

Table A5.1.22 Seepage through the Dyke (October 1988) (Rain Adjust: -0 mm)

OCT.	88	L E A K A G E			Q	R A I N F A L L										D A T A		
		R.W.L. m	SW-1 1/sec.	SW-2 1/sec.		SW-3 1/sec.	R00 mm	R01 mm	R02 mm	R03 mm	R04 mm	R05 mm	R10 mm	R20 mm	R35 mm			
01	183.21	1.25	3.43	***	0	18	13	9	9	9	41	67	146					
02	183.23	1.25	3.43	***	3	0	18	13	9	25	83	146						
03	183.27	1.25	3.43	***	9	3	0	18	13	34	83	133						
04	183.24	1.25	3.43	***	0	9	3	0	18	25	101	75						
05	183.33	2.54	3.43	***	0	0	9	3	0	32	107	55						
06	183.47	2.54	6.35	***	15	0	0	9	3	49	75	77						
07	183.51	2.54	6.35	***	4	15	0	0	9	49	66	86						
08	184.85	2.54	6.35	***	22	4	15	0	0	43	75	77						
09	186.95	2.54	6.35	***	58	22	4	15	0	43	74	86						
10	188.14	2.54	6.35	***	35	58	22	4	15	30	87	80						
11	189.31	4.42	13.82	***	3	35	58	22	4	12	90	82						
12	190.39	4.42	13.82	***	42	3	35	58	22	27	74	97						
13	195.58	4.42	13.82	***	23	42	3	35	58	28	77	97						
14	196.59	14.30	13.82	***	168	23	42	3	35	41	68	115						
15	197.36	14.30	13.82	***	8	168	23	42	3	99	62	121						
16	198.11	14.30	13.82	***	6	8	23	42	3	134	61	108						
17	198.71	14.30	13.82	***	1	6	8	168	23	42	76	108						
18	***	14.30	13.82	***	22	1	6	8	168	23	71	117						
19	***	10.22	13.82	***	22	22	1	6	168	161	84	126						
20	***	10.22	13.82	***	2	22	22	1	6	271	129	139						
21	***	2.54	13.82	***	32	2	22	22	1	244	146	124						
22	***	***	***	***	0	32	2	22	22	247	149	115						
23	***	***	***	***	0	0	32	2	22	206	188	118						

Table A.6.1.1 Cost Breakdown of Angat Rehabilitation Work

No. 1

Estimate of Unit Price

Cement Grouting : 560t

(Peso 22.00/US\$)

Description	Specification	Unit	Estimated Quantity	Unit Price (Peso)	Amount (Peso)	Note
1. Equipment						
Grout mixer	200 ϕ x 2 2.2KW	day	185	328.24	60,724	
Grout pump	37~100 ϕ /min 75KW	day	185	682.44	126,251	
contingency	(5 %)				9,349	
Sub-total					<u>196,324</u>	
2. Labour						
Foreman		day	185	256	47,360	
Skilled		day	370	120	44,400	
Unskilled		day	740	100	74,000	
Helper		day	835	100	83,500	
Sub-total					<u>249,260</u>	
3. Electricity						
Electricity		KWh	10,767	1.02	10,982	
Sub-total					<u>10,982</u>	
4. Material						
Cement		t	560	1,350	756,000	
Sub-total					<u>756,000</u>	
5. Temporary Facilities	(25%)	L.S.	1		303,142	
6. Field Administration	(10%)	L.S.	1		121,257	
7. General Administration	(15%)	L.S.	1		181,885	
Total					<u>1,818,850</u>	
				☆☆ (per t)	Peso 3,248☆☆	

Table A.6.1.2 Cost Breakdown of Angat Rehabilitation Work

No. 2

Estimate of Unit PriceMortar Grouting ($V = 50 \text{ m}^3$)

(Peso 22.00/US\$)

Description	Specification	Unit	Estimated Quantity	Unit Price (Peso)	Amount (Peso)	Note
1. Equipment						
Grout mixer	200 ϕ x 2 2.2KW	day	25	328.24	8,206	
Grout pump	37~100 ϕ /min 75KW	day	35	682.44	23,885	
contingency	(5 %)				1,605	
Sub-total					<u>33,696</u>	
2. Labour						
Foreman		day	35	256	8,960	
Skilled		day	35	120	4,200	
Unskilled		day	70	100	7,000	
Helper		day	100	100	10,000	
Sub-total					<u>30,160</u>	
3. Material						
Cement		t	30	1,350	40,500	
Sand		m^3	70	130	9,100	
Sub-total					<u>49,600</u>	
4. Electricity						
Electricity		KWh	300	1.02	306	
Sub-total					<u>306</u>	
5. Temporary Facilities	(25%)	L.S.	1		28,441	
6. Field Administration	(10%)	L.S.	1		11,376	
7. General Administration	(15%)	L.S.	1		17,064	
Total					<u>170,643</u>	
			☆☆	(per t)	Peso 3,413	☆☆

Table A.6.1.3 Cost Breakdown of Angat Rehabilitation Work

Estimate of Unit Price

Clearing & Grubbing V = 16,000 m²

(Peso 22.00/US\$)

Description	Specification	Unit	Estimated Quantity	Unit Price (Peso)	Amount (Peso)	Note
1. Equipment						
Bulldozer	D7	hr	89	1,320	117,480	
Dump Truck	11 ton	hr	1,000	352	352,000	
Tractor Shovel	1.2 m ²	hr	89	506	45,034	
Sub-total					<u>514,514</u>	
2. Labour						
Foreman		hr	89	32.25	2,870	
Skilled		hr	89	15.00	1,335	
Operator		hr	1,178	17.13	20,179	
Helper		hr	1,778	12.50	22,225	
Sub-total					<u>46,609</u>	
3. Fuel						
Diesel		l	29,314	4.70	137,776	
Sub-total					<u>137,776</u>	
4. Temporary Facilities (25%)		L.S.	1		174,725	
5. Field Administration (10%)		L.S.	1		69,890	
6. General Administration (15%)		L.S.	1		104,835	
Total					<u>1,048,349</u>	
				☆☆ (per m ²)	Peso 66☆☆	

Table A.6.1.4 Cost Breakdown of Angat Rehabilitation Work

No. 4

Estimate of Unit Price

Excavation - 1 (to embankment) $V = 17,600 \text{ m}^3$

(Peso 22.00/US\$)

Description	Specification	Unit	Estimated Quantity	Unit Price (Peso)	Amount (Peso)	Note
1. Equipment						
Bulldozer	D7	hr	196	1,320	258,720	
Dump Truck	11 ton	hr	880	352	309,760	
Tractor Shovel	1.2 m^3	hr	196	506	99,176	
Sub-total					<u>667,656</u>	
2. Labour						
Foreman		hr	196	32.25	6,321	
Skilled		hr	196	15.00	2,940	
Unskilled		hr	588	12.50	7,350	
Operator		hr	1,272	17.13	21,789	
Sub-total					<u>38,400</u>	
3. Fuel						
Diesel		l	28,856	4.70	135,623	
Sub-total					<u>135,623</u>	
4. Temporary Facilities (25%)						
		L.S.	1		210,420	
5. Field Administration (10%)						
		L.S.	1		84,168	
6. General Administration (15%)						
		L.S.	1		126,252	
Total					<u>1,262,519</u>	
				☆☆ (per m^3)	Peso 72☆☆	

Table A.6.1.5 Cost Breakdown of Angat Rehabilitation Work

No. 5

Estimate of Unit PriceExcavation - 2 (to disposal area) $V = 2,700 \text{ m}^3$

(Peso 22.00/US\$)

Description	Specification	Unit	Estimated Quantity	Unit Price (Peso)	Amount (Peso)	Note
1. Equipment						
Bulldozer	D7	hr	30	1,320	39,600	
Dump Truck	11 ton	hr	338	352	118,976	
Tractor Shovel	1.2 m^3	hr	30	506	15,180	
Sub-total					<u>173,756</u>	
2. Labour						
Foreman		hr	30	32.25	968	
Skilled		hr	30	15.00	450	
Unskilled		hr	60	12.50	750	
Operator		hr	398	17.13	6,818	
Sub-total					<u>8,986</u>	
3. Fuel						
Diesel		l	9,906	4.70	46,558	
Sub-total					<u>46,558</u>	
4. Temporary Facilities (25%)		L.S.	1		57,325	
5. Field Administration (10%)		L.S.	1		22,930	
6. General Administration (15%)		L.S.	1		34,395	
Total					<u>343,950</u>	
				☆☆ (per m^3)	Peso 127☆☆	

Table A.6.1.6 Cost Breakdown of Angat Rehabilitation Work

No. 6

Estimate of Unit Price

Embankment (Spreading and Compaction) $V = 19,200 \text{ m}^3$
(Peso 22.00/US\$)

Description	Specification	Unit	Estimated Quantity	Unit Price (Peso)	Amount (Peso)	Note
1. Equipment						
Bulldozer	D8	hr	209	1,320	275,880	
Vibrating roller	11 ton	hr	108	550	59,400	
Sub-total					<u>335,280</u>	
2. Labour						
Foreman		hr	104	32.25	3,354	
Skilled		hr	209	15.00	3,135	
Helper		hr	490	12.50	6,125	
Operator		hr	245	17.13	4,197	
Sub-total					<u>16,811</u>	
3. Fuel						
Diesel		l	5,058	4.70	23,773	
Sub-total					<u>23,773</u>	
4. Temporary Facilities (25%)		L.S.	1		93,966	
5. Field Administration (10%)		L.S.	1		37,586	
6. General Administration (15%)		L.S.	1		56,380	
Total					<u>563,796</u>	
				☆☆ (per m^3)	Peso 29☆☆	

Table A.6.1.7 Cost Breakdown of Angat Rehabilitation Work

No. 7

Estimate of Unit Price

Trench Excavation V = 4,900 m³

(Peso 22.00/US\$)

Description	Specification	Unit	Estimated Quantity	Unit Price (Peso)	Amount (Peso)	Note
1. Equipment						
Backhoe	1 m ³	hr	70	1,100	77,000	
Dump Truck	11 ton	hr	613	352	215,776	
Sub-total					<u>292,776</u>	
2. Labour						
Foreman		hr	70	32.25	2,258	
Skilled		hr	70	15.00	1,050	
Unskilled		hr	210	12.50	2,625	
Operator		hr	683	17.13	11,700	
Sub-total					<u>17,633</u>	
3. Fuel						
Diesel		l	17,811	4.70	83,712	
Sub-total					<u>83,712</u>	
4. Temporary Facility (25%)						
					98,530	
5. Field Administration (10%)						
					39,412	
6. General Administration (15%)						
					59,118	
Total					<u>591,181</u>	
			☆☆	(per m ³)	Peso 121	☆☆

Table A.6.1.8 Cost Breakdown of Angat Rehabilitation Work

No. 8

Estimate of Unit PriceGabion V = 1, 545 m^3

(Peso 22.00/US\$)

Description	Specification	Unit	Estimated Quantity	Unit Price (Peso)	Amount (Peso)	Note
1. Material						
Wire mesh	4 kg/unit	kg	4,120	22.68	93,442	
Cobble stone		m^3	1,545	250.00	386,250	
Miscellaneous	(2 %)	L.S.	1		9,594	
Sub-total					<u>489,286</u>	
2. Equipment						
Truck		hr	454	230.00	104,420	
Sub-total					<u>104,420</u>	
3. Fuel						
Diesel		ℓ	7,151	4.70	33,610	
Sub-total					<u>33,610</u>	
4. Labour						
Skilled		hr	412	15.00	6,180	
Unskilled		hr	1,236	12.50	15,450	
Operator		hr	454	17.13	7,777	
Sub-total					<u>29,407</u>	
5. Temporary Facilities (25%)		L.S.	1		164,181	
6. Field Administration (10%)		L.S.	1		65,672	
7. General Administration (15%)		L.S.	1		98,508	
Total					<u>985,084</u>	
				☆☆ (per m^3)	Peso 638	☆☆

Table A.6.1.9 Cost Breakdown of Angat Rehabilitation Work

No. 9

Estimate of Unit PriceCobble stone $V = 1,950 \text{ m}^3$

(Peso 22.00/US\$)

Description	Specification	Unit	Estimated Quantity	Unit Price (Peso)	Amount (Peso)	Note
1. Material						
Cobble stone		m^3	1,950	230.00	448,500	
Sub-total					<u>448,500</u>	
2. Equipment						
Truck		hr	574	230.00	132,020	
Sub-total					<u>132,020</u>	
3. Fuel						
Diesel		l	9,041	4.70	42,493	
Sub-total					<u>42,493</u>	
4. Labour						
Skilled		hr	3,467	15.00	52,005	
Unskilled		day	10,400	12.5	130,000	
Operator		hr	574	17.13	9,833	
Sub-total					<u>191,838</u>	
5. Temporary Facilities	(25%)	L.S.	1		203,713	
6. Field Administration	(10%)	L.S.	1		81,485	
7. General Administration	(15%)	L.S.	1		122,228	
Total					<u>1,222,277</u>	
				☆☆ (per m^3)	Peso 627	☆☆

Table A.6.1.10-1 Cost Breakdown of Angat Rehabilitation Work

No. 10-1

Estimate of Unit PriceConcrete $V = 710 \text{ m}^3$

(Peso 22.00/US\$)

Description	Specification	Unit	Estimated Quantity	Unit Price (Peso)	Amount (Peso)	Note
1. Equipment						
Temporary Mixer	(41KW)	mon.	2	8,148	16,296	
Truck mixer	3 m^3	hr	150	399	59,850	
Truck	6 - 8 (271HP)	hr	219	230	50,370	
Miscellaneous	(10 %)	L.S.	1		12,652	
Sub-total					<u>139,168</u>	
2. Material						
Cement		t	284	1,350	383,400	
Sand		m^3	243	130	31,590	
Gravel		m^3	501	250	125,250	
Miscellaneous	(10 %)		1		54,024	
Sub-total					<u>594,264</u>	
3. Labour						
Foreman		day	25	256	6,400	
Skilled		day	100	120	12,000	
Unskilled		day	200	100	20,000	
Carpentor	(Specialist)	day	150	137	20,550	
Operator		day	78	137	10,686	
Sub-total					<u>69,636</u>	
4. Fuel & Electricity						
Diesel		l	8,311	4.70	39,062	
Electricity		KWh	21,150	1.02	21,573	
Sub-total					<u>60,635</u>	
5. Temporary Facilities (25%)						
		L.S.	1		215,926	
6. Field Administration (10%)						
		L.S.	1		86,370	

Table A.6.1.11 Cost Breakdown of Angat Rehabilitation Work

No. 11

Estimate of Unit Price

Re-bar (33 ton)

(Peso 22.00/US\$)

Description	Specification	Unit	Estimated Quantity	Unit Price (Peso)	Amount (Peso)	Note
1. Equipment						
Truck	(175 HP)	hr	20	230	4,600	
Crane	11 ton	hr	20	484	9,680	
Miscellaneous	(20 %)	L.S.	1		2,856	
Sub-total					<u>17,136</u>	
2. Material						
Re-bar		t	33	12,100	399,300	
Miscellaneous	(20 %)				79,860	
Sub-total					<u>479,160</u>	
3. Labour						
Foreman		day	35	256	8,960	
Specialist		day	35	137	4,795	
Skilled			175	120	21,000	
Operator		hr	40	137	5,480	
Unskilled		hr	105	100	10,500	
Sub-total					<u>50,735</u>	
4. Fuel						
Diesel		l	729	4.70	3,426	
Sub-total					<u>3,426</u>	
5. Temporary Facility (25%)					137,614	
6. Field Administration (10%)					55,046	
7. General Administration (15%)					82,569	
Total					<u>825,686</u>	
				☆☆ (per t)	Peso 25,021	☆☆

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