXCAVATION STRUCTURE



Area of Excavation = $(6.80 + 2)/2 \times 2.40 = 10.56 \text{ m}^2$

Length of Excavation = 12.5 + 4/2 = 14.5 m

Volume of Excavation = 10.56×14.5 = 153.12 m^3

For 5 locations = 5×153.12 = 765.6 m^3

2. LEVELING CONCRETE

For Base Concrete = $0.7 \times 0.10 \times 5 \times 2$ = 0.70 m^3

For Top Concrete = $0.5 \times 0.10 \times 5 \times 2$ = 0.50 m^3

Total = 1.20 m^3

For 5 locations = 5×1.20 = 6.00 m^3

3. CONCRETE K 225

For Base Concrete = $((0.3 + 0.5)/2 \times 0.3 +$

 $(0.2 \times 0.5)) \times 5 \times 2 = 2.20 \text{ m}^3$

34.69 m³

For Top Concrete = $(0.3 \times 0.70) \times 5 \times 2$ = 2.10 m^3

Total = 4.30 m^3

For 5 locations = 5×4.30 = 21.50 m^3

4. WET COBLE MASONRY

a. Pack of Precast Concrete Ø 800:

 $(1.60 \times 0.7 + 0.5 \times 0.25 \times 3.14 \times 1.2^2 -$

 $0.25 \times 3.14 \times 0.18^2$) x 14.50

b. $0.3 \times \sqrt{6^2 + 2.7^2 + (1 \times 0.3)} \times 5 = 5.924 \text{ m}^3$

c. $0.3 \times 6.00 \times 5$ = 9.00 m^3

d. $(1 \times 0.3 + 0.3 \times \sqrt{2^2 + 1^2}) \times 5$ = 4.85 m³

e. $(0.3 \times 0.6 + 0.3 \times (2.3 + 0.6)) \times 5$ = 5.25 m³

Total = 27.42 m^3

For 5 locations = 5×27.42 = 137.10 m^3

Name of Structure	OUTLET STRUCTURE OF SECONDARY CHANNEL	Category Calculation	WORK YOLUME	Page	3/7
5. B <i>i</i>	ACK FILL				
Vo	olume Excavation – Volume	e Construction			*
15	3.12 – (1.60 x 0.7 + 0.5 x 0	.25 x 3.14 x 1.2 ²) x	14.50 = 128.68	n³	*** ***
Fo	or 5 locations = 128.6	58 x 5	= 643.4	n³	•
6. SI	TEEL REINFORCING				
	For Base Concrete:		. 14		
	$6D13 \times 5 = 6 \times 1$.04 x 5	= 31.2	kg	44 - 1 T
	D10-300 = 1.7 x			•	
	Total		= 46.31	kg	
	For two Base Concrete	$= 2 \times 46.31$	= 92.61	kg	
	For Top Concrete:				
	$6D13 \times 5 = 6 \times 1$.04 x 5	= 31.2	kg	
	D10 - 300 = 1.10	x 0.503 x (500/30	+1) = 9.22	kg	•
	Total		= 40.422		
	For two Base Concrete	e = 2 x 40.422	= 80.843		
	otal Reinforcing Concrete		=142.763		
Fc	or 5 locations $= 5 \times 1$	42.763	= 713.81	kg	
7. GI	RAVEL BEDDING				
b.	$0.25 \times (\sqrt{6^2 + 2^2} + 1.00) \times 5$		= 9.156	n³	mark and a second
	0.25 x 435 x 5		= 5.625	100	
	$(0.25 \times 1 + 0.25 \times \sqrt{2^2 + 1^2})$	v 5	= 4.04 1	m ³	
	otal		= 18.82		
5.1.2	or 5 locations = 5×1	8.82	= 94.10	the production of the second	
	OULDER FILLING				
	$.6 + 0.2) / 2 \times 0.6 \times 5 \times 2$		= 0.60	1 1 1	
Fo	or 5 locations $= 5 \times 0$	0.60	= 3.00	m³	
9. W	EEP HOLE PVC Ø 50				
14	l x 5		= 70 No	os.	
		- 2000			
	OODEN PILE Ø 15 cm, L	- 2000			
2	x 5			10	
1 (1) 1/2 (1) 1/2 (1)					A CONTRACTOR OF THE

Name of Structure	OUTLET STRUCTURE OF SECONDARY CHANNEL	Category Calculation	WORK VOLUME	Page	4/7
11. Insp	ection Road				
5 x	S _ · ·	la Inang	25 r	n²	
12. PRF	ECAST CONCRETE Ø 8	0 cm			
16.5	5 m x 5		== 82.5 n		
13. FOI	RM WORK TYPE E		A Carried		19 ⁷ 21.
	0.1 x 5 x 5		, t		•
				20	
14. FOI	RM WORK TYPE CI				
{0.7	$x 4 + 2 \times 0.5 + 2 \times 0.2 +$	2 x 0.36} x 5 x 5	= 12		
15. POI	NTING				
	· · · · · · · · · · · · · · · · · · ·	0.7		. (13.)	
		6.03			
	5.8			2.4 S.4	
2.23			en e	in Marka (japo) Indonésia	
	3 + 5.8 + 6.03 + 0.7) x 5 3 ding = -(1)			n² + 1 - 7/4/1	
Tota	and the second of the second o	x v.8 x 5)	= -4 m $= 365 m$		
			3031		
				erin kir Partika	

Name of Structure BARU RIVER BRIDGE Category WORKS Page 1/3

SUMMARY OF WORK VOLUME

1. CONCRETE SHEET PILE, L=6 m = 570 m'

2. CONCRETE FOR PILE CAP, TYPE C1 = 4.56 m³

3. REINFORCING BAR FOR PILE CAP, U 30 = 889 Kg

4. FORM WORK = 34 m²

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Name of Structure	BARU RIVER BRIDGE PROTECTION	Category Calculation	WORKS VOLUME	Page	2/3

BARU RIVER BRIDGE PROTECTION

Revetment Type (Concrete Sheet Pile)

1. Revetment Concrete Sheet Pile (L=6.0 m)

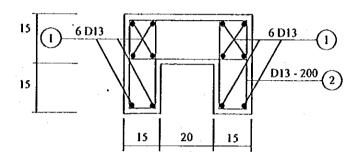
Length of structure 9.50 x 4

= 38 n

Total length sheet pile $\frac{38}{0.4} \times 6$

= 570 m′

2. Concrete (C1) for Top of Sheet Pile



Concrete = $0.15 \times 0.3 \times 2 + 0.15 \times 0.20$ = 0.120 m^2

Volume = $0.12 \times 38 \text{ m}$ = 4.56 m^3

3. Reinforcing Bar

(1) D 13 = $38 \times 6 \times 2$

= 456 m

Weight = 456×1.040

= 474.24 kg

(2) D13 = 2.032×196

= 398.27 m

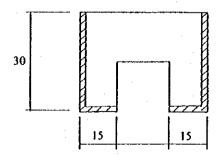
Weight = 398.3×1.040

= 414.2 kg

Total

= 888.5 kg

4. Form Work



 $2 \times 0.3 + 2 \times 0.15 \times 38$

= 34 m²