Table 4.1.2 (14/20) CALCULATION SHEET FOR COMMON WORK BY USING EQUIPMENT

ID No. CW-1-51 | Working Name: Excavation F | Calculation Quantity: 100 m3 | Remarks: Loosed Soil (Condition:bad(less than water level))

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment	A-2-1-7	Backhoe; 0.6 m3	hourly	2.82	125542.9	2040	90965.08	354031	5752.8	256521.5	
Others		Miscellaneous	L.S.					69	47	78	
Total for	100 m3							354,100	5,800	256,600	
Unit Cost for	1 m3							3541	58	2566	

Q= 1hour x q x f x E / Cm (m3/hr) | 1 hour = 3600 | q = 0.59 | f = 1 | E = work efficiency = 0.5 | Cm = 30

Q = 35.4 | Hence, Driving Time = 100 / 35.4 = 2.82

ID No. CW-1-52 | Working Name: Excavation G | Calculation Quantity: 100 m3 | Remarks: Loosed Soil (Condition:good, Material:Rock or Cobble)

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment	A-2-1-7	Backhoe; 0.6 m3	hourly	2.17	125542.9	2040	90965.08	272428.1	4426.8	197394.2	
Others		Miscellaneous	L.S.					72	73	6	
Total for	100 m3							272,500	4,500	197,400	
Unit Cost for	1 m3							2725	45	1974	

Q= 1hour x q x f x E / Cm (m3/hr) | 1 hour = 3600 | q = 0.59 | f = 1 | E = work efficiency = 0.65 | Cm = 30

Q = 46.02 | Hence, Driving Time = 100 / 46.02 = 2.17

ID No. CW-1-53 | Working Name: Excavation H | Calculation Quantity: 100 m3 | Remarks: Loosed Soil (Condition:common, Material:Rock or Cobble)

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment	A-2-1-7	Backhoe; 0.6 m3	hourly	2.82	125542.9	2040	90965.08	354031	5752.8	256521.5	
Others		Miscellaneous	L.S.					69	47	78	
Total for	100 m3							354,100	5,800	256,600	
Unit Cost for	1 m3							3541	58	2566	

Q= 1hour x q x f x E / Cm (m3/hr) | 1 hour = 3600 | q = 0.59 | f = 1 | E = work efficiency = 0.5 | Cm = 30

Q = 35.4 | Hence, Driving Time = 100 / 35.4 = 2.82

ID No. CW-1-54 | Working Name: Excavation I | Calculation Quantity: 100 m3 | Remarks: Loosed Soil (Condition:bad(less than water level), Material:Rock or Cobble)

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment	A-2-1-7	Backhoe; 0.6 m3	hourly	4.04	125542.9	2040	90965.08	507193.3	8241.6	367498.9	
Others		Miscellaneous	L.S.					7	58	1	
Total for	100 m3							507,200	8,300	367,500	
Unit Cost for	1 m3							5072	83	3675	

Q= 1hour x q x f x E / Cm (m3/hr) | 1 hour = 3600 | q = 0.59 | f = 1 | E = work efficiency = 0.35 | Cm = 30

Q = 24.78 | Hence, Driving Time = 100 / 24.78 = 4.04

Table 4.1.2 (15/20) CALCULATION SHEET FOR COMMON WORK BY USING EQUIPMENT

ID No.	Working Name		Calculation Quantity	Remarks
CW-1-55	Spreading and Compaction-A		100 m3	
	Construction Place	Road Bed	2	1. Road Body, 2. Road Bed, 3. River Embankment
	Equipment of Spreading	Bulldozer 15t	1	1. Total Spreading Volume <10,000m3, 2. Volume >10,000 3. Impossible to use the Bulldozer
	Equipment of Compaction	Tire Roller 8~20t	1	1. Selection of Tire Roller, 2. Soil Material : Sand, Total Compaction Volume <10,000m3 3. Soil Material : Sand, Total Compaction Volume >10,000m3, 4. Low Trafficability
	Working Condition	Site is good condition for working	1	1. Working Site is enough space and there is no obstructive structure 2. Between 1. and 2. (Middle situation) 3. Working Space is limited and there are lots of obstructive structures.

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-1-19	Bulldozer, 15 ton	hourly	0.64	178,227	2,280	161,158	114,065	1,459	103,141	
	A-2-1-68	Tire Roller, 8-20 ton	hourly	0.93	81,684	864	82,451	75,966	804	76,680	
Labour											
	L-2-23	Common Labour	day	0.40	0	0	35100	0	0	14,040	
Total for		100 m3						190,031	2,263	193,861	
Unit Cost for		1 m3						1,900	23	1,939	

Production Rate

Working Quantity for Compaction (m3/hour) : Q1

Calculation by Volume

$$Q1 = \frac{V \times W \times D \times E}{N} \quad (m3/hour)$$

Working Quantity for Compaction (m2/hour) : A

Calculation by Area

$$A1 = \frac{V \times W \times E}{N} \quad (m2/hour)$$

Where,
- V : Compaction Speed (m/hour)
- W : Effective Compaction Width (m)
- D : Every Thickness of Compaction (m)
- N : Number of Compaction Times
- E : Coefficient for Working

Working Time for Compaction (m3/hour) : Q1

Where,

V : Compaction Speed (m/hour)	3500	from Table XXX-C
W : Effective Compaction Width (m)	1.8	from Table XXX-C
D : Every Thickness of Compaction (m)	0.2	from Table XXX-B
N : Number of Compaction Times	7	from Table XXX-B
E : Coefficient for Working	0.6	from Table XXX-D

Hence, Q1 = 108 (m3/s)

Working Quantity for Spreading (m3/hour) : Q2

Case of Bulldozer 15t

$Q2 = 10 \times E \times (13 \times D + 9)$ (m3/hour)

Case of Bulldozer 21t

$Q2 = 10 \times E \times (18 \times D + 13)$ (m3/hour)

Where,
- D : Every Thickness of Compaction (m)
- E : Coefficient for Working

Working Quantity for Spreading (m3/hour) : Q

Where, Equipment for Spreading : Bulldozer 15t

D : Every Thickness of Compaction (m)	0.2
E : Coefficient for Working	0.8

Hence, Q2 = 155.2 (m3/hour)

Working Quantity Corporated for Spreading and Compaction by Bulldozer : Qmix

$$Qmix = \frac{Q1 \times Q2}{(Q1 + Q2)} \quad (m3/hour)$$

Working Quantity Corporated for Spreading and Compaction by Bulldozer : Qmix

Qmix = Impossible to mix

Labor Rate : Common Labor 0.4

ID No.	Working Name		Calculation Quantity	Remarks
CW-1-56	Spreading and Compaction for Gravel Pavement		20 m3	Width is less than 4m

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-1-88	Vibrating Roller, 0.8-1.1 ton (Hand Guide)	hourly	6.00	17,057	144	13,791	102,343	864	82,743	
Labour											
	L-2-1	Foreman	day	0.60	0	0	48800	0	0	29,280	
	L-2-23	Common Labour	day	6.00	0	0	35100	0	0	210,600	
Total for		20 m3						102,343	864	322,623	
Unit Cost for		1 m3						5,117	43	16,431	

*1 : Thickness of 1 Layer ; 10 cm

*2 : Conversion of Unit 100 m2 x 10 cm = 10 m3

*3 : Labor of each 1 Layer ;

Foreman	0.3 person/100m2	=	person/ 10	m3
Common Labor	3 person/100m2	=	person/ 10	m3

*4 : Thickness of Gravel Pavement 20 cm

*5 : Labor for Working ;

Foreman	0.3 person/100m2	x	2 times =	0.6
Common Labor	3 person/100m2	x	2 times =	6

*6 : Vibrating Roller for Working ; 3 hours/100m2

Hence, 6 hours

*7 : Prodution Rates are mainly quated from Japanese Standard

ID No. CW-1-57 | Working Name: Reinforced Concrete Work Type D by Pump | Calculation Quantity: 10 m3 | Remarks: by Boom, Standard Concreting Volume=75m3

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-1-36-1	Concrete Pump Truck; 90-110 m3/hr	Time	0.15	45418.33	340	28935.44	6812.749	51	4340.31525	
	A-2-1-36-2	Concrete Pump Truck; 90-110 m3/hr	hourly	0.7	272510	2040	173612.6	190757	1428	121528.827	
Labour											
	L-2-1	Foreman	day	0.11	0	0	48800	0	0	5,368	
	L-2-17	Concrete Worker	day	0.36	0	0	39000	0	0	14040	
	L-2-23	Common Labour	day	0.47	0	0	35100	0	0	16497	
Material											
	M-C-13	Ready Mixed Concrete; 175kg/cm2, 40mm (D)	m3	10.2	0	39000	156000	0	397800	1591200	
Others											
	CW-1-45	Curing Work	m3	10	110	0	350	1100	0	3500	Reinforced Concrete
		Miscellaneous	L.S.	1				4,030	8,021	35,226	Apprx.2% of mentioned above
Total for		10 m3						202,700	407,300	1,791,700	
Unit Cost for		1 m3						20270	40730	179170	

Concrete : 10 x (1+ 0.02) = 10.2m3

ID No. CW-1-60 | Working Name: Concrete Work for Type-C by Shoot Hopper | Calculation Quantity: 10 m3 | Remarks: by Manpower

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.8	0	0	48800	0	0	39,040	
	L-2-17	Concrete Worker	day	1.6	0	0	39000	0	0	62400	
	L-2-23	Common Labour	day	3.5	0	0	35100	0	0	122850	
Material											
	M-C-11	Ready Mixed Concrete; 225kg/cm2, 25mm (C1&2)	m3	10.7	0	40000	160000	0	428000	1712000	
Others											
	CW-1-45	Curing Work	m3	10	110	0	350	1100		3500	Reinforced Concrete
		Miscellaneous	L.S.	1				100	8,600	38,810	Apprx.2% of mentioned above
Total for		10 m3						1,200	436,600	1,978,600	
Unit Cost for		1 m3						120	43660	197860	

Concrete : 10 x (1+ 0.07) = 10.7m3

ID No. CW-1-61 | Working Name: Concrete Work for Type-C3 by Shoot Hopper | Calculation Quantity: 10 m3 | Remarks: by Manpower

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.8	0	0	48800	0	0	39,040	
	L-2-17	Concrete Worker	day	1.6	0	0	39000	0	0	62400	
	L-2-23	Common Labour	day	3.5	0	0	35100	0	0	122850	
Material											
	M-C-12	Ready Mixed Concrete; 225kg/cm2, 15mm (C3)	m3	10.7	0	40000	160000	0	428000	1712000	
Others											
	CW-1-45	Curing Work	m3	10	110	0	350	1100		3500	Reinforced Concrete
		Miscellaneous	L.S.	1				100	8,600	38,810	Apprx.2% of mentioned above
Total for		10 m3						1,200	436,600	1,978,600	
Unit Cost for		1 m3						120	43660	197860	

Concrete : 10 x (1+ 0.07) = 10.7m3

ID No. CW-1-62 | Working Name: Reinforced Concrete Work Type B by Pump | Calculation Quantity: 10 m3 | Remarks: by Boom, Standard Concreting Volume=75m3

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-1-36-1	Concrete Pump Truck; 90-110 m3/hr	Time	0.15	45418.33	340	28935.44	6,813	51	4,340	
	A-2-1-36-2	Concrete Pump Truck; 90-110 m3/hr	hourly	0.7	272510	2040	173612.6	190,757	1,428	121,529	
Labour											
	L-2-1	Foreman	day	0.11	0	0	48800	0	0	5,368	
	L-2-17	Concrete Worker	day	0.36	0	0	39000	0	0	14,040	
	L-2-23	Common Labour	day	0.47	0	0	35100	0	0	16,497	
Material											
	M-C-10	Ready Mixed Concrete; 250kg/cm2, 25mm (B)	m3	10.2	0	42000	168000	0	428,400	1,713,600	
Others											
	CW-1-45	Curing Work	m3	10	110	0	350	1,100	0	3,500	Reinforced Concrete
		Miscellaneous	L.S.	1				4,030	8,621	37,626	Apprx.2% of mentioned above
Total for		10 m3						202,700	438,500	1,916,500	
Unit Cost for		1 m3						20,270	43,850	191,650	

Concrete : 10 x (1+ 0.02) = 10.2m3

ID No. CW-1-63 | Working Name: Light Concrete (Concrete 1:3:5) | Calculation Quantity: 10 m3 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	3	0	0	48800	0	0	146,400	
	L-2-28	Chief of Concrete Worker	day	0.5	0	0	58600	0	0	29,300	
	L-2-17	Concrete Worker	day	5	0	0	39000	0	0	195,000	
	L-2-23	Common Labour	day	60	0	0	35100	0	0	2,106,000	
Material											
	M-C-1	Portland Cement	kg	2319	0	100	400	0	231,900	927,600	
	M-B-2	Coarse Aggregate	m3	9.3	0	2600	49400	0	24,180	459,420	
	M-B-14	Sand for Concrete	m3	5.6	0	2050	38950	0	11,480	218,120	
Total for		10 m3						0	267,560	4,081,840	
Unit Cost for		1 m3						0	26,756	408,184	

Table 4.1.2 (18/20) CALCULATION SHEET FOR COMMON WORK BY USING EQUIPMENT

ID No.	Working Name		Calculation Quantity	Remarks
CW-1-58	Spreading and Compaction for Earth Filling		100 m3	
	Construction Place	River Embankment	3	1. Road Body, 2. Road Bed, 3. River Embankment
	Equipment of Spreading	Bulldozer 15t	1	1. Total Spreading Volume <10,000m3, 2. Volume >10,000 3. Impossible to use the Bulldozer
	Equipment of Compaction	Bulldozer 15t	2	1. Selection of Tire Roller, 2. Soil Material : Sand, Total Compaction Volume <10,000m3 3. Soil Material : Sand, Total Compaction Volume >10,000m3, 4. Low Trafficability
	Working Condition	Site is common condition for working	3	1. Working Site is enough space and there is no obstructive structure 2. Between 1. and 2. (Middle situation) 3. Working Space is limited and there are lots of obstructive structures.

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Equipment											
	A-2-1-19	Bulldozer; 15 ton	hourly	1.59	178,227	2,280	161,158	283,380	3,625	256,242	
	A-2-1-68	Tire Roller; 8-20 ton	hourly	0.00	81,684	864	82,451	0	0	0	
Labour											
	L-2-23	Common Labour	day	0.20	0	0	35100	0	0	7,020	
Total for		100 m3						283,380	3,625	263,262	
Unit Cost for		1 m3						2,834	36	2,633	

Production Rate

Working Quantity for Compaction (m3/hour) : Q1

Calculation by Volume

$$Q1 = \frac{V \times W \times D \times E}{N} \quad (m3/hour)$$

Working Quantity for Compaction (m2/hour) : A

Calculation by Area

$$A1 = \frac{V \times W \times E}{N} \quad (m2/hour)$$

Where,
- V : Compaction Speed (m/hour)
- W : Effective Compaction Width (m)
- D : Every Thickness of Compaction (m)
- N : Number of Compaction Times
- E : Coefficient for Working

Working Time for Compaction (m3/hour) : Q1

Where,	V : Compaction Speed (m/hour)	3500	from Table XXX-C
	W : Effective Compaction Width (m)	0.8	from Table XXX-C
	D : Every Thickness of Compaction (m)	0.3	from Table XXX-B
	N : Number of Compaction Times	3	Consideration from Working
	E : Coefficient for Working	0.6	from Table XXX-D

Hence, Q1 = 168 (m3/hour)

Working Quantity for Spreading (m3/hour) : Q2

Case of Bulldozer 15t

$$Q2 = 10 \times E \times (13 \times D + 9) \quad (m3/hour)$$

Case of Bulldozer 21t

$$Q2 = 10 \times E \times (18 \times D + 13) \quad (m3/hour)$$

Where,
- D : Every Thickness of Compaction (m)
- E : Coefficient for Working

Working Quantity for Spreading (m3/hour) : Q

Where, Equipment for Spreading :		Bulldozer 15t
	D : Every Thickness of Compaction (m)	0.3
	E : Coefficient for Working	0.6

Hence, Q2 = 100.8 (m3/hour)

Working Quantity Corporated for Spreading and Compaction by Bulldozer : Qmix

$$Qmix = \frac{Q1 \times Q2}{(Q1 + Q2)} \quad (m3/hour)$$

Working Quantity Corporated for Spreading and Compaction by Bulldozer : Qmix

Qmix = 63 (m3/hour)

Labor Rate : Common Labor 0.2

Table 4.1.2 (19/20) CALCULATION SHEET FOR COMMON WORK BY USING EQUIPMENT

ID No.	Working Name		Calculation Quantity 100 m3	Remarks
CW-1-59	Spreading and Compaction-D			
	Construction Place	Road Body	1	1. Road Body, 2. Road Bed, 3. River Embankment
	Equipment of Spreading	Bulldozer 15t	1	1. Total Spreading Volume <10,000m3, 2. Volume >10,000 3. Impossible to use the Bulldozer
	Equipment of Compaction	Tire Roller 8~20t	1	1. Selection of Tire Roller, 2. Soil Material : Sand, Total Compaction Volume <10,000m3 3. Soil Material : Sand, Total Compaction Volume >10,000m3, 4. Low Trafficability
	Working Condition	Site is good condition for working	1	1. Working Site is enough space and there is no obstructive structure 2. Between 1. and 2. (Middle situation) 3. Working Space is limited and there are lots of obstructive structures.

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PE/C	Unit Cost IE/C	Unit Cost L/C	Cost PE/C	Cost IE/C	Cost L/C	Remarks
Equipment											
	A-2-1-19	Bulldozer; 15 ton	hourly	0.64	178,227	2,280	161,158	114,837	1,469	103,839	
	A-2-1-68	Tire Roller; 8-20 ton	hourly	0.44	81,684	864	82,451	36,016	381	36,354	
Labour											
	L-2-23	Common Labour	day	0.20	0	0	35100	0	0	7,020	
Material											
			0	0	0	0	0	0	0	0	0	
Others											
		Miscellaneous	L.S.					47	50	87	
Total for		100 m3						150,900	1,900	147,300	
Unit Cost for		1 m3						1,509	19	1,473	

Production Rate

Working Quantity for Compaction (m3/hour) : Q1

Calculation by Volume

$$Q1 = \frac{V \times W \times D \times E}{N} \quad (m3/hour)$$

Working Quantity for Compaction (m2/hour) : A

Calculation by Area

$$A1 = \frac{V \times W \times E}{N} \quad (m2/hour)$$

Where,

V : Compaction Speed (m/hour)
W : Effective Compaction Width (m)
D : Every Thickness of Compaction (m)
N : Number of Compaction Times
E : Coefficient for Working

Working Time for Compaction (m3/hour) : Q1

Where,		
V : Compaction Speed (m/hour)	3500	from Table XXX-C
W : Effective Compaction Width (m)	1.8	from Table XXX-C
D : Every Thickness of Compaction (m)	0.3	from Table XXX-B
N : Number of Compaction Times	5	from Table XXX-B
E : Coefficient for Working	0.6	from Table XXX-D

Hence, Q1 = 226.8 (m3/s)

Working Quantity for Spreading (m3/hour) : Q2

Case of Bulldozer 15t

$$Q2 = 10 \times E \times (13 \times D + 9) \quad (m3/hour)$$

Case of Bulldozer 21t

$$Q2 = 10 \times E \times (18 \times D + 13) \quad (m3/hour)$$

Where,

D : Every Thickness of Compaction (m)
E : Coefficient for Working

Working Quantity for Spreading (m3/hour) : Q

Where, Equipment for Spreading :	Bulldozer 15t
D : Every Thickness of Compaction (m)	0.3
E : Coefficient for Working	0.8

Hence, Q2 = 155.2 (m3/hour)

Working Quantity Corporated for Spreading and Compaction by Bulldozer : Qmix

$$Qmix = \frac{Q1 \times Q2}{(Q1 + Q2)} \quad (m3/hour)$$

Working Quantity Corporated for Spreading and Compaction by Bulldozer : Qmix

Qmix = Impossible to mix

Labor Rate : Common Labor 0.2

Table 4.1.2 (20/20) CALCULATION SHEET FOR COMMON WORK BY USING EQUIPMENT

ID No.	Working Name	Calculation Quantity	Remarks
CW-1-64	Excavation by Backhoe 0.35m3	100 m3	Loosed Soil (Condition:common)

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment	A-2-1-3	Backhoe; 0.35 m3	hourly	3.77	71293.71	1200	51823.69	268,777	4,524	195,375	
Others											
Total for	100 m3							268,777	4,524	195,375	
Unit Cost for	1 m3							2,688	45	1,954	

Q= 1hour x q x f x E / Cm (m3/hr) 1 hour = 3600 q = 0.34 f = 1
E = work efficiency = 0.65 Cm = 30

Q = 26.52 Hence, Driving Time = 100 / 26.52 = 3.77

ID No.	Working Name	Calculation Quantity	Remarks
CW-1-65	Spreading by Swamp Bulldozer	100 m3	Swamp Bulldozer 16t (Loosed and Bad Condition)

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment	A-2-1-67	Swamp Bulldozer; 16 ton	hourly	2.4	180013.5	2280	162682.7	428,432	5,426	387,185	
Labour	L-2-23	Common Labour	day	0.5	0	0	35100	0	0	17,550	
Total for	100 m3							428,432	5,426	404,735	
Unit Cost for	1 m3							4,284	54	4,047	

Q= 1hour x q x f x E / Cm (m3/hr) 1 hour = 60 q = 1.97 f = 1
E = work efficiency = 0.6
Cm = 0.03 x 30 m + 0.79 = 1.69

Q = 41.9645 Hence, Driving Time = 100 / 41.9645 = 2.38

Table 4.1.3 WORKING COEFFICIENT FOR EARTH WORK

Table 4.1.3 - A SELECTION OF EQUIPMENT FOR SPREADING AND COMPACTION

Working	Place	Contents	Equipment	Description
Compaction	Road Body or River Embankment	Selection of Tire Roller	Tire Roller	8~20t
		Material : Sand, Total Volume <10,000m3	Bull Dozer	15t
		Material : Sand, Total Volume >10,000m3	Bull Dozer	21t
		Imposible to use Bulldozer	Swamp Bull Dozer	16t
	Road Bed	Standard	Tire Roller	8~20t
		Material : Sand, Total Volume <10,000m3	Bull Dozer	15t
		Material : Sand, Total Volume >10,000m3	Bull Dozer	21t
Spreading	All	Total Volume <10,000m3	Bull Dozer	15t
		Total Volume >10,000m3	Bull Dozer	21t
		Impossible to use Bulldozer	Swamp Bull Dozer	16t

Table 4.1.3 - B THICKNESS OF EMBANKMENT AND COMPACTED NUMBER

Place	Thickness (m)	Equipment	Description	Number of Compaction
Road Body or River Embankment	0.3	Tire Roller	8~20t	5
		Bulldozer	15t	5
		Bulldozer	21t	4
Road Bed	0.2	Tire Roller	8~20t	7
		Bulldozer	15t	7
		Bulldozer	21t	6

Table 4.1.3 - C STANDARD COMPACTION SPEED AND WIDTH OF EQUIPMENT

Equipment	Description	Speed (m/s)	Width (m)	Application
Bulldozer	15t	3500	0.8	Road Body, Road Bed and Embankment
	21t		0.9	
Tire Roller	8~20		1.8	

Table 4.1.3 - D EFFICIENCY OF WORKING FOR COMPACTION

Description	Road Body, Embankment and Road Bed		
Field Condition	Good	Common	Bad
Bulldozer	0.8	0.6	0.4
Tire Roller	0.6	0.4	0.2

Table 4.1.3 - E EFFICIENCY OF WORKING FOR SPREADING

Field Condition	Good	Common	Bad
Cofficient	0.8	0.6	0.4

Table 4.1.3 - F LABOR RATE FOR SUPPORTING

(man day/100m2)

Working Item	Place	Common Labor
Spreading	Embankment	0.2
	Road Body	
	Road Bed	0.4

Table 4.1.4 (1/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-1	Temporary Fence of Corrugated Iron Sheet, 2m high	1 m	SK SNI T-01-1991-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.04	0	0	48800	0	0	1,952	
	L-2-26	Chief of Carpenter	day	0.02	0	0	58600	0	0	1,172	
	L-2-12	Carpenter	day	0.4	0	0	39000	0	0	15,600	
	L-2-23	Common Labour	day	0.4	0	0	35100	0	0	14,040	
Material											
	M-D-2	Log Pile, Dia. 10cm	m	5	0	0	5000	0	0	25,000	
	M-C-1	Portland Cement	kg	18.6	0	100	400	0	1,860	7,440	
	M-B-5	Cobble Stone	m3	0.06	0	1850	35150	0	111	2,109	
	M-E-48	Nails for Wood	kg	0.06	0	2400	5600	0	144	336	
	M-K-43	Red Lead	kg	0.45	0	2700	6300	0	1,215	2,835	
				1.2	0	0	0	0	0	0	
Others											
		Miscellaneous	L.S.					0	70	16	
Total for		1 m						0	3,400	70,500	
Unit Cost for		1 m						0	3,400	70,500	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-2	Making of Wood Temporary Fence	1 m2	SK SNI T-01-1991

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.01	0	0	48800	0	0	488	
	L-2-26	Chief of Carpenter	day	0.03	0	0	58600	0	0	1,758	
	L-2-12	Carpenter	day	0.3	0	0	39000	0	0	11,700	
	L-2-23	Common Labour	day	0.1	0	0	35100	0	0	3,510	
Material											
	M-D-18	Plank Wood third class(Borneo	m3	0.25	0	0	1250000	0	0	312,500	
	M-E-48	Nails for Wood	kg	0.25	0	2400	5600	0	600	1,400	
	M-K-43	Red Lead	kg	0.4	0	2700	6300	0	1,080	2,520	
	M-K-44	Door Hinge (125 mm)	pcs	3	0	1200	2800	0	3,600	8,400	
	M-K-45	Aluminium Door Key	pcs	1	0	15000	35000	0	15,000	35,000	
Others											
		Miscellaneous	L.S.					0	20	24	
Total for		1 m2						0	20,300	377,300	
Unit Cost for		1 m2						0	20,300	377,300	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-3	Clearing Area	1 m2	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.005	0	0	48800	0	0	244	
	L-2-26	Chief of Carpenter	day	0.05	0	0	58600	0	0	2,930	
	L-2-12	Carpenter	day	0.05	0	0	39000	0	0	1,950	
	L-2-23	Common Labour	day	0.05	0	0	35100	0	0	1,755	
Others											
		Miscellaneous	L.S.					0	0	21	
Total for		1 m2						0	0	6,900	
Unit Cost for		1 m2						0	0	6,900	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-4	Bowplank Installation	1 m	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.005	0	0	48800	0	0	244	
	L-2-26	Chief of Carpenter	day	0.05	0	0	58600	0	0	2,930	
	L-2-12	Carpenter	day	0.05	0	0	39000	0	0	1,950	
	L-2-23	Common Labour	day	0.05	0	0	35100	0	0	1,755	
Material											
	M-D-18	Plank Wood third class(Borneo	m3	0.004	0	0	1250000	0	0	5,000	
	M-E-48	Nails for Wood	kg	0.02	0	2400	5600	0	48	112	
Others											
		Miscellaneous	L.S.					0	52	9	
Total for		1 m						0	100	12,000	
Unit Cost for		1 m						0	100	12,000	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (2/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-5 | Working Name: Cutting Common Earth, 1m depth | Calculation Quantity: 1 m3 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.04	0	0	48800	0	0	1,952	
	L-2-23	Common Labour	day	0.4	0	0	35100	0	0	14,040	
Others											
		Miscellaneous	L.S.					0	0	8	
Total for	1 m3							0	0	16,000	
Unit Cost for	1 m3							0	0	16,000	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-6 | Working Name: Cutting Solid Earth, 1m depth | Calculation Quantity: 1 m3 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.062	0	0	48800	0	0	3,026	
	L-2-23	Common Labour	day	0.625	0	0	35100	0	0	21,938	
Others											
		Miscellaneous	L.S.					0	0	37	
Total for	1 m3							0	0	25,000	
Unit Cost for	1 m3							0	0	25,000	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-7 | Working Name: Cutting Muddy Earth, 1m depth | Calculation Quantity: 1 m3 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.083	0	0	48800	0	0	4,050	
	L-2-23	Common Labour	day	0.0933	0	0	35100	0	0	3,275	
Others											
		Miscellaneous	L.S.					0	0	75	
Total for	1 m3							0	0	7,400	
Unit Cost for	1 m3							0	0	7,400	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-8 | Working Name: Removing Earth for 150m distance | Calculation Quantity: 1 m3 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.05	0	0	48800	0	0	2,440	
	L-2-23	Common Labour	day	0.0516	0	0	35100	0	0	1,811	
Others											
		Miscellaneous	L.S.					0	0	49	
Total for	1 m3							0	0	4,300	
Unit Cost for	1 m3							0	0	4,300	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-9 | Working Name: Backfilling Earth | Calculation Quantity: 1 m3 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.019	0	0	48800	0	0	927	
	L-2-23	Common Labour	day	0.192	0	0	35100	0	0	6,739	
Others											
		Miscellaneous	L.S.					0	0	34	
Total for	1 m3							0	0	7,700	
Unit Cost for	1 m3							0	0	7,700	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-10 | Working Name: Flatting and Compaction Earth | Calculation Quantity: 1 m3 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.05	0	0	48800	0	0	2,440	
	L-2-23	Common Labour	day	0.5	0	0	35100	0	0	17,550	
Others											
		Miscellaneous	L.S.					0	0	10	
Total for	1 m3							0	0	20,000	
Unit Cost for	1 m3							0	0	20,000	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (3/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-11	Filling Solid Earth for Road Body/berm	1 m3	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.01	0	0	48800	0	0	488	
	L-2-23	Common Labour	day	0.03	0	0	35100	0	0	1,053	
Material											
	M-B-13	Solid Soil	m3	1.2	0	600	11400	0	720	13,680	
Others											
		Miscellaneous	L.S.					0	80	79	
Total for		1 m3						0	800	15,300	
Unit Cost for		1 m3						0	800	15,300	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-12	Filling Sand	1 m3	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.06	0	0	48800	0	0	2,928	
	L-2-27	Chief of Mason	day	0.3	0	0	58600	0	0	17,580	
	L-2-11	Mason		0.3	0	0	39000	0	0	11,700	
	L-2-23	Common Labour		0.6	0	0	35100	0	0	21,060	
Material											
	M-B-4	Sand for Filling and Base Course	m3	1.3	0	1350	25650	0	1,755	33,345	
Others											
		Miscellaneous	L.S.					0	45	87	
Total for		1 m3						0	1,800	86,700	
Unit Cost for		1 m3						0	1,800	86,700	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (4/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-13 | Working Name: Masonry/Riprap Protection, 20cm thickness | Calculation Quantity: 1 m3 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.078	0	0	48800	0	0	3,806	
	L-2-27	Chief of Mason	day	0.039	0	0	58600	0	0	2,285	
	L-2-11	Mason	day	0.39	0	0	39000	0	0	15,210	
	L-2-23	Common Labour	day	0.6	0	0	35100	0	0	21,060	
Material											
	M-B-10	Crushed Stone for Riprap	m3	1.2	0	2350	44650	0	2,820	53,580	
Others											
		Miscellaneous	L.S.					0	80	58	
Total for	1 m3							0	2,900	96,000	
Unit Cost for	1 m3							0	2,900	96,000	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-14 | Working Name: Masonry of Crushed Stone/Riverstone with 1cement : 2 sand | Calculation Quantity: 1 m3 | Remarks: SK SNI T-02-1991

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.078	0	0	48800	0	0	3,806	
	L-2-27	Chief of Mason	day	0.039	0	0	58600	0	0	2,285	
	L-2-11	Mason	day	0.39	0	0	39000	0	0	15,210	
	L-2-23	Common Labour	day	0.6	0	0	35100	0	0	21,060	
Material											
	M-B-11	Crushed Stone for Masonry	m3	1.2	0	1100	20900	0	1,320	25,080	
	M-C-1	Portland Cement	kg	266.25	0	100	400	0	26,625	106,500	
	M-B-3	Sand for Mortar (Masonry)	m3	0.34	0	2250	42750	0	765	14,535	
Others											
		Miscellaneous	L.S.					0	90	23	
Total for	1 m3							0	28,800	188,500	
Unit Cost for	1 m3							0	28,800	188,500	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-15 | Working Name: Masonry of Crushed Stone, 1cement : 3sand | Calculation Quantity: 1 m3 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.15	0	0	48800	0	0	7,320	
	L-2-27	Chief of Mason	day	0.06	0	0	58600	0	0	3,516	
	L-2-11	Mason	day	0.6	0	0	39000	0	0	23,400	
	L-2-23	Common Labour	day	1.5	0	0	35100	0	0	52,650	
Material											
	M-B-11	Crushed Stone for Masonry	m3	1.2	0	1100	20900	0	1,320	25,080	
	M-C-1	Portland Cement	kg	202.5	0	100	400	0	20,250	81,000	
	M-B-3	Sand for Mortar (Masonry)	m3	0.34	0	2250	42750	0	765	14,535	
Others											
		Miscellaneous	L.S.					0	65	99	
Total for	1 m3							0	22,400	207,600	
Unit Cost for	1 m3							0	22,400	207,600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-16 | Working Name: Masonry of Crushed Stone, 1cement : 5sand | Calculation Quantity: 1 m3 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.15	0	0	48800	0	0	7,320	
	L-2-27	Chief of Mason	day	0.06	0	0	58600	0	0	3,516	
	L-2-11	Mason	day	0.6	0	0	39000	0	0	23,400	
	L-2-23	Common Labour	day	1.5	0	0	35100	0	0	52,650	
Material											
	M-B-11	Crushed Stone for Masonry	m3	1.2	0	1100	20900	0	1,320	25,080	
	M-C-1	Portland Cement	kg	117.5	0	100	400	0	11,750	47,000	
	M-B-3	Sand for Mortar (Masonry)	m3	0.45	0	2250	42750	0	1,013	19,238	
Others											
		Miscellaneous	L.S.					0	18	97	
Total for	1 m3							0	14,100	178,300	
Unit Cost for	1 m3							0	14,100	178,300	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (5/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-17	Masonry of Crushed Stone, 1cement : 3lime : 10sand	1 m3	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.15	0	0	48800	0	0	7,320	
	L-2-27	Chief of Mason	day	0.06	0	0	58600	0	0	3,516	
	L-2-11	Mason	day	0.6	0	0	39000	0	0	23,400	
	L-2-23	Common Labour	day	1.5	0	0	35100	0	0	52,650	
Material											
	M-B-11	Crushed Stone for Masonry	m3	1.2	0	1100	20900	0	1,320	25,080	
	M-C-1	Portland Cement	kg	61.5	0	100	400	0	6,150	24,600	
	M-C-58	Lime	m3	0.12	0	11500	103500	0	1,380	12,420	
	M-B-3	Sand for Mortar (Masonry)	m3	0.41	0	2250	42750	0	923	17,528	
Others											
		Miscellaneous	L.S.					0	28	87	
Total for		1 m3						0	9,800	166,600	
Unit Cost for		1 m3						0	9,800	166,600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-18	Masonry of Brick Stone/Brickwork, 1cement : 2sand, 1Brick thickness	1 m2	SK SNI T-03-1991

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.096	0	0	48800	0	0	4,685	
	L-2-27	Chief of Mason	day	0.032	0	0	58600	0	0	1,875	
	L-2-11	Mason	day	0.32	0	0	39000	0	0	12,480	
	L-2-23	Common Labour	day	0.96	0	0	35100	0	0	33,696	
Material											
	M-L-17	Brick; 26 x 12.4 x 5.2 cm	pcs	160	0	0	200	0	0	32,000	
	M-C-1	Portland Cement	kg	66.5	0	100	400	0	6,650	26,600	
	M-B-3	Sand for Mortar (Masonry)	m3	0.95	0	2250	42750	0	2,138	40,613	
Others											
		Miscellaneous	L.S.					0	13	52	
Total for		1 m2						0	8,800	152,000	
Unit Cost for		1 m2						0	8,800	152,000	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-19	Masonry of Brick Stone/Brickwork, 1cement : 4sand, 1Brick thickness	1 m2	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.096	0	0	48800	0	0	4,685	
	L-2-27	Chief of Mason	day	0.032	0	0	58600	0	0	1,875	
	L-2-11	Mason	day	0.32	0	0	39000	0	0	12,480	
	L-2-23	Common Labour	day	0.96	0	0	35100	0	0	33,696	
Material											
	M-L-17	Brick; 26 x 12.4 x 5.2 cm	pcs	160	0	0	200	0	0	32,000	
	M-C-1	Portland Cement	kg	40.65	0	100	400	0	4,065	16,260	
	M-B-3	Sand for Mortar (Masonry)	m3	0.104	0	2250	42750	0	234	4,446	
Others											
		Miscellaneous	L.S.					0	1	58	
Total for		1 m2						0	4,300	105,500	
Unit Cost for		1 m2						0	4,300	105,500	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-20	Masonry of Brick Stone/Brickwork, 1cement : 3lime : 10sand, 1Brick thickness	1 m2	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.096	0	0	48800	0	0	4,685	
	L-2-27	Chief of Mason	day	0.032	0	0	58600	0	0	1,875	
	L-2-11	Mason	day	0.32	0	0	39000	0	0	12,480	
	L-2-23	Common Labour	day	0.96	0	0	35100	0	0	33,696	
Material											
	M-L-17	Brick; 26 x 12.4 x 5.2 cm	pcs	160	0	0	200	0	0	32,000	
	M-C-1	Portland Cement	kg	1.45	0	100	400	0	145	580	
	M-C-58	Lime	m3	0.029	0	11500	103500	0	334	3,002	
	M-B-3	Sand for Mortar (Masonry)	m3	0.095	0	2250	42750	0	214	4,061	
Others											
		Miscellaneous	L.S.					0	8	21	
Total for		1 m2						0	700	92,400	
Unit Cost for		1 m2						0	700	92,400	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (6/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-21 | Working Name: Masonry of Brick Stone/Brickwork, 1cement : 2sand, 1/2Brick thickness | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost F/C		Unit Cost L/C	Cost F/C		Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.048	0	0	48800	0	0	2,342	
	L-2-27	Chief of Mason	day	0.016	0	0	58600	0	0	938	
	L-2-11	Mason	day	0.16	0	0	39000	0	0	6,240	
	L-2-23	Common Labour	day	0.48	0	0	35100	0	0	16,848	
Material											
	M-L-17	Brick; 26 x 12.4 x 5.2 cm	pcs	80	0	0	200	0	0	16,000	
	M-C-1	Portland Cement	kg	32.5	0	100	400	0	3,250	13,000	
	M-B-3	Sand for Mortar (Masonry)	m3	0.042	0	2250	42750	0	95	1,796	
Others		Miscellaneous	L.S.					0	56	37	
Total for	1 m2							0	3,400	57,200	
Unit Cost for	1 m2							0	3,400	57,200	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-22 | Working Name: Masonry of Brick Stone/Brickwork, 1cement : 4sand, 1/2brick thickness | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	IF/C	L/C	Cost PF/C	IF/C	L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.048	0	0	48800	0	0	2,342	
	L-2-27	Chief of Mason	day	0.016	0	0	58600	0	0	938	
	L-2-11	Mason	day	0.16	0	0	39000	0	0	6,240	
	L-2-23	Common Labour	day	0.48	0	0	35100	0	0	16,848	
Material											
	M-L-17	Brick; 26 x 12.4 x 5.2 cm	pcs	80	0	0	200	0	0	16,000	
	M-C-1	Portland Cement	kg	20	0	100	400	0	2,000	8,000	
	M-B-3	Sand for Mortar (Masonry)	m3	0.051	0	2250	42750	0	115	2,180	
Others		Miscellaneous	L.S.					0	85	52	
Total for	1 m2							0	2,200	52,600	
Unit Cost for	1 m2							0	2,200	52,600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-23 | Working Name: Masonry of Brick Stone/Brickwork, 1cement : 3lime : 10sand, 1/2brick thickness | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	IF/C	L/C	Cost PF/C	IF/C	L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.048	0	0	48800	0	0	2,342	
	L-2-27	Chief of Mason	day	0.016	0	0	58600	0	0	938	
	L-2-11	Mason	day	0.16	0	0	39000	0	0	6,240	
	L-2-23	Common Labour	day	0.48	0	0	35100	0	0	16,848	
Material											
	M-L-17	Brick; 26 x 12.4 x 5.2 cm	pcs	80	0	0	200	0	0	16,000	
	M-C-1	Portland Cement	kg	7.25	0	100	400	0	725	2,900	
	M-C-58	Lime	m3	0.046	0	11500	103500	0	529	4,761	
	M-B-3	Sand for Mortar (Masonry)	m3	0.014	0	2250	42750	0	32	599	
Others		Miscellaneous	L.S.					0	15	73	
Total for	1 m2							0	1,300	50,700	
Unit Cost for	1 m2							0	1,300	50,700	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-24 | Working Name: Wall Masonry of Concrete Block, 1cement : 5sand | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	IF/C	L/C	Cost PF/C	IF/C	L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.048	0	0	48800	0	0	2,342	
	L-2-27	Chief of Mason	day	0.016	0	0	58600	0	0	938	
	L-2-11	Mason	day	0.16	0	0	39000	0	0	6,240	
	L-2-23	Common Labour	day	0.48	0	0	35100	0	0	16,848	
Material											
	M-C-43	Concrete Hollow Block : 40 x 2	pcs	13	0	270	630	0	3,510	8,190	
	M-C-1	Portland Cement	kg	6.5	0	100	400	0	650	2,600	
	M-B-3	Sand for Mortar (Masonry)	m3	0.022	0	2250	42750	0	50	941	
	M-E-1	Reinforcing Bar, Round U-30	kg	0.6	0	2500	2500	0	1,500	1,500	
Others		Miscellaneous	L.S.					0	91	2	
Total for	1 m2							0	5,800	39,600	
Unit Cost for	1 m2							0	5,800	39,600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (7/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-25	Tile Floor Work of 20cm x 20cm, 1lime : 3sand	1 m2	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.012	0	0	48800	0	0	586	
	L-2-27	Chief of Mason	day	0.008	0	0	58600	0	0	469	
	L-2-11	Mason	day	0.08	0	0	39000	0	0	3,120	
	L-2-23	Common Labour	day	0.24	0	0	35100	0	0	8,424	
Material											
	M-K-4	Color Floor Tile 20x20	m2	1	0	1300	11700	0	1,300	11,700	
	M-C-58	Lime	m3	0.003	0	11500	103500	0	35	311	
	M-B-3	Sand for Mortar (Masonry)	m3	0.028	0	2250	42750	0	63	1,197	
Others		Miscellaneous	L.S.					0	3	94	
Total for		1 m2						0	1,400	25,900	
Unit Cost for		1 m2						0	1,400	25,900	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-26	Tile Floor Work of 20cm x 20cm, 1cement : 1/2lime : 5sand	1 m2	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.012	0	0	48800	0	0	586	
	L-2-27	Chief of Mason	day	0.008	0	0	58600	0	0	469	
	L-2-11	Mason	day	0.08	0	0	39000	0	0	3,120	
	L-2-23	Common Labour	day	0.24	0	0	35100	0	0	8,424	
Material											
	M-K-4	#REF!	#REF!	1	0	1300	11700	0	1,300	11,700	
	M-C-1	#REF!	#REF!	7.72	0	100	400	0	772	3,088	
	M-C-58	#REF!	#REF!	0.003	0	11500	103500	0	35	311	
	M-B-3	#REF!	#REF!	0.029	0	2250	42750	0	65	1,240	
Others		Miscellaneous	L.S.					0	28	63	
Total for		1 m2						0	2,200	29,000	
Unit Cost for		1 m2						0	2,200	29,000	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-27	Plint Tile Work, 15cm x 20cm or 10cm x 20cm 1cement : 2sand	1 m	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.012	0	0	48800	0	0	586	
	L-2-27	Chief of Mason	day	0.008	0	0	58600	0	0	469	
	L-2-11	Mason	day	0.08	0	0	39000	0	0	3,120	
	L-2-23	Common Labour	day	0.24	0	0	35100	0	0	8,424	
Material											
	M-K-5	Color Floor Tile 15x20	m2	5	0	1250	11250	0	6,250	56,250	
	M-C-1	Portland Cement	kg	10	0	100	400	0	1,000	4,000	
	M-B-3	Sand for Mortar (Masonry)	m3	0.017	0	2250	42750	0	38	727	
Others		Miscellaneous	L.S.					0	12	25	
Total for		1 m						0	7,300	73,600	
Unit Cost for		1 m						0	7,300	73,600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-28	PVC pipe Installation with Dia.0.75", 1m length	1 piece	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-27	Chief of Mason	day	0.02	0	0	58600	0	0	1,172	
	L-2-11	Mason	day	0.175	0	0	39000	0	0	6,825	
	L-2-1	Foreman	day	0.3	0	0	48800	0	0	14,640	
	L-2-23	Common Labour	day	0.3	0	0	35100	0	0	10,530	
Material											
	M-G-2	PVC Pipe, Dia. 19.05mm(3/4")	bar	0.167	0	4350	10150	0		1,695	
Others		Miscellaneous	L.S.					0	0	1,838	Small Tool 5% of Direct Cost
Total for		1 piece						0	0	36,700	
Unit Cost for		1 piece						0	0	36,700	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (8/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-29 | Working Name: PVC pipe Installation with Dia.1", 1m length | Calculation Quantity: 1 piece | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-27	Chief of Mason	day	0.02	0	0	58600	0	0	1,172	
	L-2-11	Mason	day	0.15	0	0	39000	0	0	5,850	
	L-2-23	Common Labour	day	0.85	0	0	35100	0	0	29,835	
	L-2-1	Foreman	day	0.25	0	0	48800	0	0	12,200	
Material											
	M-G-3	PVC Pipe, Dia. 25.4mm(1")	bar	0.167	0	6000	14000	0		2,338	
Others											
		Miscellaneous	L.S.					0	0	2,605	Small Tool 5% of Direct Cost
Total for		1 piece						0	0	54,000	
Unit Cost for		1 piece						0	0	54,000	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-30 | Working Name: Cutting Earth for Installation of PVC, ACP and GIP | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
			day		0	0	0	0	0	0	
			day		0	0	0	0	0	0	
			day		0	0	0	0	0	0	
			day		0	0	0	0	0	0	
Material											
				0.312	0	0	0	0	0	0	
				0.32	0	0	0	0	0	0	
					0	0	0	0	0	0	
Others											
		Miscellaneous	L.S.					0	0	0	
Total for		1 m2						0	0	0	
Unit Cost for		1 m2						0	0	0	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-31 | Working Name: Filling Sand for Installation of PVC, ACP and GIP | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
			day		0	0	0	0	0	0	
			day		0	0	0	0	0	0	
			day		0	0	0	0	0	0	
			day		0	0	0	0	0	0	
Material											
				0.07	0	0	0	0	0	0	
				0.08	0	0	0	0	0	0	
Others											
		Miscellaneous	L.S.					0	0	0	
Total for		1 m2						0	0	0	
Unit Cost for		1 m2						0	0	0	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (9/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No.	Working Name							Calculation Quantity			Remarks
CW-2-32	Concrete Work with 1cement : 3/2sand : 5/2lime							1	m3		
					Unit Cost			Cost			Remarks
Major Item	ID No.	Description	Unit	Quantity	PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.3	0	0	48800	0	0	14,640	
	L-2-28	Chief of Concrete Worker	day	0.1	0	0	58600	0	0	5,860	
	L-2-17	Concrete Worker	day	1	0	0	39000	0	0	39,000	
	L-2-23	Common Labour	day	6	0	0	35100	0	0	210,600	
Material											
	M-C-1	Portland Cement	kg	443.2	0	100	400	0	44,320	177,280	
	M-B-2	Coarse Aggregate	m3	0.82	0	2600	49400	0	2,132	40,508	
	M-B-14	Sand for Concrete	m3	0.49	0	2050	38950	0	1,005	19,086	
Others											
		Miscellaneous	L.S.					0	43	27	
Total for		1 m3						0	47,500	507,000	
Unit Cost for		1 m3						0	47,500	507,000	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name							Calculation Quantity			Remarks
CW-2-33	Concrete Work with 1cement : 2sand : 4gravel							1	m3		
					Unit Cost			Cost			Remarks
Major Item	ID No.	Description	Unit	Quantity	PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.3	0	0	48800	0	0	14,640	
	L-2-28	Chief of Concrete Worker	day	0.1	0	0	58600	0	0	5,860	
	L-2-17	Concrete Worker	day	1	0	0	39000	0	0	39,000	
	L-2-23	Common Labour	day	6	0	0	35100	0	0	210,600	
Material											
	M-C-1	Portland Cement	kg	324.8	0	100	400	0	32,480	129,920	
	M-B-2	Coarse Aggregate	m3	0.96	0	2600	49400	0	2,496	47,424	
	M-B-14	Sand for Concrete	m3	0.49	0	2050	38950	0	1,005	19,086	
Others											
		Miscellaneous	L.S.					0	20	71	
Total for		1 m3						0	36,000	466,600	
Unit Cost for		1 m3						0	36,000	466,600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name							Calculation Quantity			Remarks
CW-2-34	Concrete Work with 1cement : 2sand : 3gravel							1	m3		
					Unit Cost			Cost			Remarks
Major Item	ID No.	Description	Unit	Quantity	PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.3	0	0	48800	0	0	14,640	
	L-2-28	Chief of Concrete Worker	day	0.1	0	0	58600	0	0	5,860	
	L-2-17	Concrete Worker	day	1	0	0	39000	0	0	39,000	
	L-2-23	Common Labour	day	6	0	0	35100	0	0	210,600	
Material											
	M-C-1	Portland Cement	kg	340	0	100	400	0	34,000	136,000	
	M-B-2	Coarse Aggregate	m3	0.82	0	2600	49400	0	2,132	40,508	
	M-B-14	Sand for Concrete	m3	0.54	0	2050	38950	0	1,107	21,033	
Others											
		Miscellaneous	L.S.					0	61	59	
Total for		1 m3						0	37,300	467,700	
Unit Cost for		1 m3						0	37,300	467,700	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name							Calculation Quantity			Remarks
CW-2-35	Concrete Work with 1cement : 3sand : 6gravel							1	m3		
					Unit Cost			Cost			Remarks
Major Item	ID No.	Description	Unit	Quantity	PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.3	0	0	48800	0	0	14,640	
	L-2-28	Chief of Concrete Worker	day	0.05	0	0	58600	0	0	2,930	
	L-2-17	Concrete Worker	day	0.5	0	0	39000	0	0	19,500	
	L-2-23	Common Labour	day	6	0	0	35100	0	0	210,600	
Material											
	M-C-1	Portland Cement	kg	230.4	0	100	400	0	23,040	92,160	
	M-B-2	Coarse Aggregate	m3	1	0	2600	49400	0	2,600	49,400	
	M-B-14	Sand for Concrete	m3	0.5	0	2050	38950	0	1,025	19,475	
Others											
		Miscellaneous	L.S.					0	35	95	
Total for		1 m3						0	26,700	408,800	
Unit Cost for		1 m3						0	26,700	408,800	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (10/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-36 | Working Name: Reinforcing-Bar Work | Calculation Quantity: 100 kg | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-29	Chief of Steel Worker	day	3	0	0	58600	0	0	175,800	
	L-2-16	Steel Worker	day	9	0	0	39000	0	0	351,000	
	L-2-23	Common Labour	day	9	0	0	35100	0	0	315,900	
Material											
	M-E-2	Reinforcing Bar, Deformed U-1	kg	125	0	3000	3000	0	375,000	375,000	
	M-E-64	Steel Wire	kg	2	0	2400	5600	0	4,800	11,200	
				0.5	0	0	0	0	0	0	
Others											
		Revision to 100kg						0	-45,576	-147,468	100/125x10%
		Miscellaneous	L.S.					0	76	68	
Total for	100 kg							0	334,300	1,081,500	
Unit Cost for	1 kg							0	3,343	10,815	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-37 | Working Name: Steel-net with Dia.4-15" | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
			day		0	0	0	0	0	0	
			day		0	0	0	0	0	0	
			day		0	0	0	0	0	0	
Material											
	M-E-65	Steel Net	kg	1.4	0	510	1190	0	714	1,666	
				4	0	0	0	0	0	0	
Others											
		Miscellaneous	L.S.					0	86	34	
Total for	1 m2							0	800	1,700	
Unit Cost for	1 m2							0	800	1,700	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-38 | Working Name: Form Work for 1m3 of Concrete | Calculation Quantity: 1 m3 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.1	0	0	48800	0	0	4,880	
	L-2-26	Chief of Carpenter	day	0.5	0	0	58600	0	0	29,300	
	L-2-18	Form Worker	day	5	0	0	39000	0	0	195,000	
	L-2-23	Common Labour	day	2	0	0	35100	0	0	70,200	
Material											
	M-D-18	Plank Wood third class(Borneo)	m3	0.4	0	0	1250000	0	0	500,000	
	M-E-48	Nails for Wood	kg	4	0	2400	5600	0	9,600	22,400	
Others											
		Miscellaneous	L.S.					0	0	20	
Total for	1 m3							0	9,600	821,800	
Unit Cost for	1 m3							0	9,600	821,800	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-39 | Working Name: Form Work for Drainage Channel | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
			day		0	0	0	0	0	0	
Material											
					0	0	0	0	0	0	
Others											
		Material from CW-2-38	L.S.	0.1	0	2400	1255600	0	240	125,560	
		Labor from CW-2-38	L.S.	0.1	0	0	181500	0	0	18,150	
		Miscellaneous	L.S.					0	60	90	
Total for	1 m2							0	300	143,800	
Unit Cost for	1 m2							0	300	143,800	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (11/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-40 | Working Name: Breaking-up the Concrete Form | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour			day		0	0	0	0	0	0	
Material					0	0	0	0	0	0	
Others											
		Labor from CW-2-38	L.S.	0.02	0	0	181500	0	0	3,630	
		Miscellaneous	L.S.					0	0	70	
Total for	1 m2							0	0	3,700	
Unit Cost for	1 m2							0	0	3,700	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-41 | Working Name: Reinforced Concrete with 1cement : 3/2sand : 5/2gravel/aggregate | Calculation Quantity: 1 m3 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour			day		0	0	0	0	0	0	
Material					0	0	0	0	0	0	
Others											
		Concrete Work with 1cement :									
	CW-2-32	3/2sand : 5/2lime	m3	1	0	47500	507000	0	47,500	507,000	
	CW-2-36	Reinforcing-Bar Work	kg	110	0	3343	10815	0	367,730	1,189,650	
		Form Work for 1m3 of									
	CW-2-38	Concrete	m3	1	0	9600	821800	0	9,600	821,800	
		Miscellaneous	L.S.					0	70	50	
Total for	1 m3							0	424,900	2,518,500	
Unit Cost for	1 m3							0	424,900	2,518,500	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-42 | Working Name: Reinforced Concrete with 1cement : 2sand : 4gravel/aggregate | Calculation Quantity: 1 m3 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour			day		0	0	0	0	0	0	
Material					0	0	0	0	0	0	
Others											
		Concrete Work with 1cement :									
	CW-2-33	2sand : 4gravel	m3	1	0	36000	466600	0	36,000	466,600	
	CW-2-36	Reinforcing-Bar Work	kg	125	0	3343	10815	0	417,875	1,351,875	
		Form Work for 1m3 of									
	CW-2-38	Concrete	m3	1	0	9600	821800	0	9,600	821,800	
		Miscellaneous	L.S.					0	25	25	
Total for	1 m3							0	463,500	2,640,300	
Unit Cost for	1 m3							0	463,500	2,640,300	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-43 | Working Name: Reinforced Concrete with 1cement : 2sand : 3gravel/aggregate | Calculation Quantity: 1 m3 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour			day		0	0	0	0	0	0	
Material					0	0	0	0	0	0	
Others											
		Concrete Work with 1cement :									
	CW-2-34	2sand : 3gravel	m3	1	0	37300	467700	0	37,300	467,700	
	CW-2-36	Reinforcing-Bar Work	kg	110	0	3343	10815	0	367,730	1,189,650	
		Form Work for 1m3 of									
	CW-2-38	Concrete	m3	1	0	9600	821800	0	9,600	821,800	
		Miscellaneous	L.S.					0	70	50	
Total for	1 m3							0	414,700	2,479,200	
Unit Cost for	1 m3							0	414,700	2,479,200	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (12/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No.	Working Name	Calculation Quantity		Remarks
CW-2-44	Plastering 15mm thickness with 1cement : 2sand	1	m2	SK-SNI T-03-1991-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.008	0	0	48800	0	0	390	
	L-2-31	Chief of Plasterer	day	0.004	0	0	58600	0	0	234	
	L-2-21	Plasterer	day	0.04	0	0	39000	0	0	1,560	
	L-2-23	Common Labour	day	0.08	0	0	35100	0	0	2,808	
Material											
	M-C-1	Portland Cement	kg	10.65	0	100	400	0	1,065	4,260	
	M-B-3	Sand for Mortar (Masonry)	m3	0.017	0	2250	42750	0	38	727	
Others		Miscellaneous	L.S.					0	97	20	
Total for		1 m2						0	1,200	10,000	
Unit Cost for		1 m2						0	1,200	10,000	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity		Remarks
CW-2-45	Plastering 15mm thickness with 1cement : 3sand	1	m2	SK-SNI T-03-1991-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.008	0	0	48800	0	0	390	
	L-2-31	Chief of Plasterer	day	0.004	0	0	58600	0	0	234	
	L-2-21	Plasterer	day	0.04	0	0	39000	0	0	1,560	
	L-2-23	Common Labour	day	0.08	0	0	35100	0	0	2,808	
Material											
	M-C-1	Portland Cement	kg	8.1	0	100	400	0	810	3,240	
	M-B-3	Sand for Mortar (Masonry)	m3	0.019	0	2250	42750	0	43	812	
Others		Miscellaneous	L.S.					0	47	55	
Total for		1 m2						0	900	9,100	
Unit Cost for		1 m2						0	900	9,100	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity		Remarks
CW-2-46	Plastering 15mm thickness with 1cement : 4sand	1	m2	SK-SNI T-03-1991-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.008	0	0	48800	0	0	390	
	L-2-31	Chief of Plasterer	day	0.004	0	0	58600	0	0	234	
	L-2-21	Plasterer	day	0.04	0	0	39000	0	0	1,560	
	L-2-23	Common Labour	day	0.08	0	0	35100	0	0	2,808	
Material											
	M-C-1	Portland Cement	kg	6.8	0	100	400	0	680	2,720	
	M-B-3	Sand for Mortar (Masonry)	m3	0.02	0	2250	42750	0	45	855	
Others		Miscellaneous	L.S.					0	75	32	
Total for		1 m2						0	800	8,600	
Unit Cost for		1 m2						0	800	8,600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity		Remarks
CW-2-47	Plastering 15mm thickness with 1cement : 6sand	1	m2	SK-SNI T-03-1991-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.008	0	0	48800	0	0	390	
	L-2-31	Chief of Plasterer	day	0.004	0	0	58600	0	0	234	
	L-2-21	Plasterer	day	0.04	0	0	39000	0	0	1,560	
	L-2-23	Common Labour	day	0.08	0	0	35100	0	0	2,808	
Material											
	M-C-1	Portland Cement	kg	4.6	0	100	400	0	460	1,840	
	M-B-3	Sand for Mortar (Masonry)	m3	0.023	0	2250	42750	0	52	983	
Others		Miscellaneous	L.S.					0	88	84	
Total for		1 m2						0	600	7,900	
Unit Cost for		1 m2						0	600	7,900	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (13/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-48 | Working Name: Plastering 15mm thickness with 1cement : 3lime : 10sand | Calculation Quantity: 1 m2 | Remarks: SK-SNI T-03-1991-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.008	0	0	48800	0	0	390	
	L-2-31	Chief of Plasterer	day	0.004	0	0	58600	0	0	234	
	L-2-21	Plasterer	day	0.04	0	0	39000	0	0	1,560	
	L-2-23	Common Labour	day	0.08	0	0	35100	0	0	2,808	
Material											
	M-C-1	Portland Cement	kg	2.3	0	100	400	0	230	920	
	M-C-58	Lime	m3	0.006	0	11500	103500	0	69	621	
	M-B-3	Sand for Mortar (Masonry)	m3	0.014	0	2250	42750	0	32	599	
Others		Miscellaneous	L.S.					0	70	68	
Total for		1 m2						0	400	7,200	
Unit Cost for		1 m2						0	400	7,200	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-49 | Working Name: Plastering 20mm thickness with 1cement : 2sand | Calculation Quantity: 1 m2 | Remarks: SK-SNI T-03-1991-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.012	0	0	48800	0	0	586	
	L-2-31	Chief of Plasterer	day	0.002	0	0	58600	0	0	117	
	L-2-21	Plasterer	day	0.02	0	0	39000	0	0	780	
	L-2-23	Common Labour	day	0.12	0	0	35100	0	0	4,212	
Material											
	M-C-1	Portland Cement	kg	17.85	0	100	400	0	1,785	7,140	
	M-B-3	Sand for Mortar (Masonry)	m3	0.023	0	2250	42750	0	52	983	
Others		Miscellaneous	L.S.					0	63	82	
Total for		1 m2						0	1,900	13,900	
Unit Cost for		1 m2						0	1,900	13,900	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-50 | Working Name: Plastering 20mm thickness with 1cement : 3sand | Calculation Quantity: 1 m2 | Remarks: SK-SNI T-03-1991-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.012	0	0	48800	0	0	586	
	L-2-31	Chief of Plasterer	day	0.002	0	0	58600	0	0	117	
	L-2-21	Plasterer	day	0.02	0	0	39000	0	0	780	
	L-2-23	Common Labour	day	0.12	0	0	35100	0	0	4,212	
Material											
	M-C-1	Portland Cement	kg	13.5	0	100	400	0	1,350	5,400	
	M-B-3	Sand for Mortar (Masonry)	m3	0.026	0	2250	42750	0	59	1,112	
Others		Miscellaneous	L.S.					0	92	94	
Total for		1 m2						0	1,500	12,300	
Unit Cost for		1 m2						0	1,500	12,300	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-51 | Working Name: Plastering 28mm thickness with 1cement : 4sand per | Calculation Quantity: 1 m2 | Remarks: SK-SNI T-03-1991-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost F/C	Unit Cost	Unit Cost L/C	Cost F/C	Cost	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.012	0	0	48800	0	0	586	
	L-2-31	Chief of Plasterer	day	0.002	0	0	58600	0	0	117	
	L-2-21	Plasterer	day	0.02	0	0	39000	0	0	780	
	L-2-23	Common Labour	day	0.12	0	0	35100	0	0	4,212	
Material											
	M-C-1	Portland Cement	kg	10.85	0	100	400	0	1,085	4,340	
	M-B-3	Sand for Mortar (Masonry)	m3	0.028	0	2250	42750	0	63	1,197	
Others		Miscellaneous	L.S.					0	52	68	
Total for		1 m2						0	1,200	11,300	
Unit Cost for		1 m2						0	1,200	11,300	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (14/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-52 | Working Name: Plastering 28mm thickness with 1cement : 6sand | Calculation Quantity: 1 m2 | Remarks: SK-SNI T-03-1991-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.012	0	0	48800	0	0	586	
	L-2-31	Chief of Plasterer	day	0.002	0	0	58600	0	0	117	
	L-2-21	Plasterer	day	0.02	0	0	39000	0	0	780	
	L-2-23	Common Labour	day	0.12	0	0	35100	0	0	4,212	
Material											
	M-C-1	Portland Cement	kg	7.8	0	100	400	0	780	3,120	
	M-B-3	Sand for Mortar (Masonry)	m3	0.03	0	2250	42750	0	68	1,283	
Others		Miscellaneous	L.S.					0	53	3	
Total for	1 m2							0	900	10,100	
Unit Cost for	1 m2							0	900	10,100	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-53 | Working Name: Seam Work at Brick Masonry with 1cement : 3sand per 1m | Calculation Quantity: 1 m2 | Remarks: SK-SNI T-03-1991-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.019	0	0	48800	0	0	927	
	L-2-31	Chief of Plasterer	day	0.012	0	0	58600	0	0	703	
	L-2-21	Plasterer	day	0.12	0	0	39000	0	0	4,680	
	L-2-23	Common Labour	day	0.36	0	0	35100	0	0	12,636	
Material											
	M-C-1	Portland Cement	kg	4.88	0	100	400	0	488	1,952	
	M-B-3	Sand for Mortar (Masonry)	m3	0.011	0	2250	42750	0	25	470	
Others		Miscellaneous	L.S.					0	87	31	
Total for	1 m2							0	600	21,400	
Unit Cost for	1 m2							0	600	21,400	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (15/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-54	Roof Trust/Trestle with Max Span of 8m	1 m3	SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.3	0	0	48800	0	0	14,640	
	L-2-26	Chief of Carpenter	day	1.9	0	0	58600	0	0	111,340	
	L-2-12	Carpenter	day	19	0	0	39000	0	0	741,000	
	L-2-23	Common Labour	day	6	0	0	35100	0	0	210,600	
Material											
	M-D-14	Plank Wood first class(Teak/Ulin)	m3	1.1	0	0	7500000	0	0	8,250,000	
	M-E-48	Nails for Wood	kg	3	0	2400	5600	0	7,200	16,800	
	M-E-4	Structural Steel(Purchasing), SS41	kg	15	5225	0	275	78,375	0	4,125	
Others											
		Miscellaneous	L.S.					25	0	95	
Total for		1 m3						78,400	7,200	9,348,600	
Unit Cost for		1 m3						78,400	7,200	9,348,600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-55	Roof Trust/Trestle with Max Span of 6m	1 m3	SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.3	0	0	48800	0	0	14,640	
	L-2-26	Chief of Carpenter	day	1.9	0	0	58600	0	0	111,340	
	L-2-12	Carpenter	day	19	0	0	39000	0	0	741,000	
	L-2-23	Common Labour	day	6	0	0	35100	0	0	210,600	
Material											
	M-D-16	Plank Wood second class(Camphol)	m3	1.1	0	0	1900000	0	0	2,090,000	
	M-E-48	Nails for Wood	kg	3	0	2400	5600	0	7,200	16,800	
	M-E-4	Structural Steel(Purchasing), SS41	kg	15	5225	0	275	78,375	0	4,125	
Others											
		Miscellaneous	L.S.					25	0	95	
Total for		1 m3						78,400	7,200	3,188,600	
Unit Cost for		1 m3						78,400	7,200	3,188,600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-56	Roof Trust/Trestle with Max Span of 6-9m	1 m3	SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.4	0	0	48800	0	0	19,520	
	L-2-26	Chief of Carpenter	day	2.5	0	0	58600	0	0	146,500	
	L-2-12	Carpenter	day	24	0	0	39000	0	0	936,000	
	L-2-23	Common Labour	day	8	0	0	35100	0	0	280,800	
Material											
	M-D-14	Plank Wood first class(Teak/Ulin)	m3	1.1	0	0	7500000	0	0	8,250,000	
	M-E-48	Nails for Wood	kg	3	0	2400	5600	0	7,200	16,800	
	M-E-4	Structural Steel(Purchasing), SS41	kg	15	5225	0	275	78,375	0	4,125	
Others											
		Miscellaneous	L.S.					25	0	55	
Total for		1 m3						78,400	7,200	9,653,800	
Unit Cost for		1 m3						78,400	7,200	9,653,800	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-57	Roof Trust/Trestle with Max Span of 6-9m	1 m3	SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.34	0	0	48800	0	0	16,592	
	L-2-26	Chief of Carpenter	day	2	0	0	58600	0	0	117,200	
	L-2-12	Carpenter	day	20	0	0	39000	0	0	780,000	
	L-2-23	Common Labour	day	6.7	0	0	35100	0	0	235,170	
Material											
	M-D-16	Plank Wood second class(Camphol)	m3	1.1	0	0	1900000	0	0	2,090,000	
	M-E-48	Nails for Wood	kg	3	0	2400	5600	0	7,200	16,800	
	M-E-4	Structural Steel(Purchasing), SS41	kg	15	5225	0	275	78,375	0	4,125	
Others											
		Miscellaneous	L.S.					25	0	13	
Total for		1 m3						78,400	7,200	3,259,900	
Unit Cost for		1 m3						78,400	7,200	3,259,900	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (16/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-58 | Working Name: Teak Wood Purlin Installation | Calculation Quantity: 1 m3 | Remarks: SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost F/C		Unit Cost L/C	Cost F/C		Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.12	0	0	48800	0	0	5,856	
	L-2-26	Chief of Carpenter	day	0.7	0	0	58600	0	0	41,020	
	L-2-12	Carpenter	day	7	0	0	39000	0	0	273,000	
	L-2-23	Common Labour	day	2.4	0	0	35100	0	0	84,240	
Material											
	M-D-14	Plank Wood first class(Teak/Ulin)	m3	1.1	0	0	7500000	0	0	8,250,000	
	M-E-48	Nails for Wood	kg	2.2	0	2400	5600	0	5,280	12,320	
Others		Miscellaneous	L.S.					0	20	64	
Total for		1 m3						0	5,300	8,666,500	
Unit Cost for		1 m3						0	5,300	8,666,500	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-59 | Working Name: Kamper Wood Purlin Installation | Calculation Quantity: 1 m3 | Remarks: SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	IF/C	L/C	Cost PF/C	IF/C	L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.097	0	0	48800	0	0	4,734	
	L-2-26	Chief of Carpenter	day	0.58	0	0	58600	0	0	33,988	
	L-2-12	Carpenter	day	5.8	0	0	39000	0	0	226,200	
	L-2-23	Common Labour	day	1.94	0	0	35100	0	0	68,094	
Material											
	M-D-16	#REF!	#REF!	1.1	0	0	1900000	0	0	2,090,000	
	M-E-48	#REF!	#REF!	2.2	0	2400	5600	0	5,280	12,320	
Others		Miscellaneous	L.S.					0	20	64	
Total for		1 m3						0	5,300	2,435,400	
Unit Cost for		1 m3						0	5,300	2,435,400	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-60 | Working Name: Roof Trust for Iron Roof | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	IF/C	L/C	Cost PF/C	IF/C	L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.0075	0	0	48800	0	0	366	
	L-2-26	Chief of Carpenter	day	0.01	0	0	58600	0	0	586	
	L-2-12	Carpenter	day	0.1	0	0	39000	0	0	3,900	
	L-2-23	Common Labour	day	0.15	0	0	35100	0	0	5,265	
Material											
	M-D-14	Plank Wood first class(Teak/Ulin)	m3	0.011	0	0	7500000	0	0	82,500	
	M-E-48	Nails for Wood	kg	0.1	0	2400	5600	0	240	560	
Others		Miscellaneous	L.S.					0	60	23	
Total for		1 m2						0	300	93,200	
Unit Cost for		1 m2						0	300	93,200	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-61 | Working Name: Roof Frame 5/7 & Roof-lath 2/8 | Calculation Quantity: 1 m2 | Remarks: SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	IF/C	L/C	Cost PF/C	IF/C	L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.005	0	0	48800	0	0	244	
	L-2-26	Chief of Carpenter	day	0.01	0	0	58600	0	0	586	
	L-2-12	Carpenter	day	0.1	0	0	39000	0	0	3,900	
	L-2-23	Common Labour	day	0.1	0	0	35100	0	0	3,510	
Material											
	M-D-16	Plank Wood second class(Camphol)	m3	0.015	0	0	1900000	0	0	28,500	
	M-E-48	Nails for Wood	kg	0.15	0	2400	5600	0	360	840	
Others		Miscellaneous	L.S.					0	40	20	
Total for		1 m2						0	400	37,600	
Unit Cost for		1 m2						0	400	37,600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (17/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-62 | Working Name: Roof Frame 5/7 & Roof-lath 3/4 | Calculation Quantity: 1 m2 | Remarks: SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.005	0	0	48800	0	0	244	
	L-2-26	Chief of Carpenter	day	0.01	0	0	58600	0	0	586	
	L-2-12	Carpenter	day	0.1	0	0	39000	0	0	3,900	
	L-2-23	Common Labour	day	0.1	0	0	35100	0	0	3,510	
Material											
	M-D-16	Plank Wood second class(Camphol)	m3	0.024	0	0	1900000	0	0	45,600	
	M-E-48	Nails for Wood	kg	0.25	0	2400	5600	0	600	1,400	
Others											
		Miscellaneous	L.S.					0	0	60	
Total for	1 m2							0	600	55,300	
Unit Cost for	1 m2							0	600	55,300	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-63 | Working Name: Roof Frame 5/7 & Roof-lath 3/4, Concrete Tile Roof | Calculation Quantity: 1 m2 | Remarks: SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.005	0	0	48800	0	0	244	
	L-2-26	Chief of Carpenter	day	0.01	0	0	58600	0	0	586	
	L-2-12	Carpenter	day	0.1	0	0	39000	0	0	3,900	
	L-2-23	Common Labour	day	0.1	0	0	35100	0	0	3,510	
Material											
	M-D-16	Plank Wood second class(Camphol)	m3	0.017	0	0	1900000	0	0	32,300	
	M-E-48	Nails for Wood	kg	0.15	0	2400	5600	0	360	840	
Others											
		Miscellaneous	L.S.					0	40	20	
Total for	1 m2							0	400	41,400	
Unit Cost for	1 m2							0	400	41,400	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-64 | Working Name: Ridge and Hip Covering with 1cement : 1sand :5lime | Calculation Quantity: 1 m | Remarks:

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.02	0	0	48800	0	0	976	
	L-2-26	Chief of Carpenter	day	0.02	0	0	58600	0	0	1,172	
	L-2-12	Carpenter	day	0.2	0	0	39000	0	0	7,800	
	L-2-23	Common Labour	day	0.4	0	0	35100	0	0	14,040	
Material											
	M-K-36	Ridge for Roof	pieces	5	0	120	280	0	600	1,400	
	M-C-1	Portland Cement	kg	9.2	0	100	400	0	920	3,680	
	M-C-58	Lime	m3	0.0278	0	11500	103500	0	320	2,877	
	M-B-3	Sand for Mortar (Masonry)	m3	0.139	0	2250	42750	0	313	5,942	
Others											
		Miscellaneous	L.S.					0	48	12	
Total for	1 m							0	2,200	37,900	
Unit Cost for	1 m							0	2,200	37,900	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-65 | Working Name: Door/Window Work of Teak Wood | Calculation Quantity: 1 m3 | Remarks: SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.46	0	0	48800	0	0	22,448	
	L-2-26	Chief of Carpenter	day	3.1	0	0	58600	0	0	181,660	
	L-2-12	Carpenter	day	31	0	0	39000	0	0	1,209,000	
	L-2-23	Common Labour	day	9.3	0	0	35100	0	0	326,430	
Material											
	M-D-14	Plank Wood first class(Teak/Ulin)	m3	1.1	0	0	7500000	0	0	8,250,000	
	M-E-48	Nails for Wood	kg	3	0	2400	5600	0	7,200	16,800	
	M-E-51	Anchor	pcs	56	0	2100	4900	0	117,600	274,400	
Others											
		Miscellaneous	L.S.					0	0	62	
Total for	1 m3							0	124,800	10,280,800	
Unit Cost for	1 m3							0	124,800	10,280,800	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (18/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-66 | Working Name: Door/Window Work of Camphol Wood | Calculation Quantity: 1 m3 | Remarks: SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.36	0	0	48800	0	0	17,568	
	L-2-23	Common Labour	day	7.2	0	0	35100	0	0	252,720	
Material											
	M-D-16	Plank Wood second class(Camphol)	m3	1.1	0	0	1900000	0	0	2,090,000	
	M-E-48	Nails for Wood	kg	3	0	2400	5600	0	7,200	16,800	
	M-E-51	Anchor	pcs	56	0	2100	4900	0	117,600	274,400	
Others		Miscellaneous	L.S.					0	0	12	
Total for	1 m3							0	124,800	2,651,500	
Unit Cost for	1 m3							0	124,800	2,651,500	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-67 | Working Name: Door/Window Work (Covered by Three Plywood and Aluminium) | Calculation Quantity: 1 m2 | Remarks: SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.018	0	0	48800	0	0	878	
	L-2-26	Chief of Carpenter	day	0.1	0	0	58600	0	0	5,860	
	L-2-12	Carpenter	day	7.5	0	0	39000	0	0	292,500	
	L-2-23	Common Labour	day	0.35	0	0	35100	0	0	12,285	
Material											
	M-D-14	Plank Wood first class(Teak/Ulin)	m3	0.39	0	0	7500000	0	0	2,925,000	
	M-E-48	Nails for Wood	kg	0.1	0	2400	5600	0	240	560	
Others		Miscellaneous	L.S.					0	60	17	
Total for	1 m2							0	300	3,237,100	
Unit Cost for	1 m2							0	300	3,237,100	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-68 | Working Name: Venitian Blind Door/Window Work of Teak Wood | Calculation Quantity: 1 m2 | Remarks: SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.068	0	0	48800	0	0	3,318	
	L-2-26	Chief of Carpenter	day	0.4	0	0	58600	0	0	23,440	
	L-2-12	Carpenter	day	4	0	0	39000	0	0	156,000	
	L-2-23	Common Labour	day	1.35	0	0	35100	0	0	47,385	
Material											
	M-D-14	Plank Wood first class(Teak/Ulin)	m3	0.042	0	0	7500000	0	0	315,000	
	M-K-37	Glue for Wood	kg	0.2	0	2250	5250	0	450	1,050	
Others		Miscellaneous	L.S.					0	50	7	
Total for	1 m2							0	500	546,200	
Unit Cost for	1 m2							0	500	546,200	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-69 | Working Name: Venitian Blind Door/Window Work of Teak Wood | Calculation Quantity: 1 m2 | Remarks: SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.05	0	0	48800	0	0	2,440	
	L-2-26	Chief of Carpenter	day	0.3	0	0	58600	0	0	17,580	
	L-2-12	Carpenter	day	3	0	0	39000	0	0	117,000	
	L-2-23	Common Labour	day	1	0	0	35100	0	0	35,100	
Material											
	M-D-16	Plank Wood second class(Camphol)	m3	0.042	0	0	1900000	0	0	79,800	
	M-K-37	Glue for Wood	kg	0.2	0	2250	5250	0	450	1,050	
Others		Miscellaneous	L.S.					0	50	30	
Total for	1 m2							0	500	253,000	
Unit Cost for	1 m2							0	500	253,000	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (19/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No.	Working Name	Calculation Quantity		Remarks
CW-2-70	Door/Window Work of Plywood with Teak Wood as the Frame	1	m2	SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.03	0	0	48800	0	0	1,464	
	L-2-26	Chief of Carpenter	day	0.2	0	0	58600	0	0	11,720	
	L-2-12	Carpenter	day	2	0	0	39000	0	0	78,000	
	L-2-23	Common Labour	day	0.6	0	0	35100	0	0	21,060	
Material											
		Plank Wood first									
	M-D-14	class(Teak/Ulin)	m3	0.04	0	0	7500000	0	0	300,000	
	M-K-37	Glue for Wood	kg	0.3	0	2250	5250	0	675	1,575	
	M-E-48	Nails for Wood	kg	0.03	0	2400	5600	0	72	168	
	M-D-5	Plywood, 90x210 t=3mm	sheet	1	0	3400	30600	0	3,400	30,600	
Others											
		Miscellaneous	L.S.					0	53	13	
Total for	1 m2							0	4,200	444,600	
Unit Cost for	1 m2							0	4,200	444,600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity		Remarks
CW-2-71	Door/Window Work of Plywood with Camphol Wood as the Frame	1	m2	SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.024	0	0	48800	0	0	1,171	
	L-2-26	Chief of Carpenter	day	0.16	0	0	58600	0	0	9,376	
	L-2-12	Carpenter	day	1.6	0	0	39000	0	0	62,400	
	L-2-23	Common Labour	day	0.48	0	0	35100	0	0	16,848	
Material											
		Plank Wood second									
	M-D-16	class(Camphol)	m3	0.04	0	0	1900000	0	0	76,000	
	M-K-37	Glue for Wood	kg	0.3	0	2250	5250	0	675	1,575	
	M-E-48	Nails for Wood	kg	0.03	0	2400	5600	0	72	168	
	M-D-5	Plywood, 90x210 t=3mm	sheet	1	0	3400	30600	0	3,400	30,600	
Others											
		Miscellaneous	L.S.					0	53	62	
Total for	1 m2							0	4,200	198,200	
Unit Cost for	1 m2							0	4,200	198,200	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity		Remarks
CW-2-72	Glass Door/Window Work of Plywood with Teak Wood as the Frame	1	m2	SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.05	0	0	48800	0	0	2,440	
	L-2-26	Chief of Carpenter	day	0.27	0	0	58600	0	0	15,822	
	L-2-12	Carpenter	day	2.7	0	0	39000	0	0	105,300	
	L-2-23	Common Labour	day	1	0	0	35100	0	0	35,100	
Material											
		Plank Wood first									
	M-D-14	class(Teak/Ulin)	m3	0.3	0	0	7500000	0	0	2,250,000	
	M-K-38	Glass of 3mm thick	m2	0.75	0	8700	20300	0	6,525	15,225	
	M-E-48	Nails for Wood	kg	0.05	0	2400	5600	0	120	280	
Others											
		Miscellaneous	L.S.					0	55	33	
Total for	1 m2							0	6,700	2,424,200	
Unit Cost for	1 m2							0	6,700	2,424,200	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity		Remarks
CW-2-73	Clamp Door/Window Work, with Camphol Wood Framework	1	m2	SK-SNI T-11-1993-03

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.018	0	0	48800	0	0	878	
	L-2-26	Chief of Carpenter	day	0.1	0	0	58600	0	0	5,860	
	L-2-12	Carpenter	day	1	0	0	39000	0	0	39,000	
	L-2-23	Common Labour	day	0.35	0	0	35100	0	0	12,285	
Material											
		Plank Wood second									
	M-D-16	class(Camphol)	m3	0.038	0	0	1900000	0	0	72,200	
	M-E-48	Nails for Wood	kg	0.1	0	2400	5600	0	240	560	
Others											
		Miscellaneous	L.S.					0	60	17	
Total for	1 m2							0	300	130,800	
Unit Cost for	1 m2							0	300	130,800	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (20/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-74 | Working Name: Panel Door/Window Work, with Teak Wood Framework | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.005	0	0	48800	0	0	244	
	L-2-26	Chief of Carpenter	day	0.2	0	0	58600	0	0	11,720	
	L-2-12	Carpenter	day	2	0	0	39000	0	0	78,000	
	L-2-23	Common Labour	day	1	0	0	35100	0	0	35,100	
Material											
	M-D-14	Plank Wood first class(Teak/Ulin)	m3	0.044	0	0	7500000	0	0	330,000	
	M-E-48	Nails for Wood	kg	0.1	0	2400	5600	0	240	560	
Others		Miscellaneous	L.S.					0	60	76	
Total for		1 m2						0	300	455,700	
Unit Cost for		1 m2						0	300	455,700	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-75 | Working Name: Panel Door/Window Work, with Camphol Wood Framework | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.005	0	0	48800	0	0	244	
	L-2-26	Chief of Carpenter	day	0.2	0	0	58600	0	0	11,720	
	L-2-12	Carpenter	day	2	0	0	39000	0	0	78,000	
	L-2-23	Common Labour	day	1	0	0	35100	0	0	35,100	
Material											
	M-D-16	Plank Wood second class(Camphol)	m3	0.044	0	0	1900000	0	0	83,600	
	M-K-37	Glue for Wood	kg	0.1	0	2250	5250	0	225	525	
Others		Miscellaneous	L.S.					0	75	11	
Total for		1 m2						0	300	209,200	
Unit Cost for		1 m2						0	300	209,200	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-76 | Working Name: Ceiling Frame, Grid of 50cm x 100cm, with Camphol wood | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.11	0	0	48800	0	0	5,368	
	L-2-26	Chief of Carpenter	day	0.035	0	0	58600	0	0	2,051	
	L-2-12	Carpenter	day	0.35	0	0	39000	0	0	13,650	
	L-2-23	Common Labour	day	0.21	0	0	35100	0	0	7,371	
Material											
	M-D-16	Plank Wood second class(Camphol)	m3	0.027	0	0	1900000	0	0	51,300	
	M-E-48	Nails for Wood	kg	0.18	0	2400	5600	0	432	1,008	
Others		Miscellaneous	L.S.					0	68	52	
Total for		1 m2						0	500	80,800	
Unit Cost for		1 m2						0	500	80,800	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-77 | Working Name: Ceiling Frame, Grid of 30cm x 60cm, with Camphol wood | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.018	0	0	48800	0	0	878	
	L-2-26	Chief of Carpenter	day	0.05	0	0	58600	0	0	2,930	
	L-2-12	Carpenter	day	0.5	0	0	39000	0	0	19,500	
	L-2-23	Common Labour	day	0.35	0	0	35100	0	0	12,285	
Material											
	M-D-16	Plank Wood second class(Camphol)	m3	0.034	0	0	1900000	0	0	64,600	
	M-E-48	Nails for Wood	kg	0.23	0	2400	5600	0	552	1,288	
Others		Miscellaneous	L.S.					0	48	19	
Total for		1 m2						0	600	101,500	
Unit Cost for		1 m2						0	600	101,500	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (21/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-78 | Working Name: Ceiling Frame, Grid of 30cm x 30cm, with Camphol wood per | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.022	0	0	48800	0	0	1,074	
	L-2-26	Chief of Carpenter	day	0.06	0	0	58600	0	0	3,516	
	L-2-12	Carpenter	day	0.6	0	0	39000	0	0	23,400	
	L-2-23	Common Labour	day	0.43	0	0	35100	0	0	15,093	
Material											
	M-D-16	Plank Wood second class(Camphol)	m3	0.038	0	0	1900000	0	0	72,200	
	M-E-48	Nails for Wood	kg	0.28	0	2400	5600	0	672	1,568	
Others		Miscellaneous	L.S.					0	28	49	
Total for	1 m2							0	700	116,900	
Unit Cost for	1 m2							0	700	116,900	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-79 | Working Name: Plank Wood Work of 3cm x 20cm, with Teak wood | Calculation Quantity: 1 m | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.005	0	0	48800	0	0	244	
	L-2-26	Chief of Carpenter	day	0.02	0	0	58600	0	0	1,172	
	L-2-12	Carpenter	day	0.2	0	0	39000	0	0	7,800	
	L-2-23	Common Labour	day	0.1	0	0	35100	0	0	3,510	
Material											
	M-D-14	Plank Wood first class(Teak/Ulin)	m3	0.007	0	0	7500000	0	0	52,500	
	M-E-48	Nails for Wood	kg	0.05	0	2400	5600	0	120	280	
Others		Miscellaneous	L.S.					0	80	94	
Total for	1 m							0	200	65,600	
Unit Cost for	1 m							0	200	65,600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-80 | Working Name: Plank Wood Work of 3cm x 30cm, with Teak wood | Calculation Quantity: 1 m | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.007	0	0	48800	0	0	342	
	L-2-26	Chief of Carpenter	day	0.029	0	0	58600	0	0	1,699	
	L-2-12	Carpenter	day	0.285	0	0	39000	0	0	11,115	
	L-2-23	Common Labour	day	0.143	0	0	35100	0	0	5,019	
Material											
	M-D-14	Plank Wood first class(Teak/Ulin)	m3	0.01	0	0	7500000	0	0	75,000	
	M-E-48	Nails for Wood	kg	0.05	0	2400	5600	0	120	280	
Others		Miscellaneous	L.S.					0	80	45	
Total for	1 m							0	200	93,500	
Unit Cost for	1 m							0	200	93,500	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-81 | Working Name: Partition Wall Work of Teak wood, with Frame of Camphol Wood | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.01	0	0	48800	0	0	488	
	L-2-26	Chief of Carpenter	day	0.06	0	0	58600	0	0	3,516	
	L-2-12	Carpenter	day	0.6	0	0	39000	0	0	23,400	
	L-2-23	Common Labour	day	0.2	0	0	35100	0	0	7,020	
Material											
	M-D-16	Plank Wood second class(Camphol)	m3	0.019	0	0	1900000	0	0	36,100	
	M-K-37	Glue for Wood	kg	0.3	0	2250	5250	0	675	1,575	
	M-E-48	Nails for Wood	kg	0.1	0	2400	5600	0	240	560	
	M-D-5	Plywood, 90x210 t=3mm	sheet	1	0	3400	30600	0	3,400	30,600	
Others		Miscellaneous	L.S.					0	85	41	
Total for	1 m2							0	4,400	103,300	
Unit Cost for	1 m2							0	4,400	103,300	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-82 | Working Name: Installation of Metal Sheet Ridge Gutter | Calculation Quantity: 1 m | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.175	0	0	48800	0	0	8,540	
	L-2-29	Chief of Steel Worker	day	0.6	0	0	58600	0	0	35,160	
	L-2-16	Steel Worker	day	6	0	0	39000	0	0	234,000	
	L-2-23	Common Labour	day	3.5	0	0	35100	0	0	122,850	
Material											
	M-E-66	Iron Sheet BJLS 3.0	sheet	3.5	0	20300	8700	0	71,050	30,450	
	M-E-50	Stopper Nail	pcs	350	0	3	7	0	1,050	2,450	
Others											
		Miscellaneous	L.S.					0	0	50	
Total for	1 m							0	72,100	433,500	
Unit Cost for	1 m							0	72,100	433,500	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-83 | Working Name: Installation of Bag Gutter | Calculation Quantity: 1 m | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.25	0	0	48800	0	0	12,200	
	L-2-29	Chief of Steel Worker	day	0.8	0	0	58600	0	0	46,880	
	L-2-16	Steel Worker	day	8	0	0	39000	0	0	312,000	
	L-2-23	Common Labour	day	5	0	0	35100	0	0	175,500	
Material											
	M-E-66	#REF!	#REF!	5.5	0	20300	8700	0	111,650	47,850	
	M-E-50	#REF!	#REF!	500	0	3	7	0	1,500	3,500	
Others											
		Miscellaneous	L.S.					0	50	70	
Total for	1 m							0	113,200	598,000	
Unit Cost for	1 m							0	113,200	598,000	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-84 | Working Name: Corrugated Iron Roof BJLS 0.30 | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.005	0	0	48800	0	0	244	
	L-2-29	Chief of Steel Worker	day	0.02	0	0	58600	0	0	1,172	
	L-2-16	Steel Worker	day	0.2	0	0	39000	0	0	7,800	
	L-2-23	Common Labour	day	0.15	0	0	35100	0	0	5,265	
Material											
	M-E-67	Corrugated Iron Sheet	sheet	0.75	0	28700	12300	0	21,525	9,225	
	M-E-53	Screw Nail	pcs	4	0	150	350	0	600	1,400	
Others											
		Miscellaneous	L.S.					0	75	94	
Total for	1 m2							0	22,200	25,200	
Unit Cost for	1 m2							0	22,200	25,200	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (23/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No.	Working Name							Calculation Quantity			Remarks
CW-2-85	Eaves Gutter Installation							1	m2		
					Unit Cost			Cost			Remarks
Major Item	ID No.	Description	Unit	Quantity	PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.15	0	0	48800	0	0	7,320	
	L-2-29	Chief of Steel Worker	day	0.5	0	0	58600	0	0	29,300	
	L-2-16	Steel Worker	day	5	0	0	39000	0	0	195,000	
	L-2-23	Common Labour	day	3	0	0	35100	0	0	105,300	
Material											
	M-E-66	Iron Sheet BJLS 3.0	sheet	3	0	20300	8700	0	60,900	26,100	
	M-E-50	Stopper Nail	pcs	300	0	3	7	0	900	2,100	
Others											
		Miscellaneous	L.S.					0	0	80	
Total for	1 m2							0	61,800	365,200	
Unit Cost for	1 m2							0	61,800	365,200	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name							Calculation Quantity			Remarks
CW-2-86	Installation of Drainage Gutter							10	m2		
					Unit Cost			Cost			Remarks
Major Item	ID No.	Description	Unit	Quantity	PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.11	0	0	48800	0	0	5,368	
	L-2-29	Chief of Steel Worker	day	0.375	0	0	58600	0	0	21,975	
	L-2-16	Steel Worker	day	3.75	0	0	39000	0	0	146,250	
	L-2-23	Common Labour	day	2.25	0	0	35100	0	0	78,975	
Material											
	M-E-66	Iron Sheet BJLS 3.0	sheet	2.5	0	20300	8700	0	50,750	21,750	
	M-E-50	Stopper Nail	pcs	225	0	3	7	0	675	1,575	
Others											
		Miscellaneous	L.S.					0	75	7	
Total for	10 m2							0	51,500	275,900	
Unit Cost for	1 m2							0	5,150	27,590	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-87 | Working Name: Puttying, Foundation Paint | Calculation Quantity: 10 m2 | Remarks: (1 1/2 k2 + k30 + k28/m2)

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.025	0	0	48800	0	0	1,220	
	L-2-30	Chief of Painter	day	0.075	0	0	58600	0	0	4395	
	L-2-20	Painter	day	0.75	0	0	39000	0	0	29250	
	L-2-23	Common Labour	day	0.5	0	0	35100	0	0	17550	
Material											
	M-K-35	Antirust Primer paint	kg	2.25	0	3150	7350	0	7,088	16,538	
	M-K-34	Glaziers Putty for Wood	kg	0.8	0	3300	7700	0	2640	6160	
	M-K-39	Paint Oil	ltr	0.5	0	1200	2800	0	600	1400	
	M-K-42	Sand Paper	sheet	2	0	750	1750	0	1500	3500	
Others											
		Miscellaneous	L.S.					0	73	88	
Total for	10 m2							0	11,900	80,100	
Unit Cost for	1 m2							0	1190	8010	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-88 | Working Name: Two Times Shiny Painting | Calculation Quantity: 10 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.025	0	0	48800	0	0	1,220	
	L-2-30	Chief of Painter	day	0.07	0	0	58600	0	0	4102	
	L-2-20	Painter	day	0.7	0	0	39000	0	0	27300	
	L-2-23	Common Labour	day	0.5	0	0	35100	0	0	17550	
Material											
	M-K-40	Paint for Iron	kg	2.8	0	5700	13300	0	15,960	37,240	
	M-K-39	Paint Oil	ltr	0.5	0	1200	2800	0	600	1400	
	M-K-42	Sand Paper	sheet	1	0	750	1750	0	750	1750	
Others											
		Miscellaneous	L.S.					0	90	38	
Total for	10 m2							0	17,400	90,600	
Unit Cost for	1 m2							0	1740	9060	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-89 | Working Name: Polishing and 2times Shiny Painting | Calculation Quantity: 1 m2 | Remarks: (k28+k30/m2)

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour			day		0	0	0	0	0	0	
Material					0	0	0	0	0	0	
Others											
	CW-2-87	Puttying, Foundation Paint	m2	1	0	1190	8010	0	1,190	8,010	
	CW-2-88	Two Times Shiny Painting	m2	1	0	1740	9060	0	1,740	9,060	
	CW-2-88	Two Times Shiny Painting	m2	0.5	0	1740	9060	0	870	4,530	
		Miscellaneous	L.S.					0	0	0	
Total for	1 m2							0	3,800	21,600	
Unit Cost for	1 m2							0	3800	21600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-90 | Working Name: Simple Polishing Work per 1m2 | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-20	Painter	day	0.5	0	0	39000	0	0	19500	
Material											
	M-K-41	Polish	kg	0.0166	0	5040	11760	0	84	195	
	M-A-8	Metanole	ltr	0.07	0	700	2800	0	49	196	
	M-B-15	Pumicestone	kg	0.05	0	875	16625	0	43.75	831.25	
Others											
		Miscellaneous	L.S.					0	24	78	
Total for	1 m2							0	200	20,800	
Unit Cost for	1 m2							0	200	20800	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (25/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-91 | Working Name: Good Polishing Work2xk15 | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour			day		0	0	0	0	0	0	
Material					0	0	0	0	0	0	
Others	CW-2-90	Simple Polishing Work per	m2	2	0	200	20800	0	400	41,600	
		Miscellaneous	L.S.					0	0	0	
Total for	1 m2							0	400	41,600	
Unit Cost for	1 m2							0	400	41600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-92 | Working Name: Wall Painting Work | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.0125	0	0	48800	0	0	610	
	L-2-30	Chief of Painter	day	0.015	0	0	58600	0	0	879	
	L-2-20	Painter	day	0.15	0	0	39000	0	0	5850	
	L-2-23	Common Labour	day	0.25	0	0	35100	0	0	8775	
Material											
	M-K-30	Wall Paint	kg	0.25	0	3750	8750	0	938	2,188	
	M-K-32	Putty for Masonry Wall	kg	0.07	0	2250	5250	0	157.5	367.5	
	M-K-42	Sand Paper	sheet	0.05	0	750	1750	0	37.5	87.5	
Others											
		Miscellaneous	L.S.					0	68	44	
Total for	1 m2							0	1,200	18,800	
Unit Cost for	1 m2							0	1200	18800	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-93 | Working Name: Wall Painting Work per 10m2 | Calculation Quantity: 10 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.075	0	0	48800	0	0	3,660	
	L-2-30	Chief of Painter	day	0.2	0	0	58600	0	0	11720	
	L-2-20	Painter	day	2	0	0	39000	0	0	78000	
	L-2-23	Common Labour	day	1.5	0	0	35100	0	0	52650	
Material											
	M-K-30	Wall Paint	kg	2.5	0	3750	8750	0	9,375	21,875	
	M-K-32	Putty for Masonry Wall	kg	1.5	0	2250	5250	0	3375	7875	
	M-K-42	Sand Paper	sheet	2	0	750	1750	0	1500	3500	
Others											
		Miscellaneous	L.S.					0	50	20	
Total for	10 m2							0	14,300	179,300	
Unit Cost for	1 m2							0	1430	17930	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-94 | Working Name: Wood Painting Work | Calculation Quantity: 10 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.1	0	0	48800	0	0	4,880	
	L-2-30	Chief of Painter	day	0.034	0	0	58600	0	0	1992.4	
	L-2-20	Painter	day	3.4	0	0	39000	0	0	132600	
	L-2-23	Common Labour	day	2	0	0	35100	0	0	70200	
Material											
	M-K-43	Red Lead	kg	1.25	0	2700	6300	0	3,375	7,875	
	M-K-34	Glaziers Putty for Wood	kg	0.8	0	3300	7700	0	2640	6160	
	M-K-33	Paint for Wood	kg	4.25	0	7650	17850	0	32512.5	75862.5	
	M-K-39	Paint Oil	ltr	0.75	0	1200	2800	0	900	2100	
	M-K-42	Sand Paper	sheet	2	0	750	1750	0	1500	3500	
Others											
		Miscellaneous	L.S.					0	73	30	
Total for	10 m2							0	41,000	305,200	
Unit Cost for	1 m2							0	4100	30520	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-95	Cost of Rolling	7,500 m2	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Equipment											
	A-2-1-68	Tire Roller; 8-20 ton	hourly	137.5	81684.16	864	82451.15	11,231,572	118,800	#########	
Labour											
	L-2-2	Operator	day	25	0	0	46900	0	0	1,172,500	
	L-2-3	Assistant Operator	day	25	0	0	31200	0	0	780,000	
	L-2-7	Driver	day	30	0	0	35100	0	0	1,053,000	
	L-2-23	Common Labour	day	150	0	0	35100	0	0	5,265,000	
Material											
					0	0	0	0	0	0	
Others											
		Miscellaneous	L.S.					28	0	67	
Total for	7500	m2						11,231,600	118,800	#########	
Unit Cost for	1	m2						1,498	16	2,614	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-96	Road Foundation (Base Layer) 15cm thickness	1 m2	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.019	0	0	48800	0	0	927	
	L-2-23	Common Labour	day	0.375	0	0	35100	0	0	13,163	
Material											
	M-B-6	River Gravel(Stone)	m3	0.2	0	2250	42750	0	450	8,550	
	M-B-4	Sand for Filling and Base Cour	m3	0.05	0	1350	25650	0	68	1,283	
Others											
	CW-2-95	Cost of Rolling	m2	1	1,498	16	2,614	1,498	16	2,614	
		Miscellaneous	L.S.					2	67	63	
Total for	1	m2						1,500	600	26,600	
Unit Cost for	1	m2						1,500	600	26,600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-97	Subcoarse Layer (Support Layer) 8cm thickness	100 m2	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.38	0	0	48800	0	0	18,544	
	L-2-23	Common Labour	day	7.5	0	0	35100	0	0	263,250	
Material											
	M-B-10	Crushed Stone for Riprap	m3	19	0	2350	44650	0	44,650	848,350	
	M-B-4	Sand for Filling and Base Cour	m3	2	0	1350	25650	0	2,700	51,300	
Others											
	CW-2-95	Cost of Rolling	m2	200	1,498	16	2,614	299,509	3,168	522,869	
		Miscellaneous	L.S.					91	82	87	
Total for	100	m2						299,600	50,600	1,704,400	
Unit Cost for	1	m2						2,996	506	17,044	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (27/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-98 | Working Name: Rolling Cost for Month | Calculation Quantity: 1 month | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-2	Operator	day	30	0	0	46900	0	0	1,407,000	
	L-2-3	Assistant Operator	day	30	0	0	31200	0	0	936,000	
	L-2-7	Driver	day	30	0	0	35100	0	0	1,053,000	
	L-2-23	Common Labour	day	150	0	0	35100	0	0	5,265,000	
Material											
	M-A-9	SAE 20	ltr	10	0	500	2000	0	5,000	20,000	
	M-A-2	Light Oil (Diesel Oil)	ltr	625	0	120	480	0	75,000	300,000	
	M-A-10	SAE 40	ltr	50	0	600	2400	0	30,000	120,000	
	M-A-11	SAE 140	ltr	10	0	800	3200	0	8,000	32,000	
	M-A-12	SAE 90	ltr	10	0	660	2640	0	6,600	26,400	
	M-A-7	Grease	kg	0.25	0	600	2400	0	150	600	
	M-A-1	Gasoline	ltr	30	0	200	800	0	6,000	24,000	
Others											
		Miscellaneous	L.S.					0	50	0	
Total for		1 month						0	130,800	9,184,000	
Unit Cost for		1 month						0	130,800	9,184,000	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-99 | Working Name: Asphalt Covering with Hot Asphalt | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-2	Operator	day	0.5	0	0	46900	0	0	23,450	
	L-2-22	Asphalt Wolker	day	0.5	0	0	35100	0	0	17,550	
	L-2-23	Common Labour	day	10	0	0	35100	0	0	351,000	
Material											
	M-C-4	Asphalt	kg	0.25	0	450	1050	0	113	263	
	M-B-12	Crushed Stone for Pavement an	m3	1.2	0	3250	61750	0	3,900	74,100	
	M-D-25	Wood for Fire	m3	0.25	0	0	9000	0	0	2,250	
Others											
		Road Foundation (Base Layer)									
	CW-2-96	15cm thickness	m2	4	1,500	600	26,600	6,000	2,400	106,400	
		Ma&La&Eq of CW-2-97	L.S.	0.01	0	47,350	1,181,444	0	474	11,814	
		Miscellaneous	L.S.					0	14	73	
Total for		1 m2						6,000	6,900	586,900	
Unit Cost for		1 m2						6,000	6,900	586,900	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-100 | Working Name: Sand Beneath Rond Base Layer | Calculation Quantity: 1 m3 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.01	0	0	48800	0	0	488	
	L-2-23	Common Labour	day	0.375	0	0	35100	0	0	13,163	
Material											
	M-B-4	Sand for Filling and Base Cours	m3	1.2	0	1350	25650	0	1,620	30,780	
Others											
		Miscellaneous	L.S.					0	80	70	
Total for		1 m3						0	1,700	44,500	
Unit Cost for		1 m3						0	1,700	44,500	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (28/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-101	Crushed Stone Layer, Size of 5/7	1 m2	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.019	0	0	48800	0	0	927	
	L-2-23	Common Labour	day	0.375	0	0	35100	0	0	13,163	
Material											
	M-B-12	Crushed Stone for Pavement an	m3	0.02	0	3250	61750	0	65	1,235	
	M-B-4	Sand for Filling and Base Cour	m3	0.07	0	1350	25650	0	95	1,796	
Others											
	CW-2-95	Cost of Rolling	m2	1	1,498	16	2,614	1,498	16	2,614	
		Miscellaneous	L.S.					2	25	65	
Total for	1 m2							1,500	200	19,800	
Unit Cost for	1 m2							1,500	200	19,800	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-102	Foundation Layer	100 m2	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.375	0	0	48800	0	0	18,300	
	L-2-23	Common Labour	day	7.5	0	0	35100	0	0	263,250	
Material											
	M-C-4	#REF!	#REF!	8	0	450	1050	0	3,600	8,400	
	M-B-12	#REF!	#REF!	2	0	3250	61750	0	6,500	123,500	
Others											
	CW-2-95	Cost of Rolling	m2	1	1,498	16	2,614	1,498	16	2,614	
		Miscellaneous	L.S.					2	84	36	
Total for	100 m2							1,500	10,200	416,100	
Unit Cost for	1 m2							15	102	4,161	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-103	Surface Layer with 6mm thickness	1 m2	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Labour											
	L-2-1	Foreman	day	0.02	0	0	48800	0	0	976	
	L-2-23	Common Labour	day	0.2	0	0	35100	0	0	7,020	
Material											
	M-C-4	Asphalt	kg	6	0	450	1050	0	2,700	6,300	
	M-B-12	Crushed Stone for Pavement an	m3	0.03	0	3250	61750	0	98	1,853	
	M-B-6	River Gravel(Stone)	m3	0.02	0	2250	42750	0	45	855	
	M-B-3	Sand for Mortar (Masonry)	m3	0.01	0	2250	42750	0	23	428	
	M-D-25	Wood for Fire	m3	0.04	0	0	9000	0	0	360	
Others											
	CW-2-95	Cost of Rolling	m2	1	1,498	16	2,614	1,498	16	2,614	
		Miscellaneous	L.S.					2	19	95	
Total for	1 m2							1,500	2,900	20,500	
Unit Cost for	1 m2							1,500	2,900	20,500	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (29/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-104	Asphlt Work	100 m2	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.5	0	0	48800	0	0	24,400	
	L-2-23	Common Labour	day	10	0	0	35100	0	0	351,000	
Material											
	M-C-4	Asphalt	kg	80	0	450	1050	0	36,000	84,000	
	M-D-25	Wood for Fire	m3	0.53	0	0	9000	0	0	4,770	
	M-B-14	Sand for Concrete	m3	0.05	0	2050	38950	0	103	1,948	
Others											
		Miscellaneous	L.S.					0	98	83	
Total for	100 m2							0	36,200	466,200	
Unit Cost for	1 m2							0	362	4,662	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-105	Reinforced Concrete with 1:2:3 Duiker Slab Type A/B (with Re-bar-110kg/m3)	1 m3	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.3	0	0	48800	0	0	14,640	
	L-2-28	Chief of Concrete Worker	day	0.1	0	0	58600	0	0	5,860	
	L-2-17	Concrete Worker	day	1	0	0	39000	0	0	39,000	
	L-2-23	Common Labour	day	6	0	0	35100	0	0	210,600	
Material											
	M-C-54	Concrete Pavement Border	m3	1	0	82500	192500	0	82,500	192,500	
	M-E-2	Reinforcing Bar, Deformed U-3	kg	1	0	3000	3000	0	3,000	3,000	
	M-D-10	Form Timber	m3	0.4	0	0	850000	0	0	340,000	
Others											
		Miscellaneous	L.S.					0	0	0	
Total for	1 m3							0	85,500	805,600	
Unit Cost for	1 m3							0	85,500	805,600	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No.	Working Name	Calculation Quantity	Remarks
CW-2-106	Masonry of Kanstin Casted Concrete	1 m3	

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.3	0	0	48800	0	0	14,640	
	L-2-28	Chief of Concrete Worker	day	0.1	0	0	58600	0	0	5,860	
	L-2-17	Concrete Worker	day	1	0	0	39000	0	0	39,000	
	L-2-23	Common Labour	day	6	0	0	35100	0	0	210,600	
Material											
	M-B-12	Crushed Stone for Pavement and Concrete	m3	0.82	0	3250	61750	0	2,665	50,635	
	M-B-14	Sand for Concrete	m3	0.54	0	2050	38950	0	1,107	21,033	
	M-C-1	Portland Cement	kg	272.4	0	100	400	0	27,240	108,960	
Others											
		Miscellaneous	L.S.					0	88	72	
Total for	1 m3							0	31,100	450,800	
Unit Cost for	1 m3							0	31,100	450,800	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (30/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-107 | Working Name: Masonry of Kanstin Concrete Pavement Border with ratio of 1:2:3 | Calculation Quantity: 1 m | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-23	Common Labour	day	1	0	0	35100	0	0	35,100	
Material					0	0	0	0	0	0	
Others											
		Concrete Work with 1cement :									
	CW-2-34	2sand : 3gravel	m3	0.02	0		37300	0	0	746	
	CW-2-6	Cutting Solid Earth, 1m depth	m3	0.02	0		0	0	0	0	
	CW-2-12	Filling Sand	m3	0.005	0		1800	0	0	9	
		Form Work for 1m3 of									
	CW-2-38	Concrete	m3	0.0033	0		9600	0	0	32	
		Miscellaneous	L.S.					0	0	13	
Total for		1 m						0	0	35,900	
Unit Cost for		1 m						0	0	35,900	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-108 | Working Name: Masonry of Kanstin Brick with ratio of 1:2 | Calculation Quantity: 1 m | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-23	Common Labour	day	1	0	0	35100	0	0	35,100	
Material					0	0	0	0	0	0	
Others											
		Form Work for 1m3 of									
	CW-2-38	Concrete	m3	0.027	0	28,800	2,465,400	0	778	66,566	3 times
	CW-2-6	Cutting Solid Earth, 1m depth	m3	0.03	0	0	25,000	0	0	750	
	CW-2-12	Filling Sand	m3	0.0075	0	1,800	86,700	0	14	650	
		Plastering 15mm thickness									
	CW-2-44	with 1cement : 2sand	m2	0.1	0	1,200	10,000	0	120	1,000	
		Miscellaneous	L.S.					0	89	34	
Total for		1 m						0	1,000	104,100	
Unit Cost for		1 m						0	1,000	104,100	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-109 | Working Name: Masonry of Kanstin Brick with ratio of 1:4 | Calculation Quantity: 1 m | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-24	Light Labour	day	1	0	0	29300	0	0	29,300	
Material					0	0	0	0	0	0	
Others											
		Masonry of Brick									
		Stone/Brickwork, 1cement :									
	CW-2-19	4sand, 1Brick thickness	m2	0.027	0	12,900	316,500	0	348	8,546	3 times
	CW-2-6	Cutting Solid Earth, 1m depth	m3	0.04	0	0	25,000	0	0	1,000	
	CW-2-12	Filling Sand	m3	0.0075	0	1,800	86,700	0	14	650	
		Plastering 15mm thickness									
	CW-2-44	with 1cement : 2sand	m2	0.1	0	1,200	10,000	0	120	1,000	
		Miscellaneous	L.S.					0	18	4	
Total for		1 m						0	500	40,500	
Unit Cost for		1 m						0	500	40,500	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.4 (31/31) CALCULATION SHEET FOR COMMONWORK BY MANPOWER

ID No. CW-2-110 | Working Name: Masonry of U-shapes Casfed Concrete U-20 | Calculation Quantity: 1 m | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment					0	0	0	0	0	0	
Labour											
	L-2-24	Light Labour	day	1	0	0	29300	0	0	29,300	
Material											
	M-C-55	U-20 Shpape Concrete Block	m	1	0	1500	3500	0	1,500	3,500	
Others											
	CW-2-19	Masonry of Brick Stone/Brickwork, 1cement : 4sand, 1Brick thickness	m2	0.006	0	12,900	316,500	0	77	1,899	3 times
		Miscellaneous	L.S.					0	23	1	
Total for	1 m							0	1,600	34,700	
Unit Cost for	1 m							0	1,600	34,700	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-111 | Working Name: Masonry of U-shapes Casfed Concrete U-30 | Calculation Quantity: 1 m | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-24	Light Labour	day	1	0	0	29300	0	0	29,300	
Material											
	M-C-56	U-30 Shpape Concrete Block	m	1	0	2250	5250	0	2,250	5,250	
Others											
	CW-2-19	Masonry of Brick Stone/Brickwork, 1cement : 4sand, 1Brick thickness	m2	0.006	0	12,900	316,500	0	77	1,899	3 times
		Miscellaneous	L.S.					0	73	51	
Total for	1 m							0	2,400	36,500	
Unit Cost for	1 m							0	2,400	36,500	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

ID No. CW-2-112 | Working Name: Masonry of Paving Block | Calculation Quantity: 1 m2 | Remarks

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Labour											
	L-2-1	Foreman	day	0.02	0	0	48800	0	0	976	
	L-2-27	Chief of Mason	day	0.02	0	0	58600	0	0	1,172	
	L-2-11	Mason	day	0.2	0	0	39000	0	0	7,800	
	L-2-23	Common Labour	day	0.4	0	0	35100	0	0	14,040	
Material											
	M-C-57	Paving Block	piece	50	0	105	245	0	5,250	12,250	
	M-B-3	Sand for Mortar (Masonry)	m3	0.2	0	2250	42750	0	450	8,550	
Others											
		Miscellaneous	L.S.					0	0	12	
Total for	1 m2							0	5,700	44,800	
Unit Cost for	1 m2							0	5,700	44,800	

Source : Production Rate is quoted from Daftar Analisa Perhitungan Unit Price, April-May 1999/2000, Market Price, Semarang and Sekitarnya

Table 4.1.5 (1/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name		Calculation Quantity	Remarks
CW-3-9	Driving In of Steel Sheet Pile (Type-II)		10 piece	L=10m long
	Kind of Pile	Steel Sheet Pile	1	1. Steel Sheet Pile, 2. Concrete Sheet Pile
	Driving Direction	Driving In	1	1. Driving In, 2. Pulling Out
	Type of Sheet Pile	Steel Sheet Pile Type-II	1	1. Steel Sheet Type-II, 2. Type-III, 3. Type-IV, 4. Concrete Sheet Pile
	Soil Condition	Mainly Sand or Gravel	2	1. Mainly Silt or Clay, 2. Mainly Sand or Gravel
	Using Machine	Vibrating Hammer 40kw	10003 1~4	22 11~13,21~23
	Width	500 mm		201 101~103, 201~203
	Thickness of Material	200 mm	1	
	Length of Driving	10 meter		
	Length of Sheet Pile	11 meter		
	Crawler Crane	37t		
	Truck Crane	22t		
	Generator	125kVA		
	Working Condition	there are obstacles	1	(f1) : 1. Obstacle Structure for construction are situated 2. Nothing
		Working space is limited	1	(f2) : 1. Working space is limited, 2. Working space is enough
	(total number of driving piles is	more than 300	3	(f3) : Construction scale, number of piles is ; 1.less than 100, 2.100~300, 3 more than 300
	Other	with Truck Crane	1	1. With Truck Crane 2. No Truck Crane

2005
20056015
2005
44233266

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-1-86	Vibrating Hammer; 40 kW	hourly	2.21	105,466	0	64,516	232,903	0	142,473	
	A-2-1-40	Crawler Crane; 37 ton	hourly	2.21	255,763	984	229,959	564,809	2,173	507,826	
	A-2-2-46	Generator; 125 kVA	daily	0.32	271,912	15,120	209,096	87,025	4,839	66,921	
	A-2-1-73	Truck Crane; 22 ton, Oil Pressure	hourly	1.33	154,913	1,032	131,788	205,259	1,367	174,619	
Labour											
	L-2-1	Foreman	day	0.32	0	0	48800	0	0	15,618	
	L-2-13	Rigger	day	0.64	0	0	39000	0	0	24,964	
	L-2-23	Common Labour	day	0.32	0	0	35100	0	0	11,234	
Total for		10 piece						1,089,997	8,380	943,654	
Unit Cost for		1 piece						109,000	838	94,365	
Unit Cost for		1 m						9,909	76	8,519	

Condition of Soil Mechanics

Depth (m)	N-value
1	10
2	10
3	10
4	10
5	10
6	10
7	10
8	10
9	10
10	10
11	
12	
13	
14	
15	
Max	10

Driving or Pulling Time /piece (minutes) Tc

Where,
- α : Coefficient for Driving or Pulling — 4.04 from Table 4.1.7-D
- γ : Coefficient for Driving or Pulling — 0.02 from Table 4.1.7-D
- l : Length of Driving or Pulling (m) — 10
- Nmax : Maximum N-value of Soil — 10
- K : Coefficient for Material and Equipment — 0.93 from Table 4.1.7-D

Coefficient for Working F

F = f0 + f1 + f2 + f3

Where,
- f0 : Base Coefficient = 1
- f1 : Obstacle Condition by Structure = -0.05 from Table 4.1.7-E
- f2 : Condition by Space for Construction = -0.05
- f3 : Condition of Scale by Number of Piling = 0.05
- F : Coefficient for Working — 0.95

Hence, Tc = 13.25 minutes/piece

Material		Foreman	Rigger		Common
Steel Sheet Pile		1	2		1

Production Rate

Working Time for Driving or Pulling /piece (minutes) : Tc

$$Tc = \frac{[\,(0.75 + \gamma \times Nmax) \times l + \alpha\,] \times K}{F}$$

Where,
- α, γ : Coefficient for Driving or Pulling
- l : Length of Driving or Pulling (m)
- Nmax : Maximum N-value of Soil
- K : Coefficient for Material and Equipment
- F : Coefficient for Working

*1 10piece x $\frac{Tc}{T \times 60}$ x Composition of Manpower = Foreman 0.32, Rigger 0.64, Common 0.32

*2 10piece x $\frac{Tc}{60}$ = Vibrating Hammer 40kw And Crawler Crane 2.21 hour

*3 10piece x $\frac{Tc}{T \times 60}$ = Generator 0.32

*4 10piece x $\frac{Tc}{T \times 60}$ = Truck Crane 1.33

*5 Truck Crane Working Time / Piling Working Time = 60 %

*6 Average Daily Working Time of Generator, Labor

$T = \frac{690}{100} = 6.9$ (hour/day)

Table 4.1.5 (2/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name		Calculation Quantity	Remarks
CW-3-10	Pulling Out of Steel Sheet Pile (Type-II)		10 piece	L=10m long
	Kind of Pile	Steel Sheet Pile	1	1. Steel Sheet Pile, 2. Concrete Sheet Pile
	Driving Direction	Pulling Out	2	1. Driving In, 2. Pulling Out
	Type of Sheet Pile	Steel Sheet Pile Type-II	1	1. Steel Sheet Type-II, 2. Type-III, 3. Type-IV, 4. Concrete Sheet Pile
	Soil Condition	Mainly Sand or Gravel	2	1. Mainly Silt or Clay, 2. Mainly Sand or Gravel
	Using Machine	Vibrating Hammer 30kw	20003 1-4	22 11-13,21-23 1005
	Width	500 mm		201 101-103, 201-203
	Thickness of Material	200 mm	1	20103015
	Length of Driving	10 meter		1005
	Length of Sheet Pile	11 meter		88453266
	Crawler Crane	37t		
	Truck Crane	22t		
	Generator	100kVA		
	Working Condition	there are obstacks	1	(f1) : 1. Obstacle Structure for construction are situated 2. Nothing
		Working space is limited	1	(f2) : 1. Working space is limited, 2. Working space is enough
	(total number of driving piles is	more than 300	3	(f3) : Construction scale, number of piles is ; 1.less than 100, 2.100-300, 3 more than 300
	Other	with Truck Crane	1	1. With Truck Crane 2. No Truck Crane

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-1-85	Vibrating Hammer; 30 kW	hourly	2.09	86,428	0	52,870	180,778	0	110,586	
	A-2-1-40	Crawler Crane; 37 ton	hourly	2.09	255,763	984	229,959	534,970	2,058	480,997	
	A-2-2-15	Generator; 100 kVA	daily	0.30	215,064	10,800	160,745	65,195	3,274	48,728	
	A-2-1-73	Truck Crane; 22 ton, Oil Pressure	hourly	1.26	154,913	1,032	131,788	194,415	1,295	165,393	
Labour											
	L-2-1	Foreman	day	0.30	0	0	48800	0	0	14,793	
	L-2-13	Rigger	day	0.61	0	0	39000	0	0	23,645	
	L-2-23	Common Labour	day	0.30	0	0	35100	0	0	10,640	
Material											
		0	0		0	0	0	0	0	0	
Others											
		Miscellaneous	L.S.					42	73	17	
Total for		10 piece						975,400	6,700	854,800	
Unit Cost for		1 piece						97,540	670	85,480	
Unit Cost for		1 m						9,754	67	8,548	

Condition of Soil Mechanics

Depth (m)	N-value
1	10
2	10
3	10
4	10
5	10
6	10
7	10
8	10
9	10
10	10
11	
12	
13	
14	
15	
Max	10

Driving or Pulling Time /piece (minutes) Te

Where,
- α : Coefficient for Driving or Pulling = 3.24 from Table 4.1.7-D
- γ : Coefficient for Driving or Pulling = 0 from Table 4.1.7-D
- l : Length of Driving or Pulling (m) = 10
- Nmax : Maximum N-value of Soil = 10
- K : Coefficient for Material and Equipment = 1.11 from Table 4.1.7-D

Coefficient for Working F

F = f0 + f1 + f2 + f3

Where,
- f0 : Base Coefficient = 1
- f1 : Obstacle Condition by Structure = -0.05 from Table 4.1.7-E
- f2 : Condition by Space for Construction = -0.05
- f3 : Condition of Scale by Number of Piling = 0.05

F : Coefficient for Working = 0.95

Hence, Te = 12.55 minutes/piece

Production Rate

Working Time for Driving or Pulling /piece (minutes) : Te

$$Te = \frac{\{(0.75 + \gamma \times Nmax) \times l + \alpha\} \times K}{F}$$

Where,
- α, γ : Coefficient for Driving or Pulling
- l : Length of Driving or Pulling (m)
- Nmax : Maximum N-value of Soil
- K : Coefficient for Material and Equipment
- F : Coefficient for Working

Material		Foreman	Rigger		Common
Steel Sheet Pile		1	2		1

*1 10piece x $\frac{Te}{T \times 60}$ x Composition of Manpower = Foreman 0.30, Rigger 0.61, Common 0.30

*2 10piece x $\frac{Te}{60}$ = Vibrating Hammer 30kw And Crawler Crane 2.09 hour

*3 10piece x $\frac{Te}{T \times 60}$ = Generator 0.30

*4 10piece x $\frac{Te}{T \times 60}$ = Truck Crane 1.26

*5 Truck Crane Working Time / Piling Working Time = 60 %

*6 Average Daily Working Time of Generator, Labor: $T = \frac{690}{100} = 6.9$ (hour/day)

Table 4.1.5 (3/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name			Calculation Quantity	Remarks
CW-3-11	Driving In of Concrete Sheet Pile (l=22)			10 piece	L=10m long
	Kind of Pile	Concrete Sheet Pile		2	1. Steel Sheet Pile, 2. Concrete Sheet Pile
	Driving Direction	Driving In		1	1. Driving In, 2. Pulling Out
	Type of Sheet Pile	Concrete Sheet Pile		4	1. Steel Sheet Type-II, 2. Type-III, 3. Type-IV, 4. Concrete Sheet Pile
	Soil Condition	Mainly Sand or Gravel		2	1. Mainly Silt or Clay, 2. Mainly Sand or Gravel
	Using Machine	Vibrating Hammer 60kw	30903	1~4	22 11~13,21~23 3005
	Width	500	mm		201 101~103, 201~203
	Thickness of Material	220	mm	1	360636060
	Length of Driving	10	meter		24040
	Length of Sheet Pile	11	meter		132673266
	Crawler Crane	40t			
	Truck Crane	22t			
	Generator	200kVA			
	Working Condition	there are obstacles		1	(f1) : 1. Obstacle Structure for construction are situated 2. Nothing
		Working space is limited		1	(f2) : 1. Working space is limited, 2. Working space is enough
	(total number of driving piles is	more than 300		3	(f3) : Construction scale, number of piles is ; 1.less than 100, 2.100~300, 3 more than 300
	Other	with Truck Crane		1	1. With Truck Crane 2. No Truck Crane

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-1-87	Vibrating Hammer; 60 kW	hourly	2.63	150,191	0	91,875	395,253	0	241,785	
	A-2-1-41	Crawler Crane; 40 ton	hourly	2.63	279,714	1,080	251,509	736,113	2,842	661,888	
	A-2-2-19	Generator; 200 kVA	daily	0.38	415,060	23,760	321,895	158,304	9,062	122,771	
	A-2-1-73	Truck Crane; 22 ton, Oil Pressure	hourly	1.58	154,913	1,032	131,788	244,607	1,630	208,093	
Labour											
	L-2-1	Foreman	day	0.38	0	0	48800	0	0	18,612	
	L-2-13	Rigger	day	0.76	0	0	39000	0	0	29,749	
	L-2-23	Common Labour	day	0.38	0	0	35100	0	0	13,387	
Material		0	0		0	0	0	0	0	0	
Others											
		Miscellaneous	L.S.					24	66	16	
Total for		10 piece						1,534,300	13,600	1,296,300	
Unit Cost for		1 piece						153,430	1,360	129,630	
Unit Cost for		1 m						15,343	136	12,963	

Condition of Soil Mechanics

Depth (m)	N-value
1	10
2	10
3	10
4	10
5	10
6	10
7	10
8	10
9	10
10	10
11	
12	
13	
14	
15	
Max	10

Driving or Pulling Time /piece (minutes) Te

Where,
- α : Coefficient for Driving or Pulling = 3 from Table 4.1.7-D
- γ : Coefficient for Driving or Pulling = 0.02 from Table 4.1.7-D
- l : Length of Driving or Pulling (m) = 10
- Nmax : Maximum N-value of Soil = 10
- K : Coefficient for Material and Equipment = 1.2 from Table 4.1.7-D

Coefficient for Working F

F = f0 + f1 + f2 + f3

Where,
- f0 : Base Coefficient = 1
- f1 : Obstacle Condition by Structure = -0.05 from Table 4.1.7-E
- f2 : Condition by Space for Construction = -0.05
- f3 : Condition of Scale by Number of Piling = 0.05

F : Coefficient for Working = 0.95

Hence, Te = 15.79 minutes/piece

Material		Foreman	Rigger		Common
Concrete Sheet Pile		1	2		1

Production Rate

Working Time for Driving or Pulling /piece (minutes) : Te

$$Te = \frac{\{(0.75 + \gamma \times Nmax) \times l + \alpha\} \times K}{F}$$

Where,
- α, γ : Coefficient for Driving or Pulling
- l : Length of Driving or Pulling (m)
- Nmax : Maximum N-value of Soil
- K : Coefficient for Material and Equipment
- F : Coefficient for Working

*1 10piece x $\frac{Te}{T \times 60}$ x Composition of Manpower = Foreman 0.38, Rigger 0.76, Common 0.38

*2 10piece x $\frac{Te}{60}$ " = Vibrating Hammer 60kw And Crawler Crane 2.63 hour

*3 10piece x $\frac{Te}{T \times 60}$ " = Generator 0.38

*4 10piece x $\frac{Te}{T \times 60}$ " = Truck Crane 1.58

*5 Truck Crane Working Time / Piling Working Time = 60 %

*6 Average Daily Working Time of Generator, Labor $T = \frac{690}{100} = 6.9$ (hour/day)

Table 4.1.5 (4/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name			Calculation Quantity	Remarks
CW-3-12	Driving In of Log Pile			10 piece	L=2m long
	Kind of Pile	Log Pile	3		1. Steel Sheet Pile, 2. Concrete Sheet Pile, 3. Log Pile
	Driving Direction	Driving In	1		1. Driving In, 2. Pulling Out
	Type of Sheet Pile		0 0		1. Steel Sheet Type-II, 2. Type-III, 3. Type-IV, 4. Concrete Sheet Pile
	Soil Condition	Mainly Sand or Gravel	2		1. Mainly Silt or Clay, 2. Mainly Sand or Gravel
	Using Machine	Vibrating Hammer 30kw	30003	1~4 21	11~13,21~23 1005
	Width	150 mm		201	101~103, 201~203
	Thickness of Material	150 mm	1		0
	Length of Driving	2 meter			0
	Length of Sheet Pile	2 meter			126642663
	Backhoe	0.6m3			
	Generator	100kVA			
	Working Condition	there are obstacles	1		(f1) : 1. Obstacle Structure for construction are situated 2. Nothing
		Working space is limited	1		(f2) : 1. Working space is limited, 2. Working space is enough
	(total number of driving piles is	more than 300	3		(f3) : Construction scale, number of piles is ; 1.less than 100, 2.100~300, 3 more than 300
	Other	No Truck Crane	2		1. With Truck Crane 2. No Truck Crane

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-1-85	Vibrating Hammer; 30 kW	hourly	1.01	86,428	0	52,870	86,860	0	53,134	
	A-2-1-7	Backhoe; 0.6 m3	hourly	1.01	125,543	2,040	90,965	126,171	2,050	91,420	
	A-2-2-15	Generator; 100 kVA	daily	0.15	215,064	10,800	160,745	31,325	1,573	23,413	
Labour											
	L-2-1	Foreman	day	0.15	0	0	48800	0	0	7,108	
	L-2-13	Rigger	day	0.00	0	0	39000	0	0	0	
	L-2-23	Common Labour	day	0.29	0	0	35100	0	0	10,225	
Total for		10 piece						244,355	3,623	185,299	
Unit Cost for		1 piece						24,436	362	18,530	

Condition of Soil Mechanics

Depth (m)	N-value
1	7
2	7
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
Max	7

Driving or Pulling Time /piece (minutes) Tc

Where,
- α : Coefficient for Driving or Pulling — 3.38 from Table 4.1.7-D
- γ : Coefficient for Driving or Pulling — 0.02 from Table 4.1.7-D
- l : Length of Driving or Pulling (m) — 2
- Nmax : Maximum N-value of Soil — 7
- K : Coefficient for Material and Equipment — 1.11 from Table 4.1.7-D

Coefficient for Working F

F = f0 + f1 + f2 + f3

Where,
- f0 : Base Coefficient = 1
- f1 : Obstacle Condition by Structure = -0.05 from Table 4.1.7-E
- f2 : Condition by Space for Construction = -0.05
- f3 : Condition of Scale by Number of Piling = 0.05

F : Coefficient for Working — 0.95

Hence, Tc = 6.03 minutes/piece

Production Rate

Working Time for Driving or Pulling /piece (minutes) : Tc

$$Tc = \frac{\{(0.75 + \gamma \times Nmax) \times l + \alpha\} \times K}{F}$$

Where,
- α, γ : Coefficient for Driving or Pulling
- l : Length of Driving or Pulling (m)
- Nmax : Maximum N-value of Soil
- K : Coefficient for Material and Equipment
- F : Coefficient for Working

Material		Foreman	Rigger		Common
Concrete Sheet Pile		1	0		2

*1 10piece x $\frac{Tc}{T \times 60}$ x Composition of Manpower = Foreman 0.15, Rigger 0.00, Common 0.29

*2 10piece x $\frac{Tc}{60}$ = Vibrating Hammer 30kw And Crawler Crane 1.01 hour

*3 10piece x $\frac{Tc}{T \times 60}$ = Generator 0.15

*4 10piece x $\frac{Tc}{T \times 60}$ = Truck Crane 0.60

*5 Truck Crane Working Time / Piling Working Time = 60 %

*6 Average Daily Working Time of Generator, Labor

$T = \frac{690}{100} = 6.9$ (hour/day)

Table 4.1.5 (5/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name		Calculation Quantity	Remarks
CW-3-13	Pile Work of Concrete Pile for Groyn		10 piece	Length is 7m long
	Kind of Pile	Concrete Pile	2	1. Steel Pile, 2. Concrete Pile
	Driving Direction	Plumb Pile	1	1. Plumb, 2. Inclined, 3. Plumb with Soundproofed
	Diameter	200	mm	
	Thickness of Material	200	mm	1
	Length of Driving	5	meter	
	Length of Pile	7	meter	
	Number of welding place	0	times	
	Using Machine	Crawler Diezel Hammer		
	Weight of Pile Hammer	2.5	t	3
	Additional	without Pincers	1	1. Without Pincers, 2. With Pincers
	Working Condition	there is no obstacle	2	(f1) : 1. Obstacle Structure for construction are situated 2. Nothing
		Working space is enough	2	(f2) : 1. Working space is limited, 2. Working space is enough
	(total number of driving piles is more than 70		3	(f3) : Construction scale, number of piles is ; 1 less than 30, 2 30~70, 3 more than 70

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-2-15	Generator; 100 kVA	daily	0.70	215,064	10,800	215,064	150,545	7,560	150,545	
	A-2-1-71	Truck Crane; 11(10) ton, Oil Pressure	hourly	2.56	99,322	1,020	99,322	254,463	2,613	254,463	
	A-2-1-42	Crawler Diesel Hammer; 2.5 ton	hourly	4.27	486849.58	1680	486849.58	2078847.712	7173.6	2078847.712	
	A-2-2-58	Shotcrete Machine Wet Type ; 0.8~1.2	hourly	0.00	68498.334	0	68498.334	0	0	0	
Labour											
	L-2-1	Foreman	day	0.70	0	0	48800	0	0	34,160	
	L-2-13	Rigger	day	1.40	0	0	39000	0	0	54600	
	L-2-2	Operator	day	0.70	0	0	46900	0	0	32830	
	L-2-6	Welder	day	0.00	0	0	39000	0	0	0	
Material			0	0	0	0	0	0	0	0	
Others											
		Miscellaneous	L.S.					24,845	253	26,055	
Total for		10 piece						2,508,700	17,600	2,631,500	
Unit Cost for		1 piece						250,870	1,760	263,150	
		1 m						35,839	251	37,593	

Condition of Soil Mechanics

Depth (m)	N-value
1	15
2	15
3	15
4	15
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
Average	15

Driving Time /piece (minutes) Tb

$Tb = K \times \alpha \times L^{\beta}$

Where,
- K : Pile Coefficient = 1.6 from Table 4.1.6-A
- α : Soil Coefficient = 1 from Table 4.1.6-B
- β : Hammer Coefficient = 0.85 from Table 4.1.6-C
- L : Length of Driving = 5

Hence, Tb = 6.3 minutes

Welding Time /piece (minutes) Tw

$Tw = \Sigma twi$

Where,
- twi : Welding Time per 1 place = 0 from Table 4.1.6-D&E

Hence, Tw = 0 minutes

Preparation Time /piece (minutes) Tp

Tp = 18 minutes from Table 4.1.6-F

Coefficient for Working F

$F = f0 + f1 + f2 + f3$

Where,
- f0 : Base Coefficient = 0.9 from Table 4.1.6-G
- f1 : Obstacle Condition by Structure = 0
- f2 : Condition by Space for Construction = 0
- f3 : Condition of Scale by Number of Piling = 0.05

Hence, F = 0.95

Hence, Tc = 25.6 minutes/piece

Production Rate

Working Time for Piling/piece (minutes) : Tc

$$Tc = \frac{Tb + Tw + Tp}{F}$$

Where,
- Tb : Driving Time /piece (minutes)
- Tw : Welding Time /piece (minutes)
- Tp : Preparation Time /piece (minutes)
- F : Coefficient for Working

Miscellaneous Percentage (MP)

MP = 1 % from Table 4.1.6-H

$$T = \frac{730}{120} = 6.1 \text{ (hour/day)}$$

*110piece x $\frac{Tc}{T \times 60}$ x Composition of Manpower = Foreman 0.70, Rigger 1.40, Common 0.70, Welder 0.70

*210piece x $\frac{Tc}{60}$ = Diezel Hammer 4.27 hour *3 10piece x $\frac{Tc}{T \times 60}$ = Generator and Welder Machine 0.70

*3 Equipment Working Time / Piling Working Time = 60 %

Table 4.1.5 (6/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name		Calculation Quantity	Remarks
CW-3-14	Pile Work of Simongan Weir-C		10 piece	Length is 13m tall
	Kind of Pile	Concrete Pile	2	1. Steel Pile, 2. Concrete Pile
	Driving Direction	Plumb Pile	1	1. Plumb, 2. Inclined, 3. Plumb with Soundproofed
	Diameter	400	mm	
	Thickness of Material	75	mm	t
	Length of Driving	11.5	meter	
	Length of Pile	13	meter	
	Number of welding place	0	times	
	Using Machine	Crawler Diezel Hammer		
	Weight of Pile Hammer	2.5	t	3
	Additional	without Pinceers	1	1. Without Pinceers, 2. With Pinceers
	Working Condition	there are obstacles	1	(f1) : 1. Obstacle Structure for construction are situated 2. Nothing
		Working space is enough	2	(f2) : 1. Working space is limited, 2. Working space is enough
	(total number of driving piles is	more than 70	3	(f3) : Construction scale, number of piles is ; 1.less than 30, 2.30~70, 3 more than 70

Major Item	ID No.	Description	Unit	Quantity	Unit Cost F/C	Unit Cost I/C	Unit Cost L/C	Cost F/C	Cost I/C	Cost L/C	Remarks
Equipment											
	A-2-2-15	Generator; 100 kVA	daily	1.14	215,064	10,800	215,064	245,173	12,312	245,173	
	A-2-1-73	Truck Crane; 22 ton, Oil Pressure	hourly	4.19	154,913	1,032	154,913	648,774	4,322	648,774	
	A-2-1-42	Crawler Diesel Hammer; 2.5 ton	hourly	6.98	486849.58	1680	486849.58	3,398,210	11,726	3,398,210	
	A-2-2-58	Shotcrete Machine Wet Type : 0.8~1.2	hourly	0.00	68498.334	0	68498.334	0	0	0	
Labour											
	L-2-1	Foreman	day	1.14	0	0	48800	0	0	55,632	
	L-2-13	Rigger	day	2.29	0	0	39000	0	0	89,310	
	L-2-2	Operator	day	1.14	0	0	46900	0	0	53,466	
	L-2-6	Welder	day	0.00	0	0	39000	0	0	0	
Material											
	M-C-21	Prestressed Concrete Pile Dia. 400 mm A	m	130	142500	0	7500	18,525,000	0	975,000	
Others											
		Miscellaneous	L.S.					228,243	340	54,735	
Total for		10 piece						23,045,400	28,700	5,520,300	
Unit Cost for		1 piece						2,304,540	2,870	552,030	
Unit Cost for		1 m						177,272	221	42,464	

Condition of Soil Mechanics

Depth (m)	N-value
1	24
2	21
3	6
4	10
5	12
6	20
7	25
8	30
9	40
10	50
11	50
12	50
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
Average	28.16666667

Driving Time /piece (minutes) Tb

$Tb = K \times \alpha \times L^{\beta}$

Where,
- K : Pile Coefficient = 1.6 from Table 4.1.6-A
- α : Soil Coefficient = 1.15 from Table 4.1.6-B
- β : Hammer Coefficient = 0.97 from Table 4.1.6-C
- L : Length of Driving = 11.5

Hence, Tb = 19.7 minutes

Welding Time /piece (minutes) Tw

$Tw = \Sigma twi$

Where, twi : Welding Time per 1 place = 17 from Table 4.1.6-D&E

Hence, Tw = 0 minutes

Preparation Time /piece (minutes) Tp

Tp = 18 minutes from Table 4.1.6-F

Coefficient for Working F

$F = f0 + f1 + f2 + f3$

Where,
- f0 : Base Coefficient = 0.9 from Table 4.1.6-G
- f1 : Obstacle Condition by Structure = -0.05
- f2 : Condition by Space for Construction = 0
- f3 : Condition of Scale by Number of Piling = 0.05

Hence, F = 0.9

Hence, Te = 41.9 minutes/piece

Production Rate

Working Time for Piling/piece (minutes) : Te

$$Te = \frac{Tb + Tw + Tp}{F}$$

Where,
- Tb : Driving Time /piece (minutes)
- Tw : Welding Time /piece (minutes)
- Tp : Preparation Time /piece (minutes)
- F : Coefficient for Working

Miscellaneous Percentage (MP)

MP = 1 % from Table 4.1.6-H

$$T = \frac{730}{120} = 6.1$$ (hour/day)

*1 10piece x $\frac{Te}{T \times 60}$ x Composition of Manpower = Foreman 1.14, Rigger 2.29, Common Welder 1.14, 1.14

*2 10piece x $\frac{Te}{60}$ = Diezel Hammer 6.98 hour

*3 10piece x $\frac{Te}{T \times 60}$ = Generator and Welder Machine 1.14

*3 Equipment Working Time / Piling Working Time = 60 %

Table 4.1.5 (7/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name			Calculation Quantity	Remarks
CW-3-15	Pile Work of Simongan Weir-D			10 piece	Length is 13m tall
	Kind of Pile	Concrete Pile		2	1. Steel Pile, 2. Concrete Pile
	Driving Direction	Plumb Pile		1	1. Plumb, 2. Inclined, 3. Plumb with Soundproofed
	Diameter		350	mm	
	Thickness of Material		65	mm	1
	Length of Driving		11.5	meter	
	Length of Pile		13	meter	
	Number of welding place		0	times	
	Using Machine	Crawler Diezel Hammer			
	Weight of Pile Hammer		2.5	t	3
	Additional	without Pincers		1	1. Without Pincers, 2. With Pincers
	Working Condition	there are obstacles		1	(f1) : 1. Obstacle Structure for construction are situated 2. Nothing
		Working space is enough		2	(f2) : 1. Working space is limited, 2. Working space is enough
	(total number of driving piles is	more than 70		3	(f3) : Construction scale, number of piles is : 1.less than 30, 2.30~70, 3 more than 70

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-2-15	Generator; 100 kVA	daily	1.09	215,064	10,800	215,064	234,420	11,772	234,420	
	A-2-1-73	Truck Crane; 22 ton, Oil Pressure	hourly	3.98	154,913	1,032	154,913	616,242	4,105	616,242	
	A-2-1-42	Crawler Diesel Hammer; 2.5 ton	hourly	6.63	486849.58	1680	486849.58	3,227,813	11,138	3,227,813	
	A-2-2-58	Shuterete Machine Wet Type : 0.8~1.2	hourly	0.00	68498.334	0	68498.334	0	0	0	
Labour											
	L-2-1	Foreman	day	1.09	0	0	48800	0	0	53,192	
	L-2-13	Rigger	day	2.17	0	0	39000	0	0	84,630	
	L-2-2	Operator	day	1.09	0	0	46900	0	0	51,121	
	L-2-6	Welder	day	0.00	0	0	39000	0	0	0	
Material											
	M-C-18	Prestressed Concrete Pile Dia. 350 mm A	m	130	114000	0	6000	14,820,000	0	780,000	
Others											
		Miscellaneous	L.S.					189,026	284	50,483	
Total for		10 piece						19,087,500	27,300	5,097,900	
Unit Cost for		1 piece						1,908,750	2,730	509,790	
Unit Cost for		1 m						146,827	210	39,215	

Condition of Soil Mechanics

Depth (m)	N-value
1	24
2	21
3	6
4	10
5	12
6	20
7	25
8	30
9	40
10	50
11	50
12	50
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
Average	28.16666667

Driving Time /piece (minutes) Tb

$Tb = K \times \alpha \times L^{\beta}$

Where, K : Pile Coefficient = 1.6 from Table 4.1.6-A

α : Soil Coefficient = 1.15 from Table 4.1.6-B

β : Hammer Coefficient = 0.93 from Table 4.1.6-C

L : Length of Driving = 11.5

Hence, Tb = 17.8 minutes

Welding Time /piece (minutes) Tw

Tw = Etwi

Where, twi : Welding Time per 1 place = 15 from Table 4.1.6-D&E

Hence, Tw = 0 minutes

Preparation Time /piece (minutes) Tp

Tp = 18 minutes from Table 4.1.6-F

Coefficient for Working F

F = f0 + f1 + f2 + f3

Where, f0 : Base Coefficient = 0.9 from Table 4.1.6-G

f1 : Obstacle Condition by Structure = -0.05

f2 : Condition by Space for Construction = 0

f3 : Condition of Scale by Number of Piling = 0.05

Hence, F = 0.9

Hence, Tc = 39.8 minutes/piece

Production Rate

Working Time for Piling/piece (minutes) : Tc

$$Tc = \frac{Tb + Tw + Tp}{F}$$

Where, Tb : Driving Time /piece (minutes)

Tw : Welding Time /piece (minutes)

Tp : Preparation Time /piece (minutes)

F : Coefficient for Working

Miscellaneous Percentage (MP)

MP = 15% from Table 4.1.6-H

$$T = \frac{730}{120} \times 6.1 \text{ (hour/day)}$$

$$*1 10piece \times \frac{Tc}{T \times 60} \times \text{Composition of Manpower} = \text{Foreman } 1.09 + \text{Rigger } 2.17 + \text{Common } 1.09 + \text{Welder } 1.09$$

$$*2 10piece \times \frac{Tc}{60} = \text{Diezel Hammner } 6.63 \text{ hour}$$

$$*3 10piece \times \frac{Tc}{T \times 60} = \text{Generator and Welder Machine } 1.09$$

*3 Equipment Working Time / Piling Working Time = 60%

Table 4.1.5 (8/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name	Calculation Quantity	Remarks
CW-3-16	Wafe Work-A	10 m	Using C-Channel Steel

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
		Truck Crane; 22 ton, Oil									
	A-2-1-73	Pressure	hourly	3	154,913	1,032	131,788	464,738	3,096	395,363	
	A-2-1-38	Crawler Crane; 22.5 ton	hourly	3	153115.4	804	138527.4	459,346	2,412	415,582	
		Shotcrete Machine Wet Type :									
	A-2-2-58	0.8~1.2	hourly	0.7	68498.33	0	40476.29	47,949	0	28,333	
Labour											
	L-2-6	Welder	day	1.8	0	0	39000	0	0	70,200	
	L-2-13	Rigger	day	0.7	0	0	39000	0	0	27,300	
	L-2-23	Common Labour	day	2.1	0	0	35100	0	0	73,710	
Material											
	M-E-78	C-beam (Purchasing), SS41	kg	50	5225	0	275	261,250	0	13,750	
		Structural Steel(Purchasing),									
	M-E-4	SS41	kg	20	5225	0	275	104,500	0	5,500	
	M-E-36	Bolt and Nut	kg	5	0	12375	28875	0	61,875	144,375	
Others											
		Tools	%	15				200,667	10,107	176,117	
		Miscellaneous	L.S.					50	10	70	
Total for	10 m							1,538,500	77,500	1,350,300	
Unit Cost for	1 m							153,850	7,750	135,030	
Unit Cost for	1 kg		of C-Channel Steel					30,770	1,550	27,006	

*1	All composition numbers are quated from Japanese Standard.					
*2	C-Channel Steel Weight	500 kg/total	/	10 m/total	x 10 m =	50 kg/10m
*3	Structural Steel	200 kg/total	/	10 m/total	x 10 m =	20 kg/10m
*4	Bolt and Nut	50 kg/total	/	10 m/total	x 10 m =	5 kg/10m

ID No.	Working Name	Calculation Quantity	Remarks
CW-3-17	Wafe Work-B (Temporary)	2 ton	Using C-Channel Steel

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
		Truck Crane; 22 ton, Oil									
	A-2-1-73	Pressure	hourly	3	154,913	1,032	131,788	464,738	3,096	395,363	
	A-2-1-38	Crawler Crane; 22.5 ton	hourly	3	153115.4	804	138527.4	459,346	2,412	415,582	
		Shotcrete Machine Wet Type :									
	A-2-2-58	0.8~1.2	hourly	0.7	68498.33	0	40476.29	47,949	0	28,333	
Labour											
	L-2-6	Welder	day	1.8	0	0	39000	0	0	70,200	
	L-2-13	Rigger	day	0.7	0	0	39000	0	0	27,300	
	L-2-23	Common Labour	day	2.1	0	0	35100	0	0	73,710	
Others											
		Tools	%	15				145,805	826	151,573	
		Miscellaneous	L.S.					63	66	38	
Total for	2 ton							1,117,900	6,400	1,162,100	
Unit Cost for	1 ton							558,950	3,200	581,050	

*1	All composition numbers are quated from Japanese Standard.					
*2	C-Channel Steel Weight	15000 kg/total	/	10 m/total	x 10 m =	1,500 kg/10m
*3	Structural Steel	3000 kg/total	/	10 m/total	x 10 m =	300 kg/10m
*4	Bolt and Nut	100 kg/total	/	10 m/total	x 10 m =	10 kg/10m

Table 4.1.5 (9/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name	Calculation Quantity	Remarks
CW-3-18	Installation of Tie Rod-A	10 set	for Concrete Sheet Pile

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment	A-2-1-73	Truck Crane; 22 ton, Oil Pressure	hourly	2	154,913	1,032	131,788	309,825	2,064	263,575	
Labour	L-2-13	Rigger	day	1.5	0	0	39000	0	0	58,500	
	L-2-23	Common Labour	day	5	0	0	35100	0	0	175,500	
Material	M-E-13	Tierod (Purchasing)	kg	25	47500	0	2500	1,187,500	0	62,500	
Others		Tools	%	15				224,599	310	84,011	
		Miscellaneous	L.S.					76	26	14	
Total for	10 set							1,722,000	2,400	644,100	
Unit Cost for	1 set							172,200	240	64,410	
Unit Cost for	1 kg		of Tie Rod					68,880	96	25,764	

*1 All composition numbers are quated from Japanese Standard.

*2 Tierod 500 kg/total / 200 set/total x 10 set = 25 kg/10set

ID No.	Working Name	Calculation Quantity	Remarks
CW-3-19	Installation of Tie Rod-B (Temporary)	10 set	for Temporary Structure

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment	A-2-1-73	Truck Crane; 22 ton, Oil Pressure	hourly	2	154,913	1,032	131,788	309,825	2,064	263,575	
Labour	L-2-13	Rigger	day	1.5	0	0	39000	0	0	58,500	
	L-2-23	Common Labour	day	5	0	0	35100	0	0	175,500	
Material	M-E-12	Tierod (Lease)	kg day	3	60	0	40	150	0	100	
Others		Tools	%	15				46,496	310	74,651	
		Miscellaneous	L.S.					29	26	74	
Total for	10 set							356,500	2,400	572,400	
Unit Cost for	1 set							35,650	240	57,240	
Unit Cost for	1 kg		of Tie Rod					142,600	960	228,960	

*1 All composition numbers are quated from Japanese Standard.

*2 Tierod 500 kg/total / 200 set/total x 10 set = 3 kg/10set

Table 4.1.5 (10/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name		Calculation Quantity	Remarks
CW-3-20	Pulling Out of Concrete Sheet Pile (t=22)		100 m	L=10m long
	Kind of Pile	Concrete Sheet Pile	2	1. Steel Sheet Pile, 2. Concrete Sheet Pile
	Driving Direction	Pulling Out	2	1. Driving In, 2. Pulling Out
	Type of Sheet Pile	Concrete Sheet Pile	4	1. Steel Sheet Type-II, 2. Type-III, 3. Type-IV, 4. Concrete Sheet Pile
	Soil Condition	Mainly Sand or Gravel	2	1. Mainly Silt or Clay, 2. Mainly Sand or Gravel
	Using Machine	Vibrating Hammer 60kw	40003 1-4	21 11-13,21-23 3005
	Width	500 mm		201 101-103, 201-203
	Thickness of Material	220 mm	1	480836060
	Length of Driving	6 meter		24040
	Length of Sheet Pile	6 meter		168852663
	Crawler Crane	40t		
	Truck Crane	22t		
	Generator	200kVA		
	Working Condition	there is no obstacle	2	(f1) : 1. Obstacle Structure for construction are situated 2. Nothing
		Working space is limited	1	(f2) : 1. Working space is limited, 2. Working space is enough
	(total number of driving piles is	more than 300	3	(f3) : Construction scale, number of piles is ; 1.less than 100, 2.100-300, 3 more than 300
	Other	with Truck Crane	1	1. With Truck Crane 2. No Truck Crane

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-1-87	Vibrating Hammer; 60 kW	hourly	14.60	150,191	0	91,875	2,192,788	0	1,341,376	
	A-2-1-41	Crawler Crane; 40 ton	hourly	14.60	279,714	1,080	251,509	4,083,818	15,768	3,672,030	
	A-2-2-19	Generator; 200 kVA	daily	2.12	415,060	23,760	321,895	878,243	50,275	681,110	
	A-2-1-73	Truck Crane; 22 ton, Oil Pressure	hourly	8.76	154,913	1,032	131,788	1,357,034	9,040	1,154,459	
Labour											
	L-2-1	Foreman	day	2.12	0	0	48800	0	0	103,258	
	L-2-13	Rigger	day	4.23	0	0	39000	0	0	165,043	
	L-2-23	Common Labour	day	2.12	0	0	35100	0	0	74,270	
Others											
		Miscellaneous	L.S.					18	17	54	
Total for	100 m							8,511,900	75,100	7,191,600	
Unit Cost for	1 m							85,119	751	71,916	

Condition of Soil Mechanics

Depth (m)	N-value
1	10
2	10
3	10
4	15
5	10
6	10
7	
8	
9	
10	
11	
12	
13	
14	
15	
Max	15

Driving or Pulling Time /piece (minutes) Tc

Where,
- α : Coefficient for Driving or Pulling = 2.8 from Table 4.1.7-D
- γ : Coefficient for Driving or Pulling = 0 from Table 4.1.7-D
- l : Length of Driving or Pulling (m) = 6
- Nmax : Maximum N-value of Soil = 15
- K : Coefficient for Material and Equipment = 1.2 from Table 4.1.7-D

Coefficient for Working F

F = f0 + f1 + f2 + f3

Where,
- f0 : Base Coefficient = 1
- f1 : Obstacle Condition by Structure = 0 from Table 4.1.7-E
- f2 : Condition by Space for Construction = -0.05
- f3 : Condition of Scale by Number of Piling = 0.05

F : Coefficient for Working = 1

Hence, Tc = 8.76 minutes/piece

Production Rate

Working Time for Driving or Pulling /piece (mimutes) : Tc

$$Tc = \frac{l\,(0.75 + \gamma \times Nmax) \times l + \alpha\,] \times K}{F}$$

Where,
- α, γ : Coefficient for Driving or Pulling
- l : Length of Driving or Pulling (m)
- Nmax : Maximum N-value of Soil
- K : Coefficient for Material and Equipment
- F : Coefficient for Working

Material		Foreman	Rigger		Common
Concrete Sheet Pile		1	2		1

*1 100piece x $\frac{Tc}{T \times 60}$ x Composition of Manpower = Foreman 2.12, Rigger 4.23, Common 2.12

*2 100piece x $\frac{Tc}{60}$ = Vibrating Hammer 60kw And Crawler Crane 14.60 hour

*3 100piece x $\frac{Tc}{T \times 60}$ = Generator 2.12

*4 100piece x $\frac{Tc}{T \times 60}$ = Truck Crane 8.76

*5 Truck Crane Working Time / Piling Working Time = 60 %

*6 Average Daily Working Time of Generator, Labor $T = \frac{690}{100} = 6.9$ (hour/day)

Table 4.1.5 (11/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name		Calculation Quantity	Remarks			
CW-3-21	Driving In of H-Beam		10 piece	Driving 6m long			
	Kind of Pile	H Beam	4	1. Steel Sheet Pile, 2. Concrete Sheet Pile, 3. Log Pile, 4. H-Beam			
	Driving Direction	Driving In	1	1. Driving In, 2. Pulling Out			
	Type of Sheet Pile	0	0	1. Steel Sheet Type-II, 2. Type-III, 3. Type-IV, 4. Concrete Sheet Pile			
	Soil Condition	Mainly Sand or Gravel	2	1. Mainly Silt or Clay, 2. Mainly Sand or Gravel			
	Using Machine	Vibrating Hammer 30kw	30003 1-4	21	11-13,21-23		1005
	Width	300 mm		201	101-103, 201-203		
	Thickness of Material	400 mm	1				0
	Length of Driving	6 meter					0
	Length of Sheet Pile	12 meter					126642663
	Crawler Crane	37t					
	Generator	100kVA					
	Working Condition	there are obstacles	1	(f1) : 1. Obstacle Structure for construction are situated 2. Nothing			
		Working space is limited	1	(f2) : 1. Working space is limited, 2. Working space is enough			
	(total number of driving piles is	less than100	1	(f3) : Construction scale, number of piles is ; 1.less than 100, 2.100-300, 3 more than 300			
	Other	with Truck Crane	1	1. With Truck Crane 2. No Truck Crane			

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-1-85	Vibrating Hammer; 30 kW	hourly	1.98	86,428	0	52,870	170,839	0	104,506	
	A-2-1-71	Truck Crane; 11(10) ton, Oil Pressure	hourly	1.19	99,322	1,020	85,929	117,796	1,210	101,912	
	A-2-1-7	Backhoe; 0.6 m3	hourly	1.98	125,543	2,040	90,965	248,156	4,032	179,808	
	A-2-2-15	Generator; 100 kVA	daily	0.29	215,064	10,800	160,745	61,610	3,094	46,049	
Labour											
	L-2-1	Foreman	day	0.29	0	0	48800	0	0	13,980	
	L-2-13	Rigger	day	0.29	0	0	39000	0	0	11,172	
	L-2-23	Common Labour	day	0.57	0	0	35100	0	0	20,110	
Total for		10 piece						598,401	8,336	477,537	
Unit Cost for		1 piece						59,840	834	47,753	

Condition of Soil Mechanics

Depth (m)	N-value
1	7
2	7
3	10
4	10
5	10
6	10
7	
8	
9	
10	
11	
12	
13	
14	
15	
Max	10

Driving or Pulling Time /piece (minutes) Tc

Where,

α : Coefficient for Driving or Pulling	3.38	from Table 4.1.7-D
γ : Coefficient for Driving or Pulling	0.02	from Table 4.1.7-D
l : Length of Driving or Pulling (m)	6	
Nmax : Maximum N-value of Soil	10	
K : Coefficient for Material and Equipment	1.11	from Table 4.1.7-D

Coefficient for Working F

$F = f0 + f1 + f2 + f3$

Where,

f0 : Base Coefficient =	1	
f1 : Obstacle Condition by Structure =	-0.05	from Table 4.1.7-E
f2 : Condition by Space for Construction =	-0.05	
f3 : Condition of Scale by Number of Piling=	-0.05	
F : Coefficient for Working	0.85	

Hence, Tc = 11.86 minutes/piece

Production Rate

Working Time for Driving or Pulling /piece (minutes) : Tc

$$Tc = \frac{\{(0.75 + \gamma \times Nmax) \times l + \alpha\} \times K}{F}$$

Where,

α, γ : Coefficient for Driving or Pulling
l : Length of Driving or Pulling (m)
Nmax : Maximum N-value of Soil
K : Coefficient for Material and Equipment
F : Coefficient for Working

Material		Foreman	Rigger		Common
Concrete Sheet Pile		1	1		2

*1 10piece x $\frac{Tc}{T \times 60}$ x Composition of Manpower = Foreman 0.29, Rigger 0.29, Common 0.57

*2 10piece x $\frac{Tc}{60}$ = Vibrating Hammer 30kw And Crawler Crane 1.98 hour

*3 10piece x $\frac{Tc}{T \times 60}$ = Generator 0.29

*4 10piece x $\frac{Tc}{T \times 60}$ = Truck Crane 1.19

*5 Truck Crane Working Time / Piling Working Time = 60 %

*6 Average Daily Working Time of Generator, Labor

$T = \frac{690}{100} = 6.9$ (hour/day)

Table 4.1.5 (12/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name		Calculation Quantity	Remarks
CW-3-22	Pulling out of H-Beam		10 piece	Driving 6m long
	Kind of Pile	H Beam	4	1. Steel Sheet Pile, 2. Concrete Sheet Pile, 3. Log Pile, 4. H-Beam
	Driving Direction	Pulling Out	2	1. Driving In, 2. Pulling Out
	Type of Sheet Pile		0 0	1. Steel Sheet Type-II, 2. Type-III, 3. Type-IV, 4. Concrete Sheet Pile
	Soil Condition	Mainly Sand or Gravel	2	1. Mainly Silt or Clay, 2. Mainly Sand or Gravel
	Using Machine	Vibrating Hammer 30kw	40003 1~4	21 11~13,21~23 1005
	Width	300 mm		201 101~103, 201~203
	Thickness of Material	400 mm	1	0
	Length of Driving	6 meter		0
	Length of Sheet Pile	12 meter		168852663
	Crawler Crane	37t		
	Generator	100kVA		
	Working Condition	there are obstacles	1	(f1) : 1. Obstacle Structure for construction are situated 2. Nothing
		Working space is limited	1	(f2) : 1. Working space is limited, 2. Working space is enough
	(total number of driving piles is	less than100	1	(f3) : Construction scale, number of piles is ; 1.less than 100, 2.100~300, 3 more than 300
	Other	with Truck Crane	1	1. With Truck Crane 2. No Truck Crane

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-1-85	Vibrating Hammer; 30 kW	hourly	1.72	86,428	0	52,870	148,224	0	90,672	
	A-2-1-71	Truck Crane; 11(10) ton, Oil Pressure	hourly	1.03	99,322	1,020	85,929	102,202	1,050	88,421	
	A-2-1-7	Backhoe; 0.6 m3	hourly	1.72	125,543	2,040	90,965	215,306	3,499	156,005	
	A-2-2-15	Generator; 100 kVA	daily	0.25	215,064	10,800	160,745	53,454	2,684	39,953	
Labour											
	L-2-1	Foreman	day	0.25	0	0	48800	0	0	12,129	
	L-2-13	Rigger	day	0.25	0	0	39000	0	0	9,693	
	L-2-23	Common Labour	day	0.50	0	0	35100	0	0	17,448	
Total for		10 piece						519,1861	7,233	414,322	
Unit Cost for		1 piece						51,919	723	41,432	

Condition of Soil Mechanics

Depth (m)	N-value
1	7
2	7
3	10
4	10
5	10
6	10
7	
8	
9	
10	
11	
12	
13	
14	
15	
Max	10

Driving or Pulling Time /piece (minutes) Te

Where,
- α : Coefficient for Driving or Pulling — 3.38 from Table 4.1.6-D
- γ : Coefficient for Driving or Pulling — 0 from Table 4.1.6-D
- l : Length of Driving or Pulling (m) — 6
- Nmax : Maximum N-value of Soil — 10
- K : Coefficient for Material and Equipment — 1.11 from Table 4.1.6-D

Coefficient for Working F

F = f0 + f1 + f2 + f3

Where,
- f0 : Base Coefficient = 1
- f1 : Obstacle Condition by Structure = -0.05 from Table 4.1.6-E
- f2 : Condition by Space for Construction = -0.05
- f3 : Condition of Scale by Number of Piling = -0.05

F : Coefficient for Working — 0.85

Hence, Te = 10.29 minutes/piece

Production Rate

Working Time for Driving or Pulling /piece (minutes) : Te

$$Te = \frac{[\,(0.75 + \gamma \times Nmax) \times l + \alpha\,] \times K}{F}$$

Where,
- α, γ : Coefficient for Driving or Pulling
- l : Length of Driving or Pulling (m)
- Nmax : Maximum N-value of Soil
- K : Coefficient for Material and Equipment
- F : Coefficient for Working

Material		Foreman	Rigger		Common
Concrete Sheet Pile		1	1		2

*1 10piece x $\frac{Te}{T \times 60}$ x Composition of Manpower = Foreman 0.25, Rigger 0.25, Common 0.50

*2 10piece x $\frac{Te}{60}$ = Vibrating Hammer 30kw And Crawler Crane 1.72 hour

*3 10piece x $\frac{Te}{T \times 60}$ = Generator 0.25

*4 10piece x $\frac{Te}{T \times 60}$ = Truck Crane 1.03

*5 Truck Crane Working Time / Piling Working Time = 60 %

*6 Average Daily Working Time of Genetator, Labor

$$T = \frac{690}{100} = 6.9 \text{ (hour/day)}$$

Table 4.1.5 (13/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name		Calculation Quantity	Remarks
CW-3-23	Driving In of Log Pile L=3.0m		10 piece	L=3m long
	Kind of Pile	Log Pile	3	1. Steel Sheet Pile, 2. Concrete Sheet Pile, 3. Log Pile
	Driving Direction	Driving In	1	1. Driving In, 2. Pulling Out
	Type of Sheet Pile		0	1. Steel Sheet Type-II, 2. Type-III, 3. Type-IV, 4. Concrete Sheet Pile
	Soil Condition	Mainly Sand or Gravel	2	1. Mainly Silt or Clay, 2. Mainly Sand or Gravel
	Using Machine	Vibrating Hammer 30kw	30003 1~4	21 11~13,21~23 1005
	Width	150 mm		201 101~103, 201~203
	Thickness of Material	150 mm	1	0
	Length of Driving	3 meter		0
	Length of Sheet Pile	3 meter		126642663
	Backhoe	0.6m3		
	Generator	100kVA		
	Working Condition	there are obstacles	1	(f1) : 1. Obstacle Structure for construction are situated 2. Nothing
		Working space is limited	1	(f2) : 1. Working space is limited, 2. Working space is enough
	(total number of driving piles is	more than 300	3	(f3) : Construction scale, number of piles is ; 1.less than 100, 2.100~300, 3 more than 300
	Other	No Truck Crane	2	1. With Truck Crane 2. No Truck Crane

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-1-85	Vibrating Hammer; 30 kW	hourly	1.21	86,428	0	52,870	104,866	0	64,149	
	A-2-1-7	Backhoe; 0.6 m3	hourly	1.21	125,543	2,040	90,965	152,325	2,475	110,371	
	A-2-2-15	Generator; 100 kVA	daily	0.18	215,064	10,800	160,745	37,818	1,899	28,266	
Labour											
	L-2-1	Foreman	day	0.18	0	0	48800	0	0	8,581	
	L-2-13	Rigger	day	0.00	0	0	39000	0	0	0	
	L-2-23	Common Labour	day	0.35	0	0	35100	0	0	12,344	
Total for		10 piece						295,009	4,374	223,711	
Unit Cost for		1 piece						29,501	437	22,371	

Condition of Soil Mechanics

Depth (m)	N-value
1	7
2	7
3	10
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
Max	10

Driving or Pulling Time /piece (minutes) Tc

Where,
- α : Coefficient for Driving or Pulling — 3.38 from Table 4.1.7-D
- γ : Coefficient for Driving or Pulling — 0.02 from Table 4.1.7-D
- l : Length of Driving or Pulling (m) — 3
- Nmax : Maximum N-value of Soil — 10
- K : Coefficient for Material and Equipment — 1.11 from Table 4.1.7-D

Coefficient for Working F

F = f0 + f1 + f2 + f3

Where,
- f0 : Base Coefficient = 1
- f1 : Obstacle Condition by Structure = -0.05 from Table 4.1.7-E
- f2 : Condition by Space for Construction = -0.05
- f3 : Condition of Scale by Number of Piling = 0.05
- F : Coefficient for Working = 0.95

Hence, Tc = 7.28 minutes/piece

Production Rate

Working Time for Driving or Pulling /piece (minutes) : Tc

$$Tc = \frac{\{(0.75 + \gamma \times Nmax) \times l + \alpha\} \times K}{F}$$

Where,
- α, γ : Coefficient for Driving or Pulling
- l : Length of Driving or Pulling (m)
- Nmax : Maximum N-value of Soil
- K : Coefficient for Material and Equipment
- F : Coefficient for Working

Material	Foreman	Rigger	Common
Concrete Sheet Pile	1	0	2

*1 10piece x $\frac{Tc}{T \times 60}$ x Composition of Manpower = Foreman 0.18, Rigger 0.00, Common 0.35

*2 10piece x $\frac{Tc}{60}$ = Vibrating Hammer 30kw And Crawler Crane 1.21 hour

*3 10piece x $\frac{Tc}{T \times 60}$ = Generator 0.18

*4 10piece x $\frac{Tc}{T \times 60}$ = Truck Crane 0.73

*5 Truck Crane Working Time / Piling Working Time = 60 %

*6 Average Daily Working Time of Generator, Labor

$$T = \frac{690}{100} = 6.9 \text{ (hour/day)}$$

Table 4.1.5 (14/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name		Calculation Quantity	Remarks
CW-3-24	Driving In of Log Pile L=4.0m		10 piece	L=4m long
	Kind of Pile	Log Pile	3	1. Steel Sheet Pile, 2. Concrete Sheet Pile, 3. Log Pile
	Driving Direction	Driving In	1	1. Driving In, 2. Pulling Out
	Type of Sheet Pile		0	1. Steel Sheet Type-II, 2. Type-III, 3. Type-IV, 4. Concrete Sheet Pile
	Soil Condition	Mainly Sand or Gravel	2	1. Mainly Silt or Clay, 2. Mainly Sand or Gravel
	Using Machine	Vibrating Hammer 30kw	30003	1~4 21 11~13,21~23 1005
	Width	150 mm		201 101~103, 201~203
	Thickness of Material	150 mm	1	0
	Length of Driving	4 meter		0
	Length of Sheet Pile	4 meter		126642663
	Backhoe	0.6m3		
	Generator	100kVA		
	Working Condition	there are obstacles	1	(f1) : 1. Obstacle Structure for construction are situated 2. Nothing
		Working space is limited	1	(f2) : 1. Working space is limited, 2. Working space is enough
	(total number of driving piles is	more than 300	3	(f3) : Construction scale, number of piles is ; 1.less than 100, 2.100~300, 3.more than 300
	Other	No Truck Crane	2	1. With Truck Crane 2. No Truck Crane

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-1-85	Vibrating Hammer; 30 kW	hourly	1.40	86,428	0	52,870	120,855	0	73,930	
	A-2-1-7	Backhoe; 0.6 m3	hourly	1.40	125,543	2,030	90,965	175,551	2,853	127,199	
	A-2-2-15	Generator; 100 kVA	daily	0.20	215,064	10,800	160,745	43,584	2,189	32,576	
Labour											
	L-2-1	Foreman	day	0.20	0	0	48800	0	0	9,890	
	L-2-13	Rigger	day	0.00	0	0	39000	0	0	0	
	L-2-23	Common Labour	day	0.41	0	0	35100	0	0	14,227	
Total for		10 piece						339,990	5,041	257,821	
Unit Cost for		1 piece						33,999	504	25,782	

Condition of Soil Mechanics

Depth (m)	N-value
1	7
2	7
3	10
4	10
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
Max	10

Driving or Pulling Time /piece (minutes) Tc

Where,

α : Coefficient for Driving or Pulling	3.38	from Table 4.1.7-D
γ : Coefficient for Driving or Pulling	0.02	from Table 4.1.7-D
l : Length of Driving or Pulling (m)	4	
Nmax : Maximum N-value of Soil	10	
K : Coefficient for Material and Equipment	1.11	from Table 4.1.7-D

Coefficient for Working F

F = f0 + f1 + f2 + f3

Where,

f0 : Base Coefficient =	1	
f1 : Obstacle Condition by Structure =	-0.05	from Table 4.1.7-E
f2 : Condition by Space for Construction =	-0.05	
f3 : Condition of Scale by Number of Piling=	0.05	
F : Coefficient for Working	0.95	

Hence, Tc = 8.39 minutes/piece

Production Rate

Working Time for Driving or Pulling /piece (minutes) : Tc

$$Tc = \frac{l\,(0.75 + \gamma \times Nmax) \times l + \alpha\,] \times K}{F}$$

Where,
α, γ : Coefficient for Driving or Pulling
l : Length of Driving or Pulling (m)
Nmax : Maximum N-value of Soil
K : Coefficient for Material and Equipment
F : Coefficient for Working

Material		Foreman	Rigger		Common
Log Pile		1	0		2

*1 10piece x $\frac{Tc}{T \times 60}$ x Composition of Manpower = Foreman 0.20, Rigger 0.00, Common 0.41

*2 10piece x $\frac{Tc}{60}$ = Vibrating Hammer 30kw And Crawler Crane 1.40 hour

*3 10piece x $\frac{Tc}{T \times 60}$ = Generator 0.20

*4 10piece x $\frac{Tc}{T \times 60}$ = Truck Crane 0.84

*5 Truck Crane Working Time / Piling Working Time = 60 %

*6 Average Daily Working Time of Generator, Labor

$T = \frac{690}{100} =$ 6.9 (hour/day)

Table 4.1.5 (15/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name		Calculation Quantity	Remarks
CW-3-25	Driving In of Log Pile L=5.0m		10 piece	L=5m long
	Kind of Pile	Log Pile	3	1. Steel Sheet Pile, 2. Concrete Sheet Pile, 3. Log Pile
	Driving Direction	Driving In	1	1. Driving In, 2. Pulling Out
	Type of Sheet Pile		0	1. Steel Sheet Type-II, 2. Type-III, 3. Type-IV, 4. Concrete Sheet Pile
	Soil Condition	Mainly Sand or Gravel	2	1. Mainly Silt or Clay, 2. Mainly Sand or Gravel
	Using Machine	Vibrating Hammer 30kw	30003	1-4 21 11-13,21-23 1005
	Width	150	num	201 101-103, 201=203
	Thickness of Material	150	mm	1 0
	Length of Driving	5	meter	0
	Length of Sheet Pile	5	meter	126642663
	Backhoe	0.6m3		
	Generator	100kVA		
	Working Condition	there are obstacles	1	(f1) : 1. Obstacle Structure for construction are situated 2. Nothing
		Working space is limited	1	(f2) : 1. Working space is limited, 2. Working space is enough
	(total number of driving piles is	more than 300	3	(f3) : Construction scale, number of piles is ; 1.less than 100, 2.100-300, 3 more than 300
	Other	No Truck Crane	2	1. With Truck Crane 2. No Truck Crane

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PE/C	Unit Cost IE/C	Unit Cost L/C	Cost PE/C	Cost IE/C	Cost L/C	Remarks
Equipment											
	A-2-1-85	Vibrating Hammer; 30 kW	hourly	1.58	86,428	0	52,870	136,844	0	83,710	
	A-2-1-7	Backhoe; 0.6 m3	hourly	1.58	125,543	2,040	90,965	198,776	3,230	144,028	
	A-2-2-15	Generator; 100 kVA	daily	0.23	215,064	10,800	160,745	49,350	2,478	36,886	
Labour											
	L-2-1	Foreman	day	0.23	0	0	48800	0	0	11,198	
	L-2-13	Rigger	day	0.23	0	0	39000	0	0	8,949	
	L-2-23	Common Labour	day	0.46	0	0	35100	0	0	16,109	
Total for		10 piece						384,971	5,708	300,880	
Unit Cost for		1 piece						38,497	571	30,088	

Condition of Soil Mechanics

Depth (m)	N-value
1	7
2	7
3	10
4	10
5	10
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
Max	10

Driving or Pulling Time /piece (minutes) Te

Where, α : Coefficient for Driving or Pulling	3.38	from Table 4.1.7-D
γ : Coefficient for Driving or Pulling	0.02	from Table 4.1.7-D
l : Length of Driving or Pulling (m)	5	
Nmax : Maximum N-value of Soil	10	
K : Coefficient for Material and Equipment	1.11	from Table 4.1.7-D

Coefficient for Working F

F = f0 + f1 + f2 + f3

Where,	f0 :	Base Coefficient =	1
	f1 :	Obstacle Condition by Structure =	-0.05 from Table 4.1.7-E
	f2 :	Condition by Space for Construction =	-0.05
	f3 :	Condition of Scale by Number of Piling=	0.05
F : Coefficient for Working			0.95

Hence, Te = 9.5 minutes/piece

Material		Foreman	Rigger		Common
Log Pile		1	1		2

Production Rate

Working Time for Driving or Pulling /piece (minutes) : Te

$$Te = \frac{\{(0.75 + \gamma \times Nmax) \times l + \alpha\} \times K}{F}$$

Where,
α, γ : Coefficient for Driving or Pulling
l : Length of Driving or Pulling (m)
Nmax : Maximum N-value of Soil
K : Coefficient for Material and Equipment
F : Coefficient for Working

*1 10piece x $\frac{Te}{T \times 60}$ x Composition of Manpower = Foreman 0.23, Rigger 0.23, Common 0.46

*2 10piece x $\frac{Te}{60}$ = Vibrating Hammer 30kw And Crawler Crane 1.58 hour

*3 10piece x $\frac{Te}{T \times 60}$ = Generator 0.23

*4 10piece x $\frac{Te}{T \times 60}$ = Truck Crane 0.95

*5 Truck Crane Working Time / Piling Working Time = 60 %

*6 Average Daily Working Time of Generator, Labor $T = \frac{690}{100} = 6.9$ (hour/day)

Table 4.1.5 (16/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name		Calculation Quantity	Remarks
CW-3-26	Pile Work of Asin & Baru No.1		10 piece	Length is 16m tall
	Kind of Pile	Concrete Pile	2	1. Steel Pile, 2. Concrete Pile
	Driving Direction	Plumb Pile	1	1. Plumb, 2. Inclined, 3. Plumb with Soundproofed
	Diameter	500 mm		
	Thickness of Material	90 mm	1	
	Length of Driving	16 meter		
	Length of Pile	17 meter		
	Number of welding place	1 times		
	Using Machine	Crawler Diezel Hammer		
	Weight of Pile Hammer	3.5 t	4	
	Additional	without Pincers	1	1. Without Pincers, 2. With Pincers
	Working Condition	there are obstacles	1	(f1) : 1. Obstacle Structure for construction are situated 2. Nothing
		Working space is enough	2	(f2) : 1. Working space is limited, 2. Working space is enough
	(total number of driving piles is	more than 70	3	(f3) : Construction scale, number of piles is ; 1.less than 30, 2.30~70, 3 more than 70

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PE/C	Unit Cost IE/C	Unit Cost L/C	Cost PE/C	Cost IE/C	Cost L/C	Remarks
Equipment											
	A-2-2-15	Generator; 100 kVA	daily	1.90	215,064	10,800	215,064	408,622	20,520	408,622	
	A-2-1-73	Truck Crane; 22 ton, Oil Pressure	hourly	6.96	154,913	1,032	154,913	1,078,191	7,183	1,078,191	
	A-2-1-43	Crawler Diesel Hammer; 3.5 ton	hourly	11.60	584659.09	1800	584659.09	6,782,045	20,880	6,782,045	
	A-2-2-58	Shotcrete Machine Wet Type ; 0.8~1.2	hourly	1.90	68498.334	0	68498.334	130,147	0	130,147	
Labour											
	L-2-1	Foreman	day	1.90	0	0	48800	0	0	92,720	
	L-2-13	Rigger	day	3.80	0	0	39000	0	0	148,200	
	L-2-2	Operator	day	1.90	0	0	46900	0	0	89,110	
	L-2-6	Welder	day	1.90	0	0	39000	0	0	74,100	
Material											
	M-C-27	Prestressed Concrete Pile Dia. 500 mm A	m	170	171000	0	9000	29,070,000	0	1,530,000	
Others											
		Miscellaneous	L.S.					1,498,795	2,017	413,365	
Total for		10 piece						38,967,800	50,600	10,746,500	
Unit Cost for		1 piece						3,896,780	5,060	1,074,650	
Unit Cost for		1 m						229,222	298	63,215	

Condition of Soil Mechanics

Depth (m)	N-value
1	10
2	10
3	10
4	10
5	10
6	10
7	10
8	10
9	10
10	10
11	10
12	10
13	10
14	10
15	10
16	50
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
Average	12.5

Driving Time /piece (minutes) Tb

$Tb = K \times \alpha \times L^{\beta}$

Where, K : Pile Coefficient = 1.6 from Table 4.1.6-A

α : Soil Coefficient = 1 from Table 4.1.6-B

β : Hammer Coefficient = 1 from Table 4.1.6-C

L : Length of Driving = 16

Hence, Tb = 25.6 minutes

Welding Time /piece (minutes) Tw

$Tw = \Sigma twi$

Where, twi : Welding Time per 1 place = 19 from Table 4.1.6-D&E

Hence, Tw = 19 minutes

Preparation Time /piece (minutes) Tp

Tp = 18 minutes from Table 4.1.6-F

Coefficient for Working F

$F = f0 + f1 + f2 + f3$

Where, f0 : Base Coefficient = 0.9 from Table 4.1.6-G

f1 : Obstacle Condition by Structure = -0.05

f2 : Condition by Space for Construction = 0

f3 : Condition of Scale by Number of Piling = 0.05

Hence, F = 0.9

Hence, Tc = 69.6 minutes/piece

Production Rate

Working Time for Piling/piece (minutes) : Tc

$$Tc = \frac{Tb + Tw + Tp}{F}$$

Where, Tb : Driving Time /piece (minutes)

Tw : Welding Time /piece (minutes)

Tp : Preparation Time /piece (minutes)

F : Coefficient for Working

Miscellaneous Percentage (MP)

MP = 4 %

from Table 4.1.6-H

$T = \frac{730}{120} \times (1 - MP) = 6.1$ (hour/day)

*1 10piece x $\frac{Tc}{T \times 60}$ x Composition of Manpower = Foreman 1.90, Rigger 3.80, Common 1.90, Welder 1.90

*2 10piece x $\frac{Tc}{60}$ = Diezel Hammer 11.60 hour

*3 10piece x $\frac{Tc}{T \times 60}$ = Generator and Welder Machine 1.90

*3 Equipment Working Time / Piling Working Time = 60 %

Table 4.1.5 (17/17) CALCULATION SHEET FOR FOUNDATION WORKS

ID No.	Working Name		Calculation Quantity	Remarks
CW-3-27	Pile Work of Asin & Baru No.2		10 piece	Length is 26m tall
	Kind of Pile	Concrete Pile	2	1. Steel Pile, 2. Concrete Pile
	Driving Direction	Plumb Pile	1	1. Plumb, 2. Inclined, 3. Plumb with Soundproofed
	Diameter	500	mm	
	Thickness of Material	90	mm	1
	Length of Driving	26	meter	
	Length of Pile	27	meter	
	Number of welding place	1	times	
	Using Machine	Crawler Diezel Hammer		
	Weight of Pile Hammer	3.5	t	4
	Additional	without Pincers	1	1. Without Pincers, 2. With Pincers
	Working Condition	there are obstacles	1	(f1) : 1. Obstacle Structure for construction are situated 2. Nothing
		Working space is enough	2	(f2) : 1. Working space is limited, 2. Working space is enough
	(total number of driving piles is	more than 70	3	(f3) : Construction scale, number of piles is : 1.less than 30, 2.30-70, 3 more than 70

Major Item	ID No.	Description	Unit	Quantity	Unit Cost PF/C	Unit Cost IF/C	Unit Cost L/C	Cost PF/C	Cost IF/C	Cost L/C	Remarks
Equipment											
	A-2-2-15	Generator, 100 kVA	daily	2.39	215,064	10,800	215,064	514,003	25,812	514,003	
	A-2-1-73	Truck Crane; 22 ton, Oil Pressure	hourly	8.73	154,913	1,032	154,913	1,352,386	9,009	1,352,386	
	A-2-1-43	Crawler Diesel Hammer; 3.5 ton	hourly	14.55	584659.09	1800	584659.09	8,506,790	26,190	8,506,790	
	A-2-2-58	Shotcrete Machine Wet Type : 0.8~1.2	hourly	2.39	68498.334	0	68498.334	163,711	0	163,711	
Labour											
	L-2-1	Foreman	day	2.39	0	0	48800	0	0	116,632	
	L-2-13	Rigger	day	4.77	0	0	39000	0	0	186,030	
	L-2-2	Operator	day	2.39	0	0	46900	0	0	112,091	
	L-2-6	Welder	day	2.39	0	0	39000	0	0	93,210	
Material											
	M-C-27	Prestressed Concrete Pile Dia. 500 mm A	m	270	171000	0	9000	46,170,000	0	2,430,000	
Others											
		Miscellaneous	L.S.					2,268,310	2,489	539,047	
Total for		10 piece						58,975,200	63,500	14,013,900	
Unit Cost for		1 piece						5,897,520	6,350	1,401,390	
Unit Cost for		1 m						218,427	235	51,903	

Condition of Soil Mechanics

Depth (m)	N-value
1	10
2	10
3	10
4	10
5	10
6	10
7	10
8	10
9	10
10	10
11	10
12	10
13	10
14	10
15	10
16	10
17	10
18	10
19	10
20	10
21	10
22	10
23	10
24	10
25	10
26	50
27	
28	
29	
30	
Average	11.53846154

Driving Time /piece (minutes) Tb

$Tb = K \times \alpha \times L^{\beta}$

Where, K : Pile Coefficient = 1.6 from Table 4.1.6-A

α : Soil Coefficient = 1 from Table 4.1.6-B

β : Hammer Coefficient = 1 from Table 4.1.6-C

L : Length of Driving = 26

Hence, Tb = 41.6 minutes

Welding Time /piece (minutes) Tw

$Tw = \Sigma wi$

Where, wi : Welding Time per 1 place = 19 from Table 4.1.6-D&E

Hence, Tw = 19 minutes

Preparation Time /piece (minutes) Tp

Tp = 18 minutes from Table 4.1.6-F

Coefficient for Working F

$F = f0 + f1 + f2 + f3$

Where, f0 : Base Coefficient = 0.9 from Table 4.1.6-G

f1 : Obstacle Condition by Structure = -0.05

f2 : Condition by Space for Construction = 0

f3 : Condition of Scale by Number of Piling = 0.05

Hence, F = 0.9

Hence, Tc = 87.3 minutes/piece

Production Rate

Working Time for Piling/piece (minutes) : Tc

$$Tc = \frac{Tb + Tw + Tp}{F}$$

Where, Tb : Driving Time /piece (minutes)

Tw : Welding Time /piece (minutes)

Tp : Preparation Time /piece (minutes)

F : Coefficient for Working

Miscellaneous Percentage (MP)

MP = 4 % from Table 4.1.6-H

$$T = \frac{730}{120} = 6.1$$ (hour/day)

*110piece x $\frac{Tc}{T \times 60}$ x Composition of Manpower = Foreman 2.39, Rigger 4.77, Common 2.39, Welder 2.39

*210piece x $\frac{Tc}{60}$ = Diezel Hammer 14.55 hour, *3 10piece x $\frac{Tc}{T \times 60}$ = Generator and Welder Machine 2.39

*3 Equipment Working Time / Piling Working Time = 60 %

Table 4.1.6 WORKING COEFFICIENT FOR PILE DRIVING

Table 4.1.6 - A COEFFICIENT BY KINDS OF PILE (K)

Kind of Pile	Plumb Pile	Inclined Pile
Steel Pile	1	1.2
Concrete Pile	1.6	1.9

Table 4.1.6 - B COEFFICIENT BY SOIL MECHANICS (α)

	Range of N-value on Average				
	less than 5	5 ~ 10	10 ~20	20 ~30	equal or more than 30
Coefficient (α)	0.75	0.9	1	1.15	1.25

Table 4.1.6 - C COEFFICIENT BY HAMMER (β)

Diameter	Weight (t) for Diezel Pile Hammer						Weight(t) for Oil Pressure Pile Hammer				
(mm)	1.3	2.5	3.5	4.5	6	7.2	2	4~4.5	6.5	7~8	10~12.5
250	0.95	0.85	0.8				0.95	0.83	0.76		
300	1.01	0.91	0.85				0.99	0.88	0.81		
350	1.05	0.93	0.89	0.83			1.04	0.93	0.85	0.83	
400		0.97	0.93	0.87				0.97	0.89	0.86	
450		1	0.96	0.9	0.87			1.01	0.92	0.9	0.82
500		1.03	1	0.94	0.91			1.04	0.95	0.93	0.85
550		1.06	1.03	0.97	0.94						
600		1.09	1.06	0.99	0.96	0.93		1.1	1.01	0.98	0.89
700			1.11	1.05	1.02	0.98			1.05	1.02	0.93
800				1.09	1.06	1.02				1.06	0.97
900				1.14	1.1	1.07					1
1,000				1.18	1.14	1.11					1.03

Table 4.1.6 - D WELDING TIME FOR STEEL PILE (Tw)

Unit : minute by Arc Welding

Diameter	Thicknees of Steel (mm)					
(mm)	8	9	10	12	14	16
400	16	18	19	25	32	40
500	20	22	24	31	40	51
550	22	24	26	34	44	56
600	24	26	29	37	48	61
700	28	30	34	43	56	71
800	21	23	25	32	41	53
900	23	26	29	36	46	59
1000	26	29	31	40	51	66

Table 4.1.6 - E WELDING TIME FOR CONCRETE PILE (Tw)

Unit : minute by Arc Welding

Diameter	250	300	350	400	450	500	600	700	800
Time	12	13	15	17	18	19	22	24	26

Table 4.1.6 - F PREPARATION TIME BY MEASURES OF PILING (Tp)

unit : minute

	Preparation Time	
	Ordinary Measure	With Pincers
Plumb Pile	18	24
Plumb with soundproofed	23	34
Inclined Pile	19	26

Table 4.1.6 - G COEFFICIENT BY WORKING CONDITION (F)

Condition		Coefficient
Obstacle Condition by Structure (f1)	Situated	-0.05
	Nothing	0
Condition by Space for Construction (f2)	no Good	-0.05
	Ordinary	0
Condition of Scale by Number of Piling (f3)	less than 30 pieces	-0.05
	30 ~70	0
	more than 70	0.05

Table 4.1.6 - H MISCELLANEOUS PERCENTAGE

Unit : %

Kind of Pile	without Joint	One Joint	Two Joint	Three Joint
Steel Pile	1	5	6	9
Concrete Pile	1	4	5	

Table 4.1.6 - I COMPOSITION OF MANPOWER FOR PILING (MPC)

	Foreman	Rigger	Common Labor	Welder
Steel Pile	1	2	1	1
Concrete Pile	1	2	1	1

Table 4.1.7 WORKING COEFFICIENT FOR SHEET PILE DRIVING

Table 4.1.7 - A EQUIPMENT FOR PILLING OUT OF SHEET PILE

Type	Length of Pulling Out	Application
II	All	30
III or IV	~15m	40
	15m ~	60
Concrete Sheet Pile	All	40

Table 4.1.7 - B APPLICATION OF USING EQUIPMENT

Equipment	30kw	40kw	60kw
Crawler Crane	35~37t		40t
Truck Crane	20~22t		
Generator	100kVA	125kVA	200kVA

Table 4.1.7 - C COMPOSITION OF MANPOWER FOR PILING (MPC)

	Foreman	Rigger	Common Labor
Steel Sheet Pile	1	2	1
Concrete Sheet Pile	1	2	1

Table 4.1.7 - D COEFFICIENT FOR DRIVING OF SHEET PILE

		30kw		40kw		60kw	
		α	K	α	K	α	K
Type-II	Driving In	3.38	1.11	4.04	0.93	4.52	0.83
	Pulling Out	3.24					
Type-III	Driving In	2.82	1.33	3.38	1.11	3.75	1
	Pulling Out	2.71		3.24		3.6	
Type-IV	Driving In			3.18	1.18	3.57	1.05
	Pulling Out			3.05		3.43	
Concrete Sheet Pile	Driving In					3	1.2
	Pulling Out					2.8	
γ	Driving In	0.02					
	Pulling Out	0					

Table 4.1.7 - E COEFFICIENT BY WORKING CONDITION (F)

Condition		Coefficient
Obstacle Condition by Structure (f1)	Situated	-0.05
	Nothing	0
Condition by Space for Construction (f2)	no Good	-0.05
	Ordinary	0
Condition of Scale by Number of Piling (f3)	less than 30 pieces	-0.05
	30 ~70	0
	more than 70	0.05

Table 4.1.8 (1/7) CALCULATION SHEET FOR TEMPORARY WORK AND RAIL WORK-1

ID No.	Working Name	Calculation Quantity	Remarks
CW-1-1	Temporary Bridge	215 m2	Width is 3m. Number of Working Day is 180 days including Installation and Removal

Major Item	ID No.	Description	Unit	Quantity	Unit Cost			Cost			Remarks
					PF/C	IF/C	L/C	PF/C	IF/C	L/C	
Equipment											
	A-2-1-82	Truck; 4 ton	hourly	60	37,005	876	37,451	2,220,301	52,560	2,247,060	
	A-2-1-13	Backhoe; 1 m3	hourly	195	196,104	3,360	142,785	38,240,186	655,200	27,843,086	
	A-2-1-85	Vibrating Hanmer; 30 kW	hourly	195	86,428	0	52,870	16,853,419	0	10,309,601	
	A-2-2-16	Generator; 125 kVA	daily	30	271,912	15,120	209,096	8,157,366	453,600	6,272,879	
	A-2-1-48	Dumptruck; 10 ton	hourly	210	77269	3060	70744.12	16,226,489	642,600	14,856,265	
	A-2-1-72	Truck Crane; 16 ton, Oil Pressur	hourly	195	135641.1	1020	115858.5	26,450,012	198,900	22,592,401	
Labour											
	L-2-32	Chief of Bridge	day	60	0	0	68300	0	0	4,098,000	
	L-2-16	Steel Worker	day	150	0	0	39000	0	0	5,850,000	
	L-2-33	Bridge Worker	day	150	0	0	58600	0	0	8,790,000	
	L-2-23	Common Labour	day	300	0	0	35100	0	0	10,530,000	
Material											
	M-E-2	Reinforcing Bar, Deformed U-30	kg	340	0	3000	3000	0	1,020,000	1,020,000	
	M-D-4	Timber	m3	20.45	0	0	850000	0	0	17,382,500	
	M-E-36	Bolt and Nut	kg	60.84	0	12375	28875	0	752,895	1,756,755	
	M-E-8	H-beam (Lease), SS41	kg day	3925800	18.11842	0	12.07895	71,129,297	0	47,419,532	21810kg x 180days
	M-D-12	Coconut Pile, Dia. 25cm, 10-12	nos.	78	0	0	55000	0	0	4,290,000	
Others											
		Miscellaneous	L.S.					17,927,729	377,645	18	10%
Total for	215 m2							197,204,800	4,153,400	185,258,100	
Unit Cost for	1 m2							917,232	19,318	861,666	
Unit Cost for	1 ton							8,878,764	186,999	8,340,887	