

T-70. Unit Rate per Meter of Shotcrete of Upper Half : Grade C1							
Rate = 18,872 Baht/m				F.C. = 15,837 Baht/m 84%			
Ing-Yot No.2 Tunnel with Adit				L.C. = 3,035 Baht/m 16%			
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							per 10m
Shotcrete Robot Shot Radius 8m	1	4 Hr	2,170	8,680	10	40	4 Hr x 1
Shotcrete Shooter Wet 10-15m <sup>3</sup> /h	1	4 Hr	3,105	12,420	25	100	4 Hr x 1
Truck with Crane 4t x 2.9t lift	1	25 Hr	425	10,625	25	625	25 Hr x 1
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x 1
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	4 Hr	1,290	5,160	63	252	4 Hr x 1
Truck Mixer 4.5 m <sup>3</sup>	1	9 Hr	620	5,580	70	630	9 Hr x 1
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	9 Hr	1,780	16,020	20	180	9 Hr x 1
Subtotal				60,745		1,935	Baht / 10m
2. Material							per 10m
Portland Cement Type II		13 ton	1,666	21,658	714	9,282	
Fine Sand for Aggregate		30 m <sup>3</sup>	0	0	220	6,600	
Coarse Sand for Aggregate(Gravel)		17 m <sup>3</sup>	0	0	220	3,740	
Accelerator for Shotcrete		750 kg	100	75,000	0	0	
Miscellaneous		1 %		967		196	
Subtotal				97,625		19,818	Baht / 10m
3. Labor							per 10m
Foreman Tunnel		1.0 day			720	720	2.0 days 50% = 1
Operator of Heavy		9.0 day			460	4,140	1.5 day x 6
Driver		4.5 day			350	1,575	1.5 day x 3
Skilled Labor		3.0 day			260	780	1.5 day x 2
Common Labor		6.0 day			230	1,380	1.5 day x 4
Subtotal						8,595	
4. Total				158,370		30,348	188,718 Baht / 10m
5. Output Working Time per 1 day = 12 Hr x 2 shift per 10 m							
Rate = Baht/m				15,837 Baht/m		3,035 Baht/m = 18,872	

T-71. Unit Rate per Meter of Shotcrete of Upper Half : Grade C2								
Rate = 20,171 Baht/m				F.C. = 17,101 Baht/m		85%		
Ing-Yot No.2 Tunnel with Adit				L.C. = 3,070 Baht/m		15%		
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark
				Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)								per 10m
Shotcrete Robot Shot Radius 8m		1	5 Hr	2,170	10,850	10	50	5 Hr x 1
Shotcrete Shooter Wa 10-15m <sup>3</sup> /h		1	5 Hr	3,105	15,525	25	125	5 Hr x 1
Truck with Crane 4t x 2.9t lift		1	28 Hr	425	11,900	25	700	28 Hr x 1
Accelerator Supplier 5.5kw		1	2 day	1,130	2,260	54	108	2 day x 1
Dust Collector 300m <sup>3</sup> /hr, 30kw		1	5 Hr	1,290	6,450	63	315	5 Hr x 1
Truck Mixer 4.5 m <sup>3</sup>		1	11 Hr	620	6,820	70	770	11 Hr x 1
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )		1	11 Hr	1,780	19,580	20	220	11 Hr x 1
Subtotal					73,385		2,288	Baht / 10m
2. Material								per 10m
Portland Cement Type II		13	ton	1,666	21,658	714	9,282	
Fine Sand for Aggregate		30	m <sup>3</sup>	0	0	220	6,600	
Coarse Sand for Aggregate(Gravel)		17	m <sup>3</sup>	0	0	220	3,740	
Accelerator for Shotcrete		750	kg	100	75,000	0	0	
Miscellaneous		1	%		967		196	
Subtotal					97,625		19,818	Baht / 10m
3. Labor								per 10m
Foreman Tunnel			1.0 day			720	720	2.0 days 50% = 1
Operator of Heavy			9.0 day			460	4,140	1.5 day x 6
Driver			4.5 day			350	1,575	1.5 day x 3
Skilled Labor			3.0 day			260	780	1.5 day x 2
Common Labor			6.0 day			230	1,380	1.5 day x 4
Subtotal							8,595	
4. Total					171,010		30,701	201,711 Baht / 10m
5. Output				Working Time per 1 day = 12 Hr x 2 shift				per 10 m
Rate = Baht/m				17,101 Baht/m		3,070 Baht/m =		20,171

T-72. Unit Rate per Meter of Shotcrete of Upper Half : Grade D1							
Rate = 27,189 Baht/m				F.C. = 22,493 Baht/m 83%			
Ing-Yot No.2 Tunnel with Adit				L.C. = 4,696 Baht/m 17%			
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							
per 10m							
Shotcrete Robot Shot Radius 8m	1	6 Hr	2,170	13,020	10	60	6 Hr x 1
Shotcrete Shooter Wt 10-15m3/hr	1	6 Hr	3,105	18,630	25	150	6 Hr x 1
Truck with Crane 4t x 2.9t lift	1	36 Hr	425	15,300	25	900	36 Hr x 1
Accelerator Supplier 5.5kw	1	3 day	1,130	3,390	54	162	3 day x 1
Dust Collector 300m3/hr, 30kw	1	6 Hr	1,290	7,740	63	378	6 Hr x 1
Truck Mixer 4.5 m3	1	13 Hr	620	8,060	70	910	13 Hr x 1
Concrete Plant 1.0*2 m3(25-30m3)	1	13 Hr	1,780	23,140	20	260	13 Hr x 1
Subtotal				89,280		2,820	Baht / 10m
2. Material							
per 10m							
Portland Cement Type II		18 ton	1,666	29,988	714	12,852	
Fine Sand for Aggregate		41 m3	0	0	220	9,020	
Coarse Sand for Aggregate(Gravel)		41 m3	0	0	220	9,020	
Accelerator for Shotcrete		1030 kg	100	103,000	0	0	
Miscellaneous		2 %		2,660		618	
Subtotal				135,648		31,510	Baht / 10m
3. Labor							
per 10m							
Foreman Tunnel		1.5 day			720	1,080	3.0 days 50% = 1.5
Operator of Heavy		13.5 day			460	6,210	1.5 day x 9
Driver		6.0 day			350	2,100	1.5 day x 4
Skilled Labor		4.5 day			260	1,170	1.5 day x 3
Common Labor		9.0 day			230	2,070	1.5 day x 6
Subtotal						12,630	
4. Total				224,928		46,960	271,888 Baht / 10m
5. Output Working Time per 1 day = 12 Hr x 2 shift per 10 m							
Rate = Baht/m				22,493 Baht/m 4,696 Baht/m = 27,189			

T-73. Unit Rate per Meter of Shotcrete of Upper Half : Grade D2							
Rate = 34,590 Baht/m				F.C. = 29,320 Baht/m 85%			
Ing-Yot No.2 Tunnel with Adit				L.C. = 5,270 Baht/m 15%			
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							
per 10m							
Shotcrete Robot Shot Radius 8m	1	8 Hr	2,170	17,360	10	80	8 Hr x 1
Shotcrete Shooter Wt 10-15m3/hr	1	8 Hr	3,105	24,840	25	200	8 Hr x 1
Truck with Crane 4t x 2.9t lift	1	43 Hr	425	18,275	25	1,075	43 Hr x 1
Accelerator Supplier 5.5kw	1	3 day	1,130	3,390	54	162	3 day x 1
Dust Collector 300m3/hr, 30kw	1	8 Hr	1,290	10,320	63	504	8 Hr x 1
Truck Mixer 4.5 m3	1	20 Hr	620	12,400	70	1,400	20 Hr x 1
Concrete Plant 1.0*2 m3(25-30m3)	1	20 Hr	1,780	35,600	20	400	20 Hr x 1
Subtotal				122,185		3,821	Baht / 10m
2. Material							
per 10m							
Portland Cement Type II		23 ton	1,666	38,318	714	16,422	
Fine Sand for Aggregate		52 m3	0	0	220	11,440	
Coarse Sand for Aggregate(Gravel)		31 m3	0	0	220	6,820	
Accelerator for Shotcrete		1,310 kg	100	131,000	0	0	
Miscellaneous		1 %		1,693		347	
Subtotal				171,011		35,029	Baht / 10m
3. Labor							
per 10m							
Foreman Tunnel		1.5 day			720	1,080	3.0 days 50% = 1.5
Operator of Heavy		15.0 day			460	6,900	1.5 day x 10
Driver		7.5 day			350	2,625	1.5 day x 5
Skilled Labor		4.5 day			260	1,170	1.5 day x 3
Common Labor		9.0 day			230	2,070	1.5 day x 6
Subtotal						13,845	
4. Total				293,196		52,695	345,891 Baht / 10m
5. Output Working Time per 1 day = 12 Hr x 2 shift per 10 m							
Rate = Baht/m				29,320 Baht/m 5,270 Baht/m = 34,590			

T-74. Unit Rate per Meter of Shotcrete of Upper Half : Grade E1									
Rate = 35,303 Baht/m F.C. = 29,930 Baht/m 85%									
Ing-Yot No.2 Tunnel with Adit L.C. = 5,373 Baht/m 15%									
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 10m		
Shotcrete Robot Shot Radius 8m	1	8 Hr	2,170	17,360	10	80	8 Hr × 1		
Shotcrete Shooter Wet 10-15m <sup>3</sup> /hr	1	8 Hr	3,105	24,840	25	200	8 Hr × 1		
Truck with Crane 4t x 2.9t lift	1	43 Hr	425	18,275	25	1,075	43 Hr × 1		
Accelerator Supplier 5.5kw	1	3 day	1,130	3,390	54	162	3 day × 1		
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	8 Hr	1,290	10,320	63	504	8 Hr × 1		
Truck Mixer 4.5 m <sup>3</sup>	1	21 Hr	620	13,020	70	1,470	21 Hr × 1		
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	21 Hr	1,780	37,380	20	420	21 Hr × 1		
Subtotal				124,585		3,911	Baht / 10m		
2. Material							per 10m		
Portland Cement Type II		24 ton	1,666	39,984	714	17,136			
Fine Sand for Aggregate		53 m <sup>3</sup>	0	0	220	11,660			
Coarse Sand for Aggregate(Gravel)		31 m <sup>3</sup>	0	0	220	6,820			
Accelerator for Shotcrete		1,330 kg	100	133,000	0	0			
Miscellaneous		1 %		1,730		356			
Subtotal				174,714		35,972	Baht / 10m		
3. Labor							per 10m		
Foreman Tunnel		1.5 day			720	1,080	3.0 days50% = 1.5		
Operator of Heavy		15.0 day			460	6,900	1.5 day × 10		
Driver		7.5 day			350	2,625	1.5 day × 5		
Skilled Labor		4.5 day			260	1,170	1.5 day × 3		
Common Labor		9.0 day			230	2,070	1.5 day × 6		
Subtotal						13,845			
4. Total				299,299		53,728	353,027 Baht / 10m		
5. Output Working Time per 1 day = 12 Hr x 2 shift per 10 m									
Rate = Baht/m 29,930 Baht/m 5,373 Baht/m = 35,303									

T-75. Unit Rate per Meter of Shotcrete of Upper Half : Grade E2									
Rate = 42,251 Baht/m F.C. = 35,580 Baht/m 84%									
Ing-Yot No.2 Tunnel with Adit L.C. = 6,671 Baht/m 16%									
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 10m		
Shotcrete Robot Shot Radius 8m	1	9 Hr	2,170	19,530	10	90	9 Hr × 1		
Shotcrete Shooter Wt 10-15m <sup>3</sup> /h	1	9 Hr	3,105	27,945	25	225	9 Hr × 1		
Truck with Crane 4t x 2.9t lift	1	50 Hr	425	21,250	25	1,250	50 Hr × 1		
Accelerator Supplier 5.5kw	1	4 day	1,130	4,520	54	216	4 day × 1		
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	9 Hr	1,290	11,610	63	567	9 Hr × 1		
Truck Mixer 4.5 m <sup>3</sup>	1	22 Hr	620	13,640	70	1,540	22 Hr × 1		
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	22 Hr	1,780	39,160	20	440	22 Hr × 1		
Subtotal				137,655		4,328	Baht / 10m		
2. Material							per 10m		
Portland Cement Type II		30 ton	1,666	49,980	714	21,420			
Fine Sand for Aggregate		67 m <sup>3</sup>	0	0	220	14,740			
Coarse Sand for Aggregate(Gravel)		39 m <sup>3</sup>	0	0	220	8,580			
Accelerator for Shotcrete		1,660 kg	100	166,000	0	0			
Miscellaneous		1 %		2,160		447			
Subtotal				218,140		45,187	Baht / 10m		
3. Labor							per 10m		
Foreman Tunnel		2.0 day			720	1,440	4.0 days50% = 2		
Operator of Heavy		18.0 day			460	8,280	1.5 day × 12		
Driver		9.0 day			350	3,150	1.5 day × 6		
Skilled Labor		6.0 day			260	1,560	1.5 day × 4		
Common Labor		12.0 day			230	2,760	1.5 day × 8		
Subtotal						17,190			
4. Total				355,795		66,705	422,500 Baht / 10m		
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 10 m		
Rate = Baht/m			35,580 Baht/m 6,671 Baht/m =				42,251		

T-76. Unit Rate per Meter of Shotcrete of Upper Half : Grade B									
				Rate = 9,434 Baht/m		F.C. = 7,785 Baht/m		83%	
Adit for Ing-Yot No.2 Tunnel						L.C. = 1,649 Baht/m		17%	
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark	
				Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								per 10m	
Shotcrete Robot Shot Radius 8m	1	2 Hr		2,170	4,340	10	20	2 Hr x	1
Shotcrete Shooter Wai 10-15m3/hr	1	2 Hr		3,105	6,210	25	50	2 Hr x	1
Truck with Crane 4t x 2.9t lift	1	16 Hr		425	6,800	25	400	16 Hr x	1
Accelerator Supplier 5.5kw	1	2 day		1,130	2,260	54	108	2 day x	1
Dust Collector 300m3/hr, 30kw	1	2 Hr		1,290	2,580	63	126	2 Hr x	1
Truck Mixer 4.5 m3	1	6 Hr		620	3,720	70	420	6 Hr x	1
Concrete Plant 1.0*2 m3(25-30m3)	1	8 Hr		1,780	14,240	20	160	8 Hr x	1
Subtotal					40,150		1,284	Baht / 10m	
2. Material								per 10m	
Portland Cement Type II		5 ton		1,666	8,330	714	3,570		
Fine Sand for Aggregate		12 m3		0	0	220	2,640		
Coarse Sand for Aggregate(Gravel)		7 m3		0	0	220	1,540		
Accelerator for Shotcrete		290 kg		100	29,000	0	0		
Miscellaneous		1 %			373		78		
Subtotal					37,703		7,828	Baht / 10m	
3. Labor								per 10m	
Foreman Tunnel		1.0 day				720	720	2.0 daysx50%=	1
Operator of Heavy		7.5 day				460	3,450	1.5 day x	5
Driver		3.0 day				350	1,050	1.5 day x	2
Skilled Labor		3.0 day				260	780	1.5 day x	2
Common Labor		6.0 day				230	1,380	1.5 day x	4
Subtotal							7,380		
4. Total					77,853		16,492	94,345 Baht / 10m	
5. Output				Working Time per 1 day = 12 Hr x 2 shift				per 10 m	
Rate = Baht/m				7,785 Baht/m		1,649 Baht/m =		9,434	

T-77. Unit Rate per Meter of Shotcrete of Upper Half : Grade C1									
Rate = 13,365 Baht/m F.C. = 11,379 Baht/m 85%									
Adit for Ing-Yot No.2 Tunnel L.C. = 1,986 Baht/m 15%									
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark	
				Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								per 10m	
Shotcrete Robot Shot Radius 8m	1	3	Hr	2,170	6,510	10	30	3	Hr x 1
Shotcrete Shooter Wet 10-15m <sup>3</sup> /h	1	3	Hr	3,105	9,315	25	75	3	Hr x 1
Truck with Crane 4t x 2.9t lift	1	20	Hr	425	8,500	25	500	20	Hr x 1
Accelerator Supplier 5.5kw	1	1	day	1,130	1,130	54	54	1	day x 1
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	3	Hr	1,290	3,870	63	189	3	Hr x 1
Truck Mixer 4.5 m <sup>3</sup>	1	7	Hr	620	4,340	70	490	7	Hr x 1
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	7	Hr	1,780	12,460	20	140	7	Hr x 1
Subtotal					46,125		1,478	Baht / 10m	
2. Material								per 10m	
Portland Cement Type II		9	ton	1,666	14,994	714	6,426		
Fine Sand for Aggregate		21	m <sup>3</sup>	0	0	220	4,620		
Coarse Sand for Aggregate(Gravel)		12	m <sup>3</sup>	0	0	220	2,640		
Accelerator for Shotcrete		520	kg	100	52,000	0	0		
Miscellaneous		1	%		670		137		
Subtotal					67,664		13,823	Baht / 10m	
3. Labor								per 10m	
Foreman Tunnel		0.5	day			720	360	1.0 day x 50% =	0.5
Operator of Heavy		4.5	day			460	2,070	1.5 day x	3
Driver		3.0	day			350	1,050	1.5 day x	2
Skilled Labor		1.5	day			260	390	1.5 day x	1
Common Labor		3.0	day			230	690	1.5 day x	2
Subtotal							4,560		
4. Total					113,789		19,861	133,650 Baht / 10m	
5. Output				Working Time per 1 day = 12 Hr x 2 shift				per 10 m	
Rate = Baht/m				11,379 Baht/m				1,986 Baht/m = 13,365	

T-78. Unit Rate per Meter of Shotcrete of Upper Half : Grade C2								
			Rate = 14,982 Baht/m			F.C. = 12,558 Baht/m 84%		
Adit for Ing-Yot No.2 Tunnel						L.C. = 2,424 Baht/m 16%		
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 10m	
Shotcrete Robot Shot Radius 8m	1	4 Hr	2,170	8,680	10	40	4 Hr x	1
Shotcrete Shooter Wei 10-15m3/hr	1	4 Hr	3,105	12,420	25	100	4 Hr x	1
Truck with Crane 4t x 2.9t lift	1	24 Hr	425	10,200	25	600	24 Hr x	1
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x	1
Dust Collector 300m3/hr, 30kw	1	4 Hr	1,290	5,160	63	252	4 Hr x	1
Truck Mixer 4.5 m3	1	8 Hr	620	4,960	70	560	8 Hr x	1
Concrete Plant 1.0*2 m3(25-30m3)	1	8 Hr	1,780	14,240	20	160	8 Hr x	1
Subtotal				57,920		1,820	Baht / 10m	
2. Material							per 10m	
Portland Cement Type II		9 ton	1,666	14,994	714	6,426		
Fine Sand for Aggregate		21 m3	0	0	220	4,620		
Coarse Sand for Aggregate(Gravel)		12 m3	0	0	220	2,640		
Accelerator for Shotcrete		520 kg	100	52,000	0	0		
Miscellaneous		1 %		670		137		
Subtotal				67,664		13,823	Baht / 10m	
3. Labor							per 10m	
Foreman Tunnel		1.0 day			720	720	2.0 day x 50% =	1
Operator of Heavy		9.0 day			460	4,140	1.5 day x	6
Driver		4.5 day			350	1,575	1.5 day x	3
Skilled Labor		3.0 day			260	780	1.5 day x	2
Common Labor		6.0 day			230	1,380	1.5 day x	4
Subtotal						8,595		
4. Total				125,584		24,238	149,822 Baht / 10m	
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 10 m	
Rate = Baht/m			12,558 Baht/m			2,424 Baht/m = 14,982		

T-79. Unit Rate per Meter of Shotcrete of Upper Half : Grade D1									
			Rate = 19,718 Baht/m		F.C. = 16,457 Baht/m		83%		
Adit for Ing-Yot No.2 Tunnel					L.C. = 3,261 Baht/m		17%		
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 10m		
Shotcrete Robot Shot Radius 8m	1	5 Hr	2,170	10,850	10	50	5 Hr x	1	
Shotcrete Shooter Wd 10-15m3/h	1	5 Hr	3,105	15,525	25	125	5 Hr x	1	
Truck with Crane 4t x 2.9t lift	1	28 Hr	425	11,900	25	700	28 Hr x	1	
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x	1	
Dust Collector 300m3/hr, 30kw	1	5 Hr	1,290	6,450	63	315	5 Hr x	1	
Truck Mixer 4.5 m3	1	10 Hr	620	6,200	70	700	10 Hr x	1	
Concrete Plant 1.0*2 m3(25-30m3	1	10 Hr	1,780	17,800	20	200	10 Hr x	1	
Subtotal				70,985		2,198	Baht / 10m		
2. Material							per 10m		
Portland Cement Type II		13 ton	1,666	21,658	714	9,282			
Fine Sand for Aggregate		28 m3	0	0	220	6,160			
Coarse Sand for Aggregate(Gravel)		28 m3	0	0	220	6,160			
Accelerator for Shotcrete		710 kg	100	71,000	0	0			
Miscellaneous		1 %		927		216			
Subtotal				93,585		21,818	Baht / 10m		
3. Labor							per 10m		
Foreman Tunnel		1.0 day			720	720	2.0 day x 50% =	1	
Operator of Heavy		9.0 day			460	4,140	1.5 day x	6	
Driver		4.5 day			350	1,575	1.5 day x	3	
Skilled Labor		3.0 day			260	780	1.5 day x	2	
Common Labor		6.0 day			230	1,380	1.5 day x	4	
Subtotal						8,595			
4. Total				164,570		32,611	197,181 Baht / 10m		
5. Output							Working Time per 1 day = 12 Hr x 2 shift per 10 m		
Rate = Baht/m			16,457 Baht/m			3,261 Baht/m = 19,718			

T-80. Unit Rate per Meter of Shotcrete of Upper Half : Grade D2									
Rate = 23,574 Baht/m				F.C. = 19,990 Baht/m		85%			
Adit for Ing-Yot No.2 Tunnel				L.C. = 3,584 Baht/m		15%			
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark	
				Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								per 10m	
Shotcrete Robot Shot Radius 8m	1	6 Hr	2,170	13,020	10	60	6 Hr x	1	
Shotcrete Shooter Wd 10-15m3/h	1	6 Hr	3,105	18,630	25	150	6 Hr x	1	
Truck with Crane 4t x 2.9t lift	1	33 Hr	425	14,025	25	825	33 Hr x	1	
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x	1	
Dust Collector 300m3/hr, 30kw	1	6 Hr	1,290	7,740	63	378	6 Hr x	1	
Truck Mixer 4.5 m3	1	11 Hr	620	6,820	70	770	11 Hr x	1	
Concrete Plant 1.0*2 m3(25-30m3)	1	11 Hr	1,780	19,580	20	220	11 Hr x	1	
Subtotal					82,075		2,511	Baht / 10m	
2. Material								per 10m	
Portland Cement Type II	16	ton	1,666	26,656	714	11,424			
Fine Sand for Aggregate	36	m3	0	0	220	7,920			
Coarse Sand for Aggregate(Gravel)	21	m3	0	0	220	4,620			
Accelerator for Shotcrete	900	kg	100	90,000	0	0			
Miscellaneous	1	%		1,167		240			
Subtotal					117,823		24,204	Baht / 10m	
3. Labor								per 10m	
Foreman Tunnel	1.0	day			720	720	2.0 dayx50% =	1	
Operator of Heavy	9.0	day			460	4,140	1.5 day x	6	
Driver	6.0	day			350	2,100	1.5 day x	4	
Skilled Labor	3.0	day			260	780	1.5 day x	2	
Common Labor	6.0	day			230	1,380	1.5 day x	4	
Subtotal						9,120			
4. Total					199,898		35,835	235,733 Baht / 10m	
5. Output				Working Time per 1 day = 12 Hr x 2 shift				per 10 m	
Rate = Baht/m				19,990 Baht/m		3,584 Baht/m =		23,574	

T-81. Unit Rate per Meter of Shotcrete of Upper Half : Grade E1									
			Rate = 23,798 Baht/m		F.C. = 20,192 Baht/m		85%		
Adit for Ing-Yot No.2 Tunnel					L.C. = 3,606 Baht/m		15%		
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 10m		
Shotcrete Robot Shot Radius 8m	1	6 Hr	2,170	13,020	10	60	6 Hr x	1	
Shotcrete Shooter Wet 10-15m <sup>3</sup> /h	1	6 Hr	3,105	18,630	25	150	6 Hr x	1	
Truck with Crane 4t x 2.9t lift	1	33 Hr	425	14,025	25	825	33 Hr x	1	
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x	1	
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	6 Hr	1,290	7,740	63	378	6 Hr x	1	
Truck Mixer 4.5 m <sup>3</sup>	1	11 Hr	620	6,820	70	770	11 Hr x	1	
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	11 Hr	1,780	19,580	20	220	11 Hr x	1	
Subtotal				82,075		2,511	Baht / 10m		
2. Material							per 10m		
Portland Cement Type II		16 ton	1,666	26,656	714	11,424			
Fine Sand for Aggregate		37 m <sup>3</sup>	0	0	220	8,140			
Coarse Sand for Aggregate(Gravel)		21 m <sup>3</sup>	0	0	220	4,620			
Accelerator for Shotcrete		920 kg	100	92,000	0	0			
Miscellaneous		1 %		1,187		242			
Subtotal				119,843		24,426	Baht / 10m		
3. Labor							per 10m		
Foreman Tunnel		1.0 day			720	720	2.0 day x 50%	1	
Operator of Heavy		9.0 day			460	4,140	1.5 day x	6	
Driver		6.0 day			350	2,100	1.5 day x	4	
Skilled Labor		3.0 day			260	780	1.5 day x	2	
Common Labor		6.0 day			230	1,380	1.5 day x	4	
Subtotal						9,120			
4. Total				201,918		36,057	237,975 Baht / 10m		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 10 m		
Rate = Baht/m			20,192 Baht/m				3,606 Baht/m = 23,798		

T-82. Unit Rate per Meter of Shotcrete of Upper Half : Grade E2									
Rate = 29,025 Baht/m					F.C. = 24,410 Baht/m 84%				
Adit for Ing-Yot No.2 Tunnel					L.C. = 4,615 Baht/m 16%				
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 10m		
Shotcrete Robot Shot Radius 8m	1	7 Hr	2,170	15,190	10	70	7 Hr x	1	
Shotcrete Shooter Wei 10-15m <sup>3</sup> /h	1	7 Hr	3,105	21,735	25	175	7 Hr x	1	
Truck with Crane 4t x 2.9t lift	1	38 Hr	425	16,150	25	950	38 Hr x	1	
Accelerator Supplier 5.5kw	1	3 day	1,130	3,390	54	162	3 day x	1	
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	7 Hr	1,290	9,030	63	441	7 Hr x	1	
Truck Mixer 4.5 m <sup>3</sup>	1	12 Hr	620	7,440	70	840	12 Hr x	1	
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	12 Hr	1,780	21,360	20	240	12 Hr x	1	
Subtotal				94,295		2,878	Baht / 10m		
2. Material							per 10m		
Portland Cement Type II		20 ton	1,666	33,320	714	14,280			
Fine Sand for Aggregate		46 m <sup>3</sup>	0	0	220	10,120			
Coarse Sand for Aggregate(Gravel)		27 m <sup>3</sup>	0	0	220	5,940			
Accelerator for Shotcrete		1,150 kg	100	115,000	0	0			
Miscellaneous		1 %		1,483		303			
Subtotal				149,803		30,643	Baht / 10m		
3. Labor							per 10m		
Foreman Tunnel		1.5 day			720	1,080	3.0 dayx50%	1.5	
Operator of Heavy		13.5 day			460	6,210	1.5 day x	9	
Driver		6.0 day			350	2,100	1.5 day x	4	
Skilled Labor		4.5 day			260	1,170	1.5 day x	3	
Common Labor		9.0 day			230	2,070	1.5 day x	6	
Subtotal						12,630			
4. Total				244,098		46,151	290,249 Baht / 10m		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 10 m		
Rate = Baht/m			24,410 Baht/m				4,615 Baht/m = 29,025		

T-83. Unit Rate per Meter of Shotcrete of Lower Half : Grade C1									
Rate = 5,158 Baht/m F.C. = 4,338 Baht/m 84%									
Kok-Ing Tunnel L.C. = 820 Baht/m 16%									
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark	
				Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								per 10 m	
Shotcrete Robot Shot Radius 8m	1	2 Hr		2,170	4,340	10	20	2 Hr x	1
Shotcrete Shooter Wai 10-15m3/h	1	2 Hr		3,105	6,210	25	50	2 Hr x	1
Truck with Crane 4t x 2.9t lift	1	8 Hr		425	3,400	25	200	8 Hr x	1
Accelerator Supplier 5.5kw	1	1 day		1,130	1,130	54	54	1 day x	1
Dust Collector 300m3/hr, 30kw	1	2 Hr		1,290	2,580	63	126	2 Hr x	1
Truck Mixer 4.5 m3	1	3 Hr		620	1,860	70	210	3 Hr x	1
Concrete Plant 1.0*2 m3(25-30m3)	1	3 Hr		1,780	5,340	20	60	3 Hr x	1
Subtotal					24,860		720	Baht / 10m	
2. Material								per 10 m	
Portland Cement Type II		2 ton		1,666	3,332	714	1,428		
Fine Sand for Aggregate		6 m3		0	0	220	1,320		
Coarse Sand for Aggregate(Gravel)		3 m3		0	0	220	660		
Accelerator for Shotcrete		150 kg		100	15,000	0	0		
Miscellaneous		1 %			183		34		
Subtotal					18,515		3,442	Baht / 10m	
3. Labor								per 10m	
Foreman Tunnel		0.5 day				720	360	1.0 dayx50% =	0.5
Operator of Heavy		4.5 day				460	2,070	1.5 day x	3
Driver		1.5 day				350	525	1.5 day x	1
Skilled Labor		1.5 day				260	390	1.5 day x	1
Common Labor		3.0 day				230	690	1.5 day x	2
Subtotal							4,035		
4. Total					43,375		8,197	51,572 Baht / 10m	
5. Output				Working Time per 1 day = 12 Hr x 2 shift				per 10 m	
Rate = Baht/m				4,338 Baht/m				820 Baht/m x 5,158	

T-84. Unit Rate per Meter of Shotcrete of Lower Half : Grade C2									
Rate = 5,202 Baht/m F.C. = 4,380 Baht/m 84%									
Kok-Ing Tunnel L.C. = 822 Baht/m 16%									
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 10m		
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	2 Hr x	1	
Shotcrete Shooter Wei 10-15m <sup>3</sup> /h	1	2 Hr	3,105	6,210	25	50	2 Hr x	1	
Truck with Crane 4t x 2.9t lift	1	9 Hr	425	3,825	25	225	9 Hr x	1	
Accelerator Supplier 5.5kw	1	1 day	1,130	1,130	54	54	1 day x	1	
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 Hr x	1	
Truck Mixer 4.5 m <sup>3</sup>	1	3 Hr	620	1,860	70	210	3 Hr x	1	
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	3 Hr	1,780	5,340	20	60	3 Hr x	1	
Subtotal				25,285		745	Baht / 10m		
2. Material							per 10m		
Portland Cement Type II		2 ton	1,666	3,332	714	1,428			
Fine Sand for Aggregate		6 m <sup>3</sup>	0	0	220	1,320			
Coarse Sand for Aggregate(Gravel)		3 m <sup>3</sup>	0	0	220	660			
Accelerator for Shotcrete		150 kg	100	15,000	0	0			
Miscellaneous		1 %		183		34			
Subtotal				18,515		3,442	Baht / 10m		
3. Labor							per 10m		
Foreman Tunnel		0.5 day			720	360	1.0 dayx50% =	0.5	
Operator of Heavy		4.5 day			460	2,070	1.5 day x	3	
Driver		1.5 day			350	525	1.5 day x	1	
Skilled Labor		1.5 day			260	390	1.5 day x	1	
Common Labor		3.0 day			230	690	1.5 day x	2	
Subtotal						4,035			
4. Total				43,800		8,222	52,022 Baht / 10m		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 10 m		
Rate = Baht/m			4,380 Baht/m				822 Baht/m = 5,202		



T-85. Unit Rate per Meter of Shotcrete of Lower Half : Grade D1								
Rate = 6,753 Baht/m F.C. = 5,491 Baht/m 81%								
Kok-Ing Tunnel L.C. = 1,262 Baht/m 19%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 10m	
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	2 Hr x 1	
Shotcrete Shooter Wei 10-15m3/hr	1	2 Hr	3,105	6,210	25	50	2 Hr x 1	
Truck with Crane 4t x 2.9t lift	1	11 Hr	425	4,675	25	275	11 Hr x 1	
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x 1	
Dust Collector 300m3/hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 Hr x 1	
Truck Mixer 4.5 m3	1	4 Hr	620	2,480	70	280	4 Hr x 1	
Concrete Plant 1.0*2 m3(25-30m3)	1	4 Hr	1,780	7,120	20	80	4 Hr x 1	
Subtotal				29,665		939	Baht / 10m	
2. Material							per 10m	
Portland Cement Type II		3 ton	1,666	4,998	714	2,142		
Fine Sand for Aggregate		8 m3	0	0	220	1,760		
Coarse Sand for Aggregate(Gravel)		4 m3	0	0	220	880		
Accelerator for Shotcrete		200 kg	100	20,000	0	0		
Miscellaneous		1 %		250		48		
Subtotal				25,248		4,830	Baht / 10m	
3. Labor							per 10m	
Foreman Tunnel		1.0 day			720	720	2.0 day x 50% = 1	
Operator of Heavy		7.5 day			460	3,450	1.5 day x 5	
Driver		1.5 day			350	525	1.5 day x 1	
Skilled Labor		3.0 day			260	780	1.5 day x 2	
Common Labor		6.0 day			230	1,380	1.5 day x 4	
Subtotal						6,855		
4. Total				54,913		12,624	67,537 Baht / 10m	
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 10 m	
Rate = Baht/m			5,491 Baht/m		1,262 Baht/m =		6,753	

T-86. Unit Rate per Meter of Shotcrete of Lower Half : Grade D2								
			Rate = 7,882 Baht/m		F.C. = 6,447 Baht/m		82%	
Kok-Ing Tunnel					L.C. = 1,435 Baht/m		18%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 10m	
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	2 Hr x	1
Shotcrete Shooter Wt 10-15m3/hr	1	2 Hr	3,105	6,210	25	50	2 Hr x	1
Truck with Crane 4t x 2.9t lift	1	12 Hr	425	5,100	25	300	12 Hr x	1
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x	1
Dust Collector 300m3/hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 Hr x	1
Truck Mixer 4.5 m3	1	5 Hr	620	3,100	70	350	5 Hr x	1
Concrete Plant 1.0*2 m3(25-30m3)	1	5 Hr	1,780	8,900	20	100	5 Hr x	1
Subtotal				32,490		1,054	Baht / 10m	
2. Material							per 10m	
Portland Cement Type II	4	ton	1,666	6,664	714	2,856		
Fine Sand for Aggregate	10	m3	0	0	220	2,200		
Coarse Sand for Aggregate(Gravel)	6	m3	0	0	220	1,320		
Accelerator for Shotcrete	250	kg	100	25,000	0	0		
Miscellaneous	1	%		317		64		
Subtotal				31,981		6,440	Baht / 10m	
3. Labor							per 10m	
Foreman Tunnel	1.0	day			720	720	2.0 day x 50%	1
Operator of Heavy	7.5	day			460	3,450	1.5 day x	5
Driver	1.5	day			350	525	1.5 day x	1
Skilled Labor	3.0	day			260	780	1.5 day x	2
Common Labor	6.0	day			230	1,380	1.5 day x	4
Subtotal						6,855		
4. Total				64,471		14,349	78,820 Baht / 10m	
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 10 m	
Rate = Baht/m			6,447 Baht/m		1,435 Baht/m =		7,882	

T-87. Unit Rate per Meter of Shotcrete of Lower Half : Grade E1								
			Rate = 7,882 Baht/m		F.C. = 6,447 Baht/m		82%	
Kok-Ing Tunnel					L.C. = 1,435 Baht/m		18%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 10m	
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	2 Hr x	1
Shotcrete Shooter Wet 10-15m <sup>3</sup> /h	1	2 Hr	3,105	6,210	25	50	2 Hr x	1
Truck with Crane 4t x 2.9t lift	1	12 Hr	425	5,100	25	300	12 Hr x	1
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x	1
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 Hr x	1
Truck Mixer 4.5 m <sup>3</sup>	1	5 Hr	620	3,100	70	350	5 Hr x	1
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	5 Hr	1,780	8,900	20	100	5 Hr x	1
Subtotal				32,490		1,054	Baht / 10m	
2. Material							per 10m	
Portland Cement Type II		4 ton	1,666	6,664	714	2,856		
Fine Sand for Aggregate		10 m <sup>3</sup>	0	0	220	2,200		
Coarse Sand for Aggregate(Gravel)		6 m <sup>3</sup>	0	0	220	1,320		
Accelerator for Shotcrete		250 kg	100	25,000	0	0		
Miscellaneous		1 %		317		64		
Subtotal				31,981		6,440	Baht / 10m	
3. Labor							per 10m	
Foreman Tunnel		1.0 day			720	720	2.0 dayx50% =	
Operator of Heavy		7.5 day			460	3,450	1.5 day x	5
Driver		1.5 day			350	525	1.5 day x	1
Skilled Labor		3.0 day			260	780	1.5 day x	2
Common Labor		6.0 day			230	1,380	1.5 day x	4
Subtotal						6,855		
4. Total				64,471		14,349	78,820 Baht / 10m	
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 10 m	
Rate = Baht/m			6,447 Baht/m		1,435 Baht/m =		7,882	

T-88. Unit Rate per Meter of Shotcrete of Lower Half : Grade E2							
Rate = 9,604 Baht/m				F.C. = 7,963 Baht/m 83%			
Kok-Ing Tunnel				L.C. = 1,641 Baht/m 17%			
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							per 10m
Shotcrete Robot Shot Radius 8m	1	3 Hr	2,170	6,510	10	30	3 Hr x 1
Shotcrete Shooter Wet 10-15m <sup>3</sup> /hr	1	3 Hr	3,105	9,315	25	75	3 Hr x 1
Truck with Crane 4t x 2.9t lift	1	14 Hr	425	5,950	25	350	14 Hr x 1
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x 1
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	3 Hr	1,290	3,870	63	189	3 Hr x 1
Truck Mixer 4.5 m <sup>3</sup>	1	5 Hr	620	3,100	70	350	5 Hr x 1
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	5 Hr	1,780	8,900	20	100	5 Hr x 1
Subtotal				39,905		1,202	Baht / 10m
2. Material							per 10m
Portland Cement Type II	5	ton	1,666	8,330	714	3,570	
Fine Sand for Aggregate	12	m <sup>3</sup>	0	0	220	2,640	
Coarse Sand for Aggregate(Gravel)	7	m <sup>3</sup>	0	0	220	1,540	
Accelerator for Shotcrete	310	kg	100	31,000	0	0	
Miscellaneous	1	%		393		78	
Subtotal				39,723		7,828	Baht / 10m
3. Labor							per 10m
Foreman Tunnel	1.0	day			720	720	2.0 dayx50%= 1
Operator of Heavy	7.5	day			460	3,450	1.5 day x 5
Driver	3.0	day			350	1,050	1.5 day x 2
Skilled Labor	3.0	day			260	780	1.5 day x 2
Common Labor	6.0	day			230	1,380	1.5 day x 4
Subtotal						7,380	
4. Total				79,628		16,410	96,038 Baht / 10m
5. Output Working Time per 1 day = 12 Hr x 2 shift per 10 m							
Rate = Baht/m				7,963 Baht/m 1,641 Baht/m = 9,604			

T-89. Unit Rate per Meter of Shotcrete of Lower Half : Grade C1								
			Rate =		5,407 Baht/m		F.C. = 4,578 Baht/m 85%	
Ing-Yot Tunnel without Adit					L.C. =		829 Baht/m 15%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 10 m	
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	2 Hr x 1	
Shotcrete Shooter Wet 10-15m <sup>3</sup> /hr	1	2 Hr	3,105	6,210	25	50	2 Hr x 1	
Truck with Crane 4t x 2.9t lift	1	8 Hr	425	3,400	25	200	8 Hr x 1	
Accelerator Supplier 5.5kw	1	1 day	1,130	1,130	54	54	1 day x 1	
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 Hr x 1	
Truck Mixer 4.5 m <sup>3</sup>	1	4 Hr	620	2,480	70	280	4 Hr x 1	
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	4 Hr	1,780	7,120	20	80	4 Hr x 1	
Subtotal				27,260		810	Baht / 10m	
2. Material							per 10 m	
Portland Cement Type II		2 ton	1,666	3,332	714	1,428		
Fine Sand for Aggregate		6 m <sup>3</sup>	0	0	220	1,320		
Coarse Sand for Aggregate(Gravel)		3 m <sup>3</sup>	0	0	220	660		
Accelerator for Shotcrete		150 kg	100	15,000	0	0		
Miscellaneous		1 %		183		34		
Subtotal				18,515		3,442	Baht / 10m	
3. Labor							per 10m	
Foreman Tunnel		0.5 day			720	360	1.0 day x 50% = 0.5	
Operator of Heavy		4.5 day			460	2,070	1.5 day x 3	
Driver		1.5 day			350	525	1.5 day x 1	
Skilled Labor		1.5 day			260	390	1.5 day x 1	
Common Labor		3.0 day			230	690	1.5 day x 2	
Subtotal						4,035		
4. Total				45,775		8,287	54,062 Baht / 10m	
5. Output			Working Time per 1 day = 12 Hr x 2 shift			per 10 m		
Rate = Baht/m			4,578 Baht/m			829 Baht/m = 5,407		

T-90. Unit Rate per Meter of Shotcrete of Lower Half : Grade C2								
			Rate = 5,852 Baht/m		F.C. = 4,733 Baht/m		81%	
Ing-Yot Tunnel without Adit					L.C. = 1,119 Baht/m		19%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 10m	
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	2 Hr x	1
Shotcrete Shooter Wa 10-15m <sup>3</sup> /hr	1	2 Hr	3,105	6,210	25	50	2 Hr x	1
Truck with Crane 4t x 2.9t lift	1	9 Hr	425	3,825	25	225	9 Hr x	1
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x	1
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 Hr x	1
Truck Mixer 4.5 m <sup>3</sup>	1	4 Hr	620	2,480	70	280	4 Hr x	1
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	4 Hr	1,780	7,120	20	80	4 Hr x	1
Subtotal				28,815		889	Baht / 10m	
2. Material							per 10m	
Portland Cement Type II		2 ton	1,666	3,332	714	1,428		
Fine Sand for Aggregate		6 m <sup>3</sup>	0	0	220	1,320		
Coarse Sand for Aggregate(Gravel)		3 m <sup>3</sup>	0	0	220	660		
Accelerator for Shotcrete		150 kg	100	15,000	0	0		
Miscellaneous		1 %		183		34		
Subtotal				18,515		3,442	Baht / 10m	
3. Labor							per 10m	
Foreman Tunnel		1.0 day			720	720	2.0 day x 50% =	1
Operator of Heavy		7.5 day			460	3,450	1.5 day x	5
Driver		1.5 day			350	525	1.5 day x	1
Skilled Labor		3.0 day			260	780	1.5 day x	2
Common Labor		6.0 day			230	1,380	1.5 day x	4
Subtotal						6,855		
4. Total				47,330		11,186	58,516 Baht / 10m	
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 10 m	
Rate = Baht/m			4,733 Baht/m		1,119 Baht/m		= 5,852	

T-91. Unit Rate per Meter of Shotcrete of Lower Half : Grade D1								
			Rate = 7,002 Baht/m		F.C. = 5,731 Baht/m		82%	
Ing-Yot Tunnel without Adit					L.C. = 1,271 Baht/m		18%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 10m	
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	2 Hr x	1
Shotcrete Shooter Wet 10-15m3/hr	1	2 Hr	3,105	6,210	25	50	2 Hr x	1
Truck with Crane 4t x 2.9t lift	1	11 Hr	425	4,675	25	275	11 Hr x	1
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x	1
Dust Collector 300m3/hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 Hr x	1
Truck Mixer 4.5 m3	1	5 Hr	620	3,100	70	350	5 Hr x	1
Concrete Plant 1.0*2 m3(25-30m3)	1	5 Hr	1,780	8,900	20	100	5 Hr x	1
Subtotal				32,065		1,029	Baht / 10m	
2. Material							per 10m	
Portland Cement Type II		3 ton	1,666	4,998	714	2,142		
Fine Sand for Aggregate		8 m3	0	0	220	1,760		
Coarse Sand for Aggregate(Gravel)		4 m3	0	0	220	880		
Accelerator for Shotcrete		200 kg	100	20,000	0	0		
Miscellaneous		1 %		250		48		
Subtotal				25,248		4,830	Baht / 10m	
3. Labor							per 10m	
Foreman Tunnel		1.0 day			720	720	2.0 dayx50% =	1
Operator of Heavy		7.5 day			460	3,450	1.5 day x	5
Driver		1.5 day			350	525	1.5 day x	1
Skilled Labor		3.0 day			260	780	1.5 day x	2
Common Labor		6.0 day			230	1,380	1.5 day x	4
Subtotal						6,855		
4. Total				57,313		12,714	70,027 Baht / 10m	
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 10 m	
Rate = Baht/m			5,731 Baht/m		1,271 Baht/m =		7,002	

T-92. Unit Rate per Meter of Shotcrete of Lower Half : Grade D2								
			Rate = 7,882 Baht/m		F.C. = 6,447 Baht/m		82%	
Ing-Yot Tunnel without Adit					L.C. = 1,435 Baht/m		18%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 10m	
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	2 Hr ×	1
Shotcrete Shooter Wt 10-15m3/hr	1	2 Hr	3,105	6,210	25	50	2 Hr ×	1
Truck with Crane 4t x 2.9t lift	1	12 Hr	425	5,100	25	300	12 Hr ×	1
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day ×	1
Dust Collector 300m3/hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 Hr ×	1
Truck Mixer 4.5 m3	1	5 Hr	620	3,100	70	350	5 Hr ×	1
Concrete Plant 1.0*2 m3(25-30m3)	1	5 Hr	1,780	8,900	20	100	5 Hr ×	1
Subtotal				32,490		1,054	Baht / 10m	
2. Material							per 10m	
Portland Cement Type II		4 ton	1,666	6,664	714	2,856		
Fine Sand for Aggregate		10 m3	0	0	220	2,200		
Coarse Sand for Aggregate(Gravel)		6 m3	0	0	220	1,320		
Accelerator for Shotcrete		250 kg	100	25,000	0	0		
Miscellaneous		1 %		317		64		
Subtotal				31,981		6,440	Baht / 10m	
3. Labor							per 10m	
Foreman Tunnel		1.0 day			720	720	2.0 day×50%=	1
Operator of Heavy		7.5 day			460	3,450	1.5 day ×	5
Driver		1.5 day			350	525	1.5 day ×	1
Skilled Labor		3.0 day			260	780	1.5 day ×	2
Common Labor		6.0 day			230	1,380	1.5 day ×	4
Subtotal						6,855		
4. Total				64,471		14,349	78,820 Baht / 10m	
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 10 m	
Rate = Baht/m			6,447 Baht/m		1,435 Baht/m =		7,882	

T-93. Unit Rate per Meter of Shotcrete of Lower Half : Grade E1							
Rate = 7,920 Baht/m				F.C. = 6,479 Baht/m 82%			
Ing-Yot Tunnel without Adit				L.C. = 1,441 Baht/m 18%			
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	per 10m
Shotcrete Shooter Wei 10-15m3/hr	1	2 Hr	3,105	6,210	25	50	2 Hr x 1
Truck with Crane 4t x 2.9t lift	1	12 Hr	425	5,100	25	300	2 Hr x 1
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	12 Hr x 1
Dust Collector 300m3/hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 day x 1
Truck Mixer 4.5 m3	1	5 Hr	620	3,100	70	350	2 Hr x 1
Concrete Plant 1.0*2 m3(25-30m3)	1	5 Hr	1,780	8,900	20	100	5 Hr x 1
Subtotal				32,490		1,054	Baht / 10m
2. Material							
Portland Cement Type II	4	ton	1,666	6,664	714	2,856	per 10m
Fine Sand for Aggregate	10	m3	0	0	220	2,200	
Coarse Sand for Aggregate(Gravel)	6	m3	0	0	220	1,320	
Accelerator for Shotcrete	250	kg	100	25,000	0	0	
Miscellaneous	2	%		633		128	
Subtotal				32,297		6,504	Baht / 10m
3. Labor							
Foreman Tunnel	1.0	day			720	720	per 10m
Operator of Heavy	7.5	day			460	3,450	2.0 days 50% = 1
Driver	1.5	day			350	525	1.5 day x 5
Skilled Labor	3.0	day			260	780	1.5 day x 1
Common Labor	6.0	day			230	1,380	1.5 day x 2
Subtotal						6,855	1.5 day x 4
4. Total				64,787		14,413	79,200 Baht / 10m
5. Output Working Time per 1 day = 12 Hr x 2 shift per 10 m							
Rate = Baht/m				6,479 Baht/m 1,441 Baht/m = 7,920			

T-94. Unit Rate per Meter of Shotcrete of Lower Half : Grade E2							
Rate = 10,858 Baht/m				F.C. = 9,114 Baht/m 84%			
Ing-Yot Tunnel without Adit				L.C. = 1,744 Baht/m 16%			
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							
Shotcrete Robot Shot Radius 8m	1	4 Hr	2,170	8,680	10	40	per 10m
Shotcrete Shooter Wei 10-15m3/hr	1	4 Hr	3,105	12,420	25	100	4 Hr x 1
Truck with Crane 4t x 2.9t lift	1	20 Hr	425	8,500	25	500	20 Hr x 1
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x 1
Dust Collector 300m3/hr, 30kw	1	4 Hr	1,290	5,160	63	252	4 Hr x 1
Truck Mixer 4.5 m3	1	6 Hr	620	3,720	70	420	6 Hr x 1
Concrete Plant 1.0*2 m3(25-30m3)	1	6 Hr	1,780	10,680	20	120	6 Hr x 1
Subtotal				51,420		1,540	Baht / 10m
2. Material							
Portland Cement Type II	5	ton	1,666	8,330	714	3,570	per 10m
Fine Sand for Aggregate	12	m3	0	0	220	2,640	
Coarse Sand for Aggregate(Gravel)	7	m3	0	0	220	1,540	
Accelerator for Shotcrete	310	kg	100	31,000	0	0	
Miscellaneous	1	%		393		78	
Subtotal				39,723		7,828	Baht / 10m
3. Labor							
Foreman Tunnel	1.0	day			720	720	per 10m
Operator of Heavy	9.0	day			460	4,140	2.0 days 50% = 1
Driver	3.0	day			350	1,050	1.5 day x 6
Skilled Labor	3.0	day			260	780	1.5 day x 2
Common Labor	6.0	day			230	1,380	1.5 day x 2
Subtotal						8,070	1.5 day x 4
4. Total				91,143		17,438	108,581 Baht / 10m
5. Output Working Time per 1 day = 12 Hr x 2 shift per 10 m							
Rate = Baht/m				9,114 Baht/m 1,744 Baht/m = 10,858			

T-95. Unit Rate per Meter of Shotcrete of Lower Half : Grade B							
Rate = 3,674 Baht/m				F.C. = 2,741 Baht/m		75%	
Ing-Yot No.2 Tunnel with Adit				L.C. = 933 Baht/m		25%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							per 10 m
Shotcrete Robot Shot Radius 8m	1	1 Hr	2,170	2,170	10	10	1 Hr × 1
Shotcrete Shooter Wet 10-15m <sup>3</sup> /h	1	1 Hr	3,105	3,105	25	25	1 Hr × 1
Truck with Crane 4t x 2.9t lift	1	6 Hr	425	2,550	25	150	6 Hr × 1
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day × 1
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	1 Hr	1,290	1,290	63	63	1 Hr × 1
Truck Mixer 4.5 m <sup>3</sup>	1	3 Hr	620	1,860	70	210	3 Hr × 1
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	3 Hr	1,780	5,340	20	60	3 Hr × 1
Subtotal				18,575		626	Baht / 10m
2. Material							per 10 m
Portland Cement Type II	1	ton	1,666	1,666	714	714	
Fine Sand for Aggregate	3	m <sup>3</sup>	0	0	220	660	
Coarse Sand for Aggregate(Gravel)	2	m <sup>3</sup>	0	0	220	440	
Accelerator for Shotcrete	70	kg	100	7,000	0	0	
Miscellaneous	2	%		173		36	
Subtotal				8,839		1,850	Baht / 10m
3. Labor							per 10m
Foreman Tunnel	1.0	day			720	720	2.0 day×50% = 1
Operator of Heavy	7.5	day			460	3,450	1.5 day × 5
Driver	1.5	day			350	525	1.5 day × 1
Skilled Labor	3.0	day			260	780	1.5 day × 2
Common Labor	6.0	day			230	1,380	1.5 day × 4
Subtotal						6,855	
4. Total				27,414		9,331	36,745 Baht / 10m
5. Output			Working Time per 1 day = 12 Hr × 2 shift			per 10 m	
Rate = Baht/m			2,741 Baht/m			933 Baht/m = 3,674	

T-96. Unit Rate per Meter of Shotcrete of Lower Half : Grade C1							
Rate = 5,428 Baht/m				F.C. = 4,596 Baht/m 85%			
Ing-Yot No.2 Tunnel with Adit				L.C. = 832 Baht/m 15%			
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							
per 10 m							
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	2 Hr x 1
Shotcrete Shooter Wt 10-15m3/hr	1	2 Hr	3,105	6,210	25	50	2 Hr x 1
Truck with Crane 4t x 2.9t lift	1	8 Hr	425	3,400	25	200	8 Hr x 1
Accelerator Supplier 5.5kw	1	1 day	1,130	1,130	54	54	1 day x 1
Dust Collector 300m3/hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 Hr x 1
Truck Mixer 4.5 m3	1	4 Hr	620	2,480	70	280	4 Hr x 1
Concrete Plant 1.0*2 m3(25-30m3)	1	4 Hr	1,780	7,120	20	80	4 Hr x 1
Subtotal				27,260		810	Baht / 10m
2. Material							
per 10 m							
Portland Cement Type II	2	ton	1,666	3,332	714	1,428	
Fine Sand for Aggregate	6	m3	0	0	220	1,320	
Coarse Sand for Aggregate(Gravel)	3	m3	0	0	220	660	
Accelerator for Shotcrete	150	kg	100	15,000	0	0	
Miscellaneous	2	%		367		68	
Subtotal				18,699		3,476	Baht / 10m
3. Labor							
per 10m							
Foreman Tunnel		0.5 day			720	360	1.0 dayx50%= 0.5
Operator of Heavy		4.5 day			460	2,070	1.5 day x 3
Driver		1.5 day			350	525	1.5 day x 1
Skilled Labor		1.5 day			260	390	1.5 day x 1
Common Labor		3.0 day			230	690	1.5 day x 2
Subtotal						4,035	
4. Total				45,959		8,321	54,280 Baht / 10m
5. Output Working Time per 1 day = 12 Hr x 2 shift per 10 m							
Rate = Baht/m				4,596 Baht/m 832 Baht/m = 5,428			

T-97. Unit Rate per Meter of Shotcrete of Lower Half : Grade C2							
Rate = 6,101 Baht/m				F.C. = 4,973 Baht/m 82%			
Ing-Yot No.2 Tunnel with Adit				L.C. = 1,128 Baht/m 18%			
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							
per 10m							
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	2 Hr x 1
Shotcrete Shooter Wt 10-15m3/hr	1	2 Hr	3,105	6,210	25	50	2 Hr x 1
Truck with Crane 4t x 2.9t lift	1	9 Hr	425	3,825	25	225	9 Hr x 1
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x 1
Dust Collector 300m3/hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 Hr x 1
Truck Mixer 4.5 m3	1	5 Hr	620	3,100	70	350	5 Hr x 1
Concrete Plant 1.0*2 m3(25-30m3)	1	5 Hr	1,780	8,900	20	100	5 Hr x 1
Subtotal				31,215		979	Baht / 10m
2. Material							
per 10m							
Portland Cement Type II	2	ton	1,666	3,332	714	1,428	
Fine Sand for Aggregate	6	m3	0	0	220	1,320	
Coarse Sand for Aggregate(Gravel)	3	m3	0	0	220	660	
Accelerator for Shotcrete	150	kg	100	15,000	0	0	
Miscellaneous	1	%		183		34	
Subtotal				18,515		3,442	Baht / 10m
3. Labor							
per 10m							
Foreman Tunnel		1.0 day			720	720	2.0 dayx50%= 1
Operator of Heavy		7.5 day			460	3,450	1.5 day x 5
Driver		1.5 day			350	525	1.5 day x 1
Skilled Labor		3.0 day			260	780	1.5 day x 2
Common Labor		6.0 day			230	1,380	1.5 day x 4
Subtotal						6,855	
4. Total				49,730		11,276	61,006 Baht / 10m
5. Output Working Time per 1 day = 12 Hr x 2 shift per 10 m							
Rate = Baht/m				4,973 Baht/m 1,128 Baht/m = 6,101			

T-98. Unit Rate per Meter of Shotcrete of Lower Half ; Grade D1									
			Rate = 7,251 Baht/m		F.C. = 5,971 Baht/m		82%		
Ing-Yot No.2 Tunnel with Adit					L.C. = 1,280 Baht/m		18%		
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 10m		
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	2 Hr x	1	
Shotcrete Shooter Wet 10-15m3/hr	1	2 Hr	3,105	6,210	25	50	2 Hr x	1	
Truck with Crane 4t x 2.9t lift	1	11 Hr	425	4,675	25	275	11 Hr x	1	
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x	1	
Dust Collector 300m3/hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 Hr x	1	
Truck Mixer 4.5 m3	1	6 Hr	620	3,720	70	420	6 Hr x	1	
Concrete Plant 1.0*2 m3(25-30m3)	1	6 Hr	1,780	10,680	20	120	6 Hr x	1	
Subtotal				34,465		1,119	Baht / 10m		
2. Material							per 10m		
Portland Cement Type II	3	ton	1,666	4,998	714	2,142			
Fine Sand for Aggregate	8	m3	0	0	220	1,760			
Coarse Sand for Aggregate(Gravel)	4	m3	0	0	220	880			
Accelerator for Shotcrete	200	kg	100	20,000	0	0			
Miscellaneous	1	%		250		48			
Subtotal				25,248		4,830	Baht / 10m		
3. Labor							per 10m		
Foreman Tunnel	1.0	day			720	720	2.0 days50% =	1	
Operator of Heavy	7.5	day			460	3,450	1.5 day x	5	
Driver	1.5	day			350	525	1.5 day x	1	
Skilled Labor	3.0	day			260	780	1.5 day x	2	
Common Labor	6.0	day			230	1,380	1.5 day x	4	
Subtotal						6,855			
4. Total				59,713		12,804	72,517 Baht / 10m		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 10 m		
Rate = Baht/m			5,971 Baht/m			1,280 Baht/m = 7,251			

T-99. Unit Rate per Meter of Shotcrete of Lower Half : Grade D2								
			Rate = 8,183 Baht/m			F.C. = 6,687 Baht/m 82%		
Ing-Yot No.2 Tunnel with Adit						L.C. = 1,496 Baht/m 18%		
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 10m	
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	2 Hr x 1	
Shotcrete Shooter Wet 10-15m3/hr	1	2 Hr	3,105	6,210	25	50	2 Hr x 1	
Truck with Crane 4t x 2.9t lift	1	12 Hr	425	5,100	25	300	12 Hr x 1	
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x 1	
Dust Collector 300m3/hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 Hr x 1	
Truck Mixer 4.5 m3	1	6 Hr	620	3,720	70	420	6 Hr x 1	
Concrete Plant 1.0*2 m3(25-30m3)	1	6 Hr	1,780	10,680	20	120	6 Hr x 1	
Subtotal				34,890		1,144	Baht / 10m	
2. Material							per 10m	
Portland Cement Type II		4 ton	1,666	6,664	714	2,856		
Fine Sand for Aggregate		10 m3	0	0	220	2,200		
Coarse Sand for Aggregate(Gravel)		6 m3	0	0	220	1,320		
Accelerator for Shotcrete		250 kg	100	25,000	0	0		
Miscellaneous		1 %		317		64		
Subtotal				31,981		6,440	Baht / 10m	
3. Labor							per 10m	
Foreman Tunnel		1.0 day			720	720	2.0 day*50% = 1	
Operator of Heavy		7.5 day			460	3,450	1.5 day x 5	
Driver		3.0 day			350	1,050	1.5 day x 2	
Skilled Labor		3.0 day			260	780	1.5 day x 2	
Common Labor		6.0 day			230	1,380	1.5 day x 4	
Subtotal						7,380		
4. Total				66,871		14,964	81,835 Baht / 10m	
5. Output			Working Time per 1 day = 12 Hr x 2 shift			per 10 m		
Rate = Baht/m			6,687 Baht/m			1,496 Baht/m = 8,183		



T-100. Unit Rate per Meter of Shotcrete of Lower Half : Grade E1							
Rate = 8,222 Baht/m				F.C. = 6,719 Baht/m 82%			
Ing-Yot No.2 Tunnel with Adit				L.C. = 1,503 Baht/m 18%			
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							per 10m
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	2 Hr x 1
Shotcrete Shooter Wet 10-15m <sup>3</sup> /hr	1	2 Hr	3,105	6,210	25	50	2 Hr x 1
Truck with Crane 4t x 2.9t lift	1	12 Hr	425	5,100	25	300	12 Hr x 1
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x 1
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 Hr x 1
Truck Mixer 4.5 m <sup>3</sup>	1	6 Hr	620	3,720	70	420	6 Hr x 1
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	6 Hr	1,780	10,680	20	120	6 Hr x 1
Subtotal				34,890		1,144	Baht / 10m
2. Material							per 10m
Portland Cement Type II		4 ton	1,666	6,664	714	2,856	
Fine Sand for Aggregate		10 m <sup>3</sup>	0	0	220	2,200	
Coarse Sand for Aggregate(Gravel)		6 m <sup>3</sup>	0	0	220	1,320	
Accelerator for Shotcrete		250 kg	100	25,000	0	0	
Miscellaneous		2 %		633		128	
Subtotal				32,297		6,504	Baht / 10m
3. Labor							per 10m
Foreman Tunnel		1.0 day			720	720	2.0 dayx50%= 1
Operator of Heavy		7.5 day			460	3,450	1.5 day x 5
Driver		3.0 day			350	1,050	1.5 day x 2
Skilled Labor		3.0 day			260	780	1.5 day x 2
Common Labor		6.0 day			230	1,380	1.5 day x 4
Subtotal						7,380	
4. Total				67,187		15,028	82,215 Baht / 10m
5. Output Working Time per 1 day = 12 Hr x 2 shift per 10 m							
Rate = Baht/m				6,719 Baht/m 1,503 Baht/m = 8,222			

T-101. Unit Rate per Meter of Shotcrete of Lower Half : Grade E2								
			Rate = 10,858 Baht/m		F.C. = 9,114 Baht/m		84%	
Ing-Yot No.2 Tunnel with Adit					L.C. = 1,744 Baht/m		16%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 10m	
Shotcrete Robot Shot Radius 8m	1	4 Hr	2,170	8,680	10	40	4 Hr x 1	
Shotcrete Shooter Wei 10-15m <sup>3</sup> /hr	1	4 Hr	3,105	12,420	25	100	4 Hr x 1	
Truck with Craae 4t x 2.9t lift	1	20 Hr	425	8,500	25	500	20 Hr x 1	
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x 1	
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	4 Hr	1,290	5,160	63	252	4 Hr x 1	
Truck Mixer 4.5 m <sup>3</sup>	1	6 Hr	620	3,720	70	420	6 Hr x 1	
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	6 Hr	1,780	10,680	20	120	6 Hr x 1	
Subtotal				51,420		1,540	Baht / 10m	
2. Material							per 10m	
Portland Cement Type II		5 ton	1,666	8,330	714	3,570		
Fine Sand for Aggregate		12 m <sup>3</sup>	0	0	220	2,640		
Coarse Sand for Aggregate(Gravel)		7 m <sup>3</sup>	0	0	220	1,540		
Accelerator for Shotcrete		310 kg	100	31,000	0	0		
Miscellaneous		1 %		393		78		
Subtotal				39,723		7,828	Baht / 10m	
3. Labor							per 10m	
Foreman Tunnel		1.0 day			720	720	2.0 dayx50%= 1	
Operator of Heavy		9.0 day			460	4,140	1.5 day x 6	
Driver		3.0 day			350	1,050	1.5 day x 2	
Skilled Labor		3.0 day			260	780	1.5 day x 2	
Common Labor		6.0 day			230	1,380	1.5 day x 4	
Subtotal						8,070		
4. Total				91,143		17,438	108,581 Baht / 10m	
5. Output			Working Time per 1 day = 12 Hr x 2 shift			per 10 m		
Rate = Baht/m			9,114 Baht/m			1,744 Baht/m = 10,858		

T-102. Unit Rate per Meter of Shotcrete of Lower Half : Grade B									
			Rate = 3,893 Baht/m		F.C. = 3,144 Baht/m		81%		
Adit for Ing-Yot No.2 Tunnel					L.C. = 749 Baht/m		19%		
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 10 m		
Shotcrete Robot Shot Radius 8m	1	1 Hr	2,170	2,170	10	10	1 Hr x	1	
Shotcrete Shooter Wet 10-15m <sup>3</sup> /hr	1	1 Hr	3,105	3,105	25	25	1 Hr x	1	
Truck with Crane 4t x 2.9t lift	1	6 Hr	425	2,550	25	150	6 Hr x	1	
Accelerator Supplier 5.5kw	1	1 day	1,130	1,130	54	54	1 day x	1	
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	1 Hr	1,290	1,290	63	63	1 Hr x	1	
Truck Mixer 4.5 m <sup>3</sup>	1	3 Hr	620	1,860	70	210	3 Hr x	1	
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	3 Hr	1,780	5,340	20	60	3 Hr x	1	
Subtotal				17,445		572	Baht / 10m		
2. Material							per 10 m		
Portland Cement Type II		2 ton	1,666	3,332	714	1,428			
Fine Sand for Aggregate		4 m <sup>3</sup>	0	0	220	880			
Coarse Sand for Aggregate(Gravel)		2 m <sup>3</sup>	0	0	220	440			
Accelerator for Shotcrete		100 kg	100	10,000	0	0			
Miscellaneous		5 %		667		137			
Subtotal				13,999		2,885	Baht / 10m		
3. Labor							per 10m		
Foreman Tunnel		0.5 day			720	360	1.0 dayx50%=	0.5	
Operator of Heavy		4.5 day			460	2,070	1.5 day x	3	
Driver		1.5 day			350	525	1.5 day x	1	
Skilled Labor		1.5 day			260	390	1.5 day x	1	
Common Labor		3.0 day			230	690	1.5 day x	2	
Subtotal						4,035			
4. Total				31,444		7,492	38,936 Baht / 10m		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 10 m		
Rate = Baht/m			3,144 Baht/m		749 Baht/m =		3,893		

T-103. Unit Rate per Meter of Shotcrete of Lower Half : Grade C1										
			Rate =		5,079 Baht/m		F.C. =		4,152 Baht/m 82%	
Adit for Ing-Yot No.2 Tunnel							L.C. =		927 Baht/m 18%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark			
			Rate	Cost	Rate	Cost				
1. Operation Cost (Equipment & Fuel)							per 10 m			
Shotcrete Robot Shot Radius 8m	1	1 Hr	2,170	2,170	10	10	1 Hr x	1		
Shotcrete Shooter Wet 10-15m3/m	1	1 Hr	3,105	3,105	25	25	1 Hr x	1		
Truck with Crane 4t x 2.9t lift	1	8 Hr	425	3,400	25	200	8 Hr x	1		
Accelerator Supplier 5.5kw	1	1 day	1,130	1,130	54	54	1 day x	1		
Dust Collector 300m3/hr, 30kw	1	1 Hr	1,290	1,290	63	63	1 Hr x	1		
Truck Mixer 4.5 m3	1	3 Hr	620	1,860	70	210	3 Hr x	1		
Concrete Plant 1.0*2 m3(25-30m3)	1	3 Hr	1,780	5,340	20	60	3 Hr x	1		
Subtotal				18,295		622	Baht / 10m			
2. Material							per 10 m			
Portland Cement Type II		3 ton	1,666	4,998	714	2,142				
Fine Sand for Aggregate		7 m3	0	0	220	1,540				
Coarse Sand for Aggregate(Gravel)		4 m3	0	0	220	880				
Accelerator for Shotcrete		180 kg	100	18,000	0	0				
Miscellaneous		1 %		230		46				
Subtotal				23,228		4,608	Baht / 10m			
3. Labor							per 10m			
Foreman Tunnel		0.5 day			720	360	1.0 day*50% =	0.5		
Operator of Heavy		4.5 day			460	2,070	1.5 day x	3		
Driver		1.5 day			350	525	1.5 day x	1		
Skilled Labor		1.5 day			260	390	1.5 day x	1		
Common Labor		3.0 day			230	690	1.5 day x	2		
Subtotal						4,035				
4. Total				41,523		9,265	50,788 Baht / 10m			
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 10 m			
Rate = Baht/m					4,152 Baht/m		927 Baht/m =		5,079	

T-104. Unit Rate per Meter of Shotcrete of Lower Half : Grade C2									
Rate = 5,169 Baht/m					F.C. = 4,237 Baht/m 82%				
Adit for Ing-Yot No.2 Tunnel					L.C. = 932 Baht/m 18%				
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark	
				Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								per 10m	
Shotcrete Robot Shot Radius 8m	1	1	Hr	2,170	2,170	10	10	1	Hr x 1
Shotcrete Shooter Wet 10-15m3/hr	1	1	Hr	3,105	3,105	25	25	1	Hr x 1
Truck with Crane 4t x 2.9t lift	1	10	Hr	425	4,250	25	250	10	Hr x 1
Accelerator Supplier 5.5kw	1	1	day	1,130	1,130	54	54	1	day x 1
Dust Collector 300m3/hr, 30kw	1	1	Hr	1,290	1,290	63	63	1	Hr x 1
Truck Mixer 4.5 m3	1	3	Hr	620	1,860	70	210	3	Hr x 1
Concrete Plant 1.0*2 m3(25-30m3)	1	3	Hr	1,780	5,340	20	60	3	Hr x 1
Subtotal					19,145		672	Baht / 10m	
2. Material								per 10m	
Portland Cement Type II		3	ton	1,666	4,998	714	2,142		
Fine Sand for Aggregate		7	m3	0	0	220	1,540		
Coarse Sand for Aggregate(Gravel)		4	m3	0	0	220	880		
Accelerator for Shotcrete		180	kg	100	18,000	0	0		
Miscellaneous		1	%		230		46		
Subtotal					23,228		4,608	Baht / 10m	
3. Labor								per 10m	
Foreman Tunnel		0.5	day			720	360	1.0 day*50% =	0.5
Operator of Heavy		4.5	day			460	2,070	1.5 day x	3
Driver		1.5	day			350	525	1.5 day x	1
Skilled Labor		1.5	day			260	390	1.5 day x	1
Common Labor		3.0	day			230	690	1.5 day x	2
Subtotal							4,035		
4. Total					42,373		9,315	51,688 Baht / 10m	
5. Output				Working Time per 1 day = 12 Hr x 2 shift				per 10 m	
Rate = Baht/m				4,237 Baht/m				932 Baht/m = 5,169	

T-105. Unit Rate per Meter of Shotcrete of Lower Half : Grade D1								
			Rate = 7,109 Baht/m			F.C. = 5,993 Baht/m 84%		
Adit for Ing-Yot No.2 Tunnel						L.C. = 1,116 Baht/m 16%		
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 10m	
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	2 Hr x 1	
Shotcrete Shooter Wet 10-15m <sup>3</sup> /hr	1	2 Hr	3,105	6,210	25	50	2 Hr x 1	
Truck with Crane 4t x 2.9t lift	1	12 Hr	425	5,100	25	300	12 Hr x 1	
Accelerator Supplier 5.5kw	1	1 day	1,130	1,130	54	54	1 day x 1	
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 Hr x 1	
Truck Mixer 4.5 m <sup>3</sup>	1	4 Hr	620	2,480	70	280	4 Hr x 1	
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	4 Hr	1,780	7,120	20	80	4 Hr x 1	
Subtotal				28,960		910	Baht / 10m	
2. Material							per 10m	
Portland Cement Type II		4 ton	1,666	6,664	714	2,856		
Fine Sand for Aggregate		10 m <sup>3</sup>	0	0	220	2,200		
Coarse Sand for Aggregate(Gravel)		5 m <sup>3</sup>	0	0	220	1,100		
Accelerator for Shotcrete		240 kg	100	24,000	0	0		
Miscellaneous		1 %		307		62		
Subtotal				30,971		6,218	Baht / 10m	
3. Labor							per 10m	
Foreman Tunnel		0.5 day			720	360	1.0 day x 50% = 0.5	
Operator of Heavy		4.5 day			460	2,070	1.5 day x 3	
Driver		1.5 day			350	525	1.5 day x 1	
Skilled Labor		1.5 day			260	390	1.5 day x 1	
Common Labor		3.0 day			230	690	1.5 day x 2	
Subtotal						4,035		
4. Total				59,931		11,163	71,094 Baht / 10m	
5. Output							per 10 m	
Working Time per 1 day = 12 Hr x 2 shift								
Rate = Baht/m			5,993 Baht/m			1,116 Baht/m = 7,109		

T-106. Unit Rate per Meter of Shotcrete of Lower Half : Grade D2								
			Rate = 10,623 Baht/m			F.C. = 8,872 Baht/m 84%		
Adit for Ing-Yot No.2 Tunnel						L.C. = 1,751 Baht/m 16%		
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 10m	
Shotcrete Robot Shot Radius 8m	1	2 Hr	2,170	4,340	10	20	2 Hr x 1	
Shotcrete Shooter Wet 10-15m <sup>3</sup> /h	1	2 Hr	3,105	6,210	25	50	2 Hr x 1	
Truck with Crane 4t x 2.9t lift	1	14 Hr	425	5,950	25	350	14 Hr x 1	
Accelerator Supplier 5.5kw	1	1 day	1,130	1,130	54	54	1 day x 1	
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	2 Hr	1,290	2,580	63	126	2 Hr x 1	
Truck Mixer 4.5 m <sup>3</sup>	1	4 Hr	620	2,480	70	280	4 Hr x 1	
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	4 Hr	1,780	7,120	20	80	4 Hr x 1	
Subtotal				29,810		960	Baht / 10m	
2. Material							per 10m	
Portland Cement Type II		8 ton	1,666	13,328	714	5,712		
Fine Sand for Aggregate		18 m <sup>3</sup>	0	0	220	3,960		
Coarse Sand for Aggregate(Gravel)		10 m <sup>3</sup>	0	0	220	2,200		
Accelerator for Shotcrete		450 kg	100	45,000	0	0		
Miscellaneous		1 %		583		119		
Subtotal				58,911		11,991	Baht / 10m	
3. Labor							per 10m	
Foreman Tunnel		0.5 day			720	360	1.0 dayx50% = 0.5	
Operator of Heavy		4.5 day			460	2,070	1.5 day x 3	
Driver		3.0 day			350	1,050	1.5 day x 2	
Skilled Labor		1.5 day			260	390	1.5 day x 1	
Common Labor		3.0 day			230	690	1.5 day x 2	
Subtotal						4,560		
4. Total				88,721		17,511	106,232 Baht / 10m	
5. Output							per 10 m	
Working Time per 1 day = 12 Hr x 2 shift								
Rate = Baht/m			8,872 Baht/m			1,751 Baht/m = 10,623		

T-107. Unit Rate per Meter of Shotcrete of Lower Half : Grade E1									
Rate = 10,065 Baht/m					F.C. = 8,295 Baht/m 82%				
Adit for Ing-Yot No.2 Tunnel					L.C. = 1,770 Baht/m 18%				
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 10m		
Shotcrete Robot Shot Radius 8m	1	3 Hr	2,170	6,510	10	30	3 Hr x	1	
Shotcrete Shooter Wet 10-15m3/hr	1	3 Hr	3,105	9,315	25	75	3 Hr x	1	
Truck with Crane 4t x 2.9t lift	1	14 Hr	425	5,950	25	350	14 Hr x	1	
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x	1	
Dust Collector 300m3/hr, 30kw	1	3 Hr	1,290	3,870	63	189	3 Hr x	1	
Truck Mixer 4.5 m3	1	5 Hr	620	3,100	70	350	5 Hr x	1	
Concrete Plant 1.0*2 m3(25-30m3)	1	5 Hr	1,780	8,900	20	100	5 Hr x	1	
Subtotal				39,905		1,202	Baht / 10m		
2. Material							per 10m		
Portland Cement Type II		6 ton	1,666	9,996	714	4,284			
Fine Sand for Aggregate		13 m3	0	0	220	2,860			
Coarse Sand for Aggregate(Gravel)		7 m3	0	0	220	1,540			
Accelerator for Shotcrete		310 kg	100	31,000	0	0			
Miscellaneous		5 %		2,050		434			
Subtotal				43,046		9,118	Baht / 10m		
3. Labor							per 10m		
Foreman Tunnel		1.0 day			720	720	2.0 days50% =	1	
Operator of Heavy		7.5 day			460	3,450	1.5 day x	5	
Driver		3.0 day			350	1,050	1.5 day x	2	
Skilled Labor		3.0 day			260	780	1.5 day x	2	
Common Labor		6.0 day			230	1,380	1.5 day x	4	
Subtotal						7,380			
4. Total				82,951		17,700	100,651 Baht / 10m		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 10 m		
Rate = Baht/m			8,295 Baht/m				1,770 Baht/m = 10,065		

T-108. Unit Rate per Meter of Shotcrete of Lower Half : Grade E2									
Rate = 11,232 Baht/m				F.C. = 9,290 Baht/m			83%		
Adit for Ing-Yot No.2 Tunnel				L.C. = 1,942 Baht/m			17%		
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 10m		
Shotcrete Robot Shot Radius 8m	1	3 Hr	2,170	6,510	10	30	3 Hr x	1	
Shotcrete Shooter Wet 10-15m <sup>3</sup> /hr	1	3 Hr	3,105	9,315	25	75	3 Hr x	1	
Truck with Crane 4t x 2.9t lift	1	16 Hr	425	6,800	25	400	16 Hr x	1	
Accelerator Supplier 5.5kw	1	2 day	1,130	2,260	54	108	2 day x	1	
Dust Collector 300m <sup>3</sup> /hr, 30kw	1	3 Hr	1,290	3,870	63	189	3 Hr x	1	
Truck Mixer 4.5 m <sup>3</sup>	1	5 Hr	620	3,100	70	350	5 Hr x	1	
Concrete Plant 1.0*2 m <sup>3</sup> (25-30m <sup>3</sup> )	1	5 Hr	1,780	8,900	20	100	5 Hr x	1	
Subtotal				40,755		1,252	Baht / 10m		
2. Material							per 10m		
Portland Cement Type II		7 ton	1,666	11,662	714	4,998			
Fine Sand for Aggregate		15 m <sup>3</sup>	0	0	220	3,300			
Coarse Sand for Aggregate(Gravel)		9 m <sup>3</sup>	0	0	220	1,980			
Accelerator for Shotcrete		380 kg	100	38,000	0	0			
Miscellaneous		5 %		2,483		514			
Subtotal				52,145		10,792	Baht / 10m		
3. Labor							per 10m		
Foreman Tunnel		1.0 day			720	720	2.0 days50% =	1	
Operator of Heavy		7.5 day			460	3,450	1.5 day x	5	
Driver		3.0 day			350	1,050	1.5 day x	2	
Skilled Labor		3.0 day			260	780	1.5 day x	2	
Common Labor		6.0 day			230	1,380	1.5 day x	4	
Subtotal						7,380			
4. Total				92,900		19,424	112,324 Baht / 10m		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 10 m		
Rate = Baht/m			9,290 Baht/m				1,942 Baht/m = 11,232		

T-109. Unit Rate per Meter of Rock Bolts of Upper Half : Grade C1									
Rate = 15,823 Baht/m    F.C. = 12,363 Baht/m    78%									
Kok-Ing Tunnel    L.C. = 3,460 Baht/m    22%									
Items		Unit	Quantity		Foreign Currency		Local Currency		Remark
					Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)									per 11 set
Jumbo Drill,Crawler 2Booms,150k		1	0.9	Hr	7,235	6,512	35	32	0.9 Hr × 1
Grout Pump Single15~30liter/m		1	0.4	day	295	118	15	6	0.4 day × 1
Grout Mixer 100liter Type		1	0.4	day	125	50	15	6	0.4 day × 1
Subtotal						6,680		44	
2. Material									per 11 set
Rock Bolt 18t L=3m			11	set	540	5,940	60	660	Baht / 11set
Dry Mortar			460	kg	8	3,680	6	2,760	
Square Washer 150 x 150 x 9			11	Pcs	104	1,144	12	132	
Nut M24			11	Pcs	9	99	1	11	
Miscellaneous			10	%		1,086		356	
Subtotal						11,949		3,919	
3. Labor									per 11 set
Foreman Tunnel			0.6	day			720	432	1.5 day × 0.4
Operator of Heavy			0.2	day			460	92	1.5 day × 0.1
Skilled Labor			1.2	day			260	312	1.5 day × 0.8
Common Labor			1.8	day			230	414	1.5 day × 1.2
Subtotal								1,250	
4. Total						18,629		5,213	23,842 Baht / 11set
5. Output					Working Time per 1 day = 12 Hr × 2 shift    per 7.3 set / m				
Rate = Baht/m					12,363 Baht/m    3,460 Baht/m =    15,823				

T-110. Unit Rate per Meter of Rock Bolts of Upper Half : Grade C2								
Rate = 19,702 Baht/m    F.C. = 15,546 Baht/m    79%								
Kok-Ing Tunnel    L.C. = 4,156 Baht/m    21%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 11 set	
Jumbo Drill, Crawler 2Booms, 150k	1	0.9 Hr	7,235	6,512	35	32	0.9 Hr × 1	
Grout Pump Single 15~30 liter/m	1	0.3 day	295	89	15	5	0.3 day × 1	
Grout Mixer 100 liter Type	1	0.3 day	125	38	15	5	0.3 day × 1	
Subtotal				6,639		42		
2. Material							per 11 set	
Rock Bolt 18t L=3m		11 set	540	5,940	60	660		
Dry Mortar		460 kg	8	3,680	6	2,760		
Square Washer 150 x 150 x 9		11 Pcs	104	1,144	12	132		
Nut M24		11 Pcs	9	99	1	11		
Miscellaneous		10 %		1,086		356	Baht / 11set	
Subtotal				11,949		3,919		
3. Labor							per 11 set	
Foreman Tunnel		0.5 day			720	360	1.5 day × 0.3	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Skilled Labor		0.9 day			260	234	1.5 day × 0.6	
Common Labor		1.4 day			230	322	1.5 day × 0.9	
Subtotal						1,008		
4. Total				18,588		4,969	23,557 Baht / 11set	
5. Output			Working Time per 1 day = 12 Hr × 2 shift			per 9.2 set / m		
Rate = Baht/m			15,546 Baht/m			4,156 Baht/m = 19,702		

T-111. Unit Rate per Meter of Rock Bolts of Upper Half : Grade D1,D2,E1									
Rate = 41,338 Baht/m F.C. = 32,010 Baht/m 77%									
Kok-Ing Tunnel L.C. = 9,328 Baht/m 23%									
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 14 set		
Jumbo Drill,Crawler 2Booms,150k	1	1.4 Hr	7,235	10,129	35	49	1.4 Hr x 1		
Grout Pump Single15~30liter/m	1	0.3 day	295	89	15	5	0.3 day x 1		
Grout Mixer 100liter Type	1	0.3 day	125	38	15	5	0.3 day x 1		
Subtotal				10,256		59			
2. Material							per 14 set		
Rock Bolt 18t L=4m		14 set	711	9,954	79	1,106			
Dry Mortar		1030 kg	8	8,240	6	6,180			
Square Washer 150 x 150 x 9		14 Pcs	104	1,456	12	168			
Nut M24		14 Pcs	9	126	1	14			
Miscellaneous		10 %		1,978		747	Baht / 14set		
Subtotal				21,754		8,215			
3. Labor							per 14 set		
Foreman Tunnel		0.5 day			720	360	1.5 day x 0.3		
Operator of Heavy		0.3 day			460	138	1.5 day x 0.2		
Skilled Labor		0.9 day			260	234	1.5 day x 0.6		
Common Labor		1.4 day			230	322	1.5 day x 0.9		
Subtotal						1,054			
4. Total				32,010		9,328	41,338 Baht / 14 set		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 14.0 set / m		
Rate = Baht/m				32,010 Baht/m		9,328 Baht/m =	41,338		

T-112. Unit Rate per Meter of Rock Bolts of Upper Half : Grade E2									
Rate = 12,595 Baht/m F.C. = 9,043 Baht/m 72%									
Kok-Ing Tunnel L.C. = 3,552 Baht/m 28%									
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 4 set		
Jumbo Drill,Crawler 2Booms,150k	1	0.4 Hr	7,235	2,894	35	14	0.4 Hr x 1		
Grout Pump Single15~30liter/m	1	0.4 day	295	118	15	6	0.4 day x 1		
Grout Mixer 100liter Type	1	0.4 day	125	50	15	6	0.4 day x 1		
Subtotal				3,062		26			
2. Material							per 4 set		
Rock Bolt 18t L=4m		4 set	711	2,844	79	316	Baht / 4set		
Dry Mortar		300 kg	8	2,400	6	1,800			
Square Washer 150 x 150 x 9		4 Pcs	104	416	12	48			
Nut M24		4 Pcs	9	36	1	4			
Miscellaneous		5 %		285		108			
Subtotal				5,981		2,276			
3. Labor							per 4 set		
Foreman Tunnel		0.6 day			720	432	1.5 day x 0.4		
Operator of Heavy		0.2 day			460	92	1.5 day x 0.1		
Skilled Labor		1.2 day			260	312	1.5 day x 0.8		
Common Labor		1.8 day			230	414	1.5 day x 1.2		
Subtotal						1,250			
4. Total				9,043		3,552	12,595 Baht / 4 set		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 4.0 set / m		
Rate = Baht/m			9,043 Baht/m		3,552 Baht/m =		12,595		

T-113. Unit Rate per Meter of Rock Bolts of Upper Half : Grade E2, Forepiling								
Rate = 41,862 Baht/m    F.C. = 33,414 Baht/m    80%								
Kok-Ing Tunnel    L.C. = 8,448 Baht/m    20%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 20 set	
Jumbo Drill, Crawler 2Booms, 150k	1	1.6 Hr	7,235	11,576	35	56	1.6 Hr ×	1
Grout Pump Single 15~30liter/m	1	0.4 day	295	118	15	6	0.4 day ×	1
Grout Mixer 100liter Type	1	0.4 day	125	50	15	6	0.4 day ×	1
Subtotal				11,744		68		
2. Material							per 20 set	
Rock Bolt 18t L=3m		20 set	540	10,800	60	1,200		
Dry Mortar		830 kg	8	6,640	6	4,980		
Square Washer 150 x 150 x 9		20 Pcs	104	2,080	12	240		
Nut M24		20 Pcs	9	180	1	20		
Miscellaneous		10 %		1,970		644	Baht / 20 set	
Subtotal				21,670		7,084		
3. Labor							per 20 set	
Foreman Tunnel		0.6 day			720	432	1.5 day ×	0.4
Operator of Heavy		0.3 day			460	138	1.5 day ×	0.2
Skilled Labor		1.2 day			260	312	1.5 day ×	0.8
Common Labor		1.8 day			230	414	1.5 day ×	1.2
Subtotal						1,296		
4. Total				33,414		8,448	41,862 Baht / 20 set	
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 20.0 set / m	
Rate = Baht/m			33,414 Baht/m		8,448 Baht/m =		41,862	



T-114. Unit Rate per Meter of Rock Bolts of Upper Half : Grade C1								
Rate = 17,322 Baht/m F.C. = 13,615 Baht/m 79%								
Ing-Yot Tunnel L.C. = 3,707 Baht/m 21%								
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark
				Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)								per 12 set
Jumbo Drill,Crawler 2Booms,150k	1	1.0 Hr		7,235	7,235	35	35	1 Hr × 1
Grout Pump Single15~30liter/m	1	0.4 day		295	118	15	6	0.4 day × 1
Grout Mixer 100liter Type	1	0.4 day		125	50	15	6	0.4 day × 1
Subtotal					7,403		47	
2. Material								per 12 set
Rock Bolt 18t L=3m		12 set		540	6,480	60	720	Baht / 12 set
Dry Mortar		500 kg		8	4,000	6	3,000	
Square Washer 150 x 150 x 9		12 Pcs		104	1,248	12	144	
Nut M24		12 Pcs		9	108	1	12	
Miscellaneous		10 %			1,184		388	
Subtotal					13,020		4,264	
3. Labor								per 12 set
Foreman Tunnel		0.6 day				720	432	1.5 day × 0.4
Operator of Heavy		0.2 day				460	92	1.5 day × 0.1
Skilled Labor		1.2 day				260	312	1.5 day × 0.8
Common Labor		1.8 day				230	414	1.5 day × 1.2
Subtotal							1,250	
4. Total					20,423		5,561	25,984 Baht / 12set
5. Output				Working Time per 1 day = 12 Hr × 2 shift				per 8.0 set / m
Rate = Baht/m				13,615 Baht/m 3,707 Baht/m =				17,322

T-115. Unit Rate per Meter of Rock Bolts of Upper Half : Grade C2								
Rate = 21,416 Baht/m F.C. = 16,985 Baht/m 79%								
Ing-Yot Tunnel L.C. = 4,431 Baht/m 21%								
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark
				Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)								per 12 set
Jumbo Drill,Crawler 2Booms,150k	1	1.0 Hr		7,235	7,235	35	35	1 Hr x 1
Grout Pump Single15~30liter/m	1	0.3 day		295	89	15	5	0.3 day x 1
Grout Mixer 100liter Type	1	0.3 day		125	38	15	5	0.3 day x 1
Subtotal					7,362		45	
2. Material								per 12 set
Rock Bolt 18t L=3m		12 set		540	6,480	60	720	Baht / 12set
Dry Mortar		500 kg		8	4,000	6	3,000	
Square Washer 150 x 150 x 9		12 Pcs		104	1,248	12	144	
Nut M24		12 Pcs		9	108	1	12	
Miscellaneous		10 %			1,184		388	
Subtotal					13,020		4,264	
3. Labor								per 12 set
Foreman Tunnel		0.5 day				720	360	1.5 day x 0.3
Operator of Heavy		0.2 day				460	92	1.5 day x 0.1
Skilled Labor		0.9 day				260	234	1.5 day x 0.6
Common Labor		1.4 day				230	322	1.5 day x 0.9
Subtotal							1,008	
4. Total					20,382		5,317	25,699 Baht / 12set
5. Output				Working Time per 1 day = 12 Hr x 2 shift				per 10.0 set / m
Rate = Baht/m				16,985 Baht/m 4,431 Baht/m =				21,416

T-116. Unit Rate per Meter of Rock Bolts of Upper Half : Grade D1,D2,E1								
			Rate = 44,590 Baht/m		F.C. = 34,385 Baht/m		77%	
Ing-Yot Tunnel					L.C. = 10,205 Baht/m		23%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 15 set	
Jumbo Drill,Crawler 2Booms,150k	1	1.5 Hr	7,235	10,853	35	53	1.5 Hr ×	1
Grout Pump Single15~30liter/m	1	0.4 day	295	118	15	6	0.4 day ×	1
Grout Mixer 100liter Type	1	0.4 day	125	50	15	6	0.4 day ×	1
Subtotal				11,021		65		
2. Material							per 15 set	
Rock Bolt 18t L=4m		15 set	711	10,665	79	1,185		
Dry Mortar		1110 kg	8	8,880	6	6,660		
Square Washer 150 x 150 x 9		15 Pcs	104	1,560	12	180		
Nut M24		15 Pcs	9	135	1	15		
Miscellaneous		10 %		2,124		804	Baht / 15set	
Subtotal				23,364		8,844		
3. Labor							per 15 set	
Foreman Tunnel		0.6 day			720	432	1.5 day ×	0.4
Operator of Heavy		0.3 day			460	138	1.5 day ×	0.2
Skilled Labor		1.2 day			260	312	1.5 day ×	0.8
Common Labor		1.8 day			230	414	1.5 day ×	1.2
Subtotal						1,296		
4. Total				34,385		10,205	44,590 Baht / 15 set	
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 15.0 set / m	
Rate = Baht/m			34,385 Baht/m		10,205 Baht/m		= 44,590	

T-117. Unit Rate per Meter of Rock Bolts of Upper Half : Grade E2									
Rate = 12,595 Baht/m    F.C. = 9,043 Baht/m    72%									
Ing-Yot Tunnel    L.C. = 3,552 Baht/m    28%									
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark	
				Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								per 4 set	
Jumbo Drill,Crawler 2Booms,150k	1	0.4 Hr		7,235	2,894	35	14	0.4 Hr ×	1
Grout Pump Single15~30liter/m	1	0.4 day		295	118	15	6	0.4 day ×	1
Grout Mixer 100liter Type	1	0.4 day		125	50	15	6	0.4 day ×	1
Subtotal					3,062		26		
2. Material								per 4 set	
Rock Bolt 18t L=4m		4 set		711	2,844	79	316		
Dry Mortar		300 kg		8	2,400	6	1,800		
Square Washer 150 x 150 x 9		4 Pcs		104	416	12	48		
Nut M24		4 Pcs		9	36	1	4		
Miscellaneous		5 %			285		108	Baht / 4set	
Subtotal					5,981		2,276		
3. Labor								per 4 set	
Foreman Tunnel		0.6 day				720	432	1.5 day ×	0.4
Operator of Heavy		0.2 day				460	92	1.5 day ×	0.1
Skilled Labor		1.2 day				260	312	1.5 day ×	0.8
Common Labor		1.8 day				230	414	1.5 day ×	1.2
Subtotal							1,250		
4. Total					9,043		3,552	12,595 Baht / 4 set	
5. Output		Working Time per 1 day = 12 Hr × 2 shift						per 4.0 set / m	
Rate = Baht/m		9,043 Baht/m				3,552 Baht/m =		12,595	

T-118. Unit Rate per Meter of Rock Bolts of Upper Half : Grade E2 Forepiling									
Rate = 44,730 Baht/m					F.C. = 35,931 Baht/m 80%				
Ing-Yot Tunnel					L.C. = 8,799 Baht/m 20%				
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 21 set		
Jumbo Drill,Crawler 2Booms,150k	1	1.8 Hr	7,235	13,023	35	63	1.8 Hr × 1		
Grout Pump Single15~30liter/m	1	0.4 day	295	118	15	6	0.4 day × 1		
Grout Mixer 100liter Type	1	0.4 day	125	50	15	6	0.4 day × 1		
Subtotal				13,191		75			
2. Material							per 21 set		
Rock Bolt 18t L=3m		21 set	540	11,340	60	1,260			
Dry Mortar		870 kg	8	6,960	6	5,220			
Square Washer 150 x 150 x 9		21 Pcs	104	2,184	12	252			
Nut M24		21 Pcs	9	189	1	21			
Miscellaneous		10 %		2,067		675	Baht / 21 set		
Subtotal				22,740		7,428			
3. Labor							per 21 set		
Foreman Tunnel		0.6 day			720	432	1.5 day × 0.4		
Operator of Heavy		0.3 day			460	138	1.5 day × 0.2		
Skilled Labor		1.2 day			260	312	1.5 day × 0.8		
Common Labor		1.8 day			230	414	1.5 day × 1.2		
Subtotal						1,296			
4. Total				35,931		8,799	44,730 Baht / 21 set		
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 21.0 set / m		
Rate = Baht/m			35,931 Baht/m		8,799 Baht/m =		44,730		

T-119. Unit Rate per Meter of Rock Bolts of Upper Half : Grade B									
Rate = 17,322 Baht/m      F.C. = 13,615 Baht/m      79%									
Ing-Yot No.2 Tunnel with Adit      L.C. = 3,707 Baht/m      21%									
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 12 set		
Jumbo Drill, Crawler 2Booms, 150k	1	1.0 Hr	7,235	7,235	35	35	1 Hr x	1	
Grout Pump Single 15~30liter/m	1	0.4 day	295	118	15	6	0.4 day x	1	
Grout Mixer 100liter Type	1	0.4 day	125	50	15	6	0.4 day x	1	
Subtotal				7,403		47			
2. Material							per 12 set		
Rock Bolt 18t L=3m		12 set	540	6,480	60	720			
Dry Mortar		500 kg	8	4,000	6	3,000			
Square Washer 150 x 150 x 9		12 Pcs	104	1,248	12	144			
Nut M24		12 Pcs	9	108	1	12			
Miscellaneous		10 %		1,184		388	Baht / 12 set		
Subtotal				13,020		4,264			
3. Labor							per 12 set		
Foreman Tunnel		0.6 day			720	432	1.5 day x	0.4	
Operator of Heavy		0.2 day			460	92	1.5 day x	0.1	
Skilled Labor		1.2 day			260	312	1.5 day x	0.8	
Common Labor		1.8 day			230	414	1.5 day x	1.2	
Subtotal						1,250			
4. Total				20,423		5,561	25,984 Baht / 12set		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 8.0 set / m		
Rate = Baht/m			13,615 Baht/m				3,707 Baht/m = 17,322		

T-120. Unit Rate per Meter of Rock Bolts of Upper Half : Grade C1								
Rate = 11,729 Baht/m    F.C. = 9,170 Baht/m    78%								
Adit for Ing-Yot No.2 Tunnel    L.C. = 2,559 Baht/m    22%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 8 set	
Jumbo Drill, Crawler 2Booms, 150k	1	0.7 Hr	7,235	5,065	35	25	0.7 Hr × 1	
Grout Pump Single 15~30liter/n	1	0.3 day	295	89	15	5	0.3 day × 1	
Grout Mixer 100liter Type	1	0.3 day	125	38	15	5	0.3 day × 1	
Subtotal				5,192		35		
2. Material							per 8 set	
Rock Bolt 18t L=3m		8 set	540	4,320	60	480		
Dry Mortar		330 kg	8	2,640	6	1,980		
Square Washer 150 x 150 x 9		8 Pcs	104	832	12	96		
Nut M24		8 Pcs	9	72	1	8		
Miscellaneous		10 %		786		256	Baht / 8 set	
Subtotal				8,650		2,820		
3. Labor							per 8 set	
Foreman Tunnel		0.5 day			720	360	1.5 day × 0.3	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Skilled Labor		0.9 day			260	234	1.5 day × 0.6	
Common Labor		1.4 day			230	322	1.5 day × 0.9	
Subtotal						1,008		
4. Total				13,842		3,863	17,705 Baht / 8set	
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 5.3 set / m	
Rate = Baht/m			9,170 Baht/m		2,559 Baht/m		= 11,729	

T-121. Unit Rate per Meter of Rock Bolts of Upper Half : Grade C2								
Rate = 14,507 Baht/m    F.C. = 11,557 Baht/m    80%								
Adit for Ing-Yot No.2 Tunnel    L.C. = 2,950 Baht/m    20%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 8 set	
Jumbo Drill, Crawler 2Booms, 150k	1	0.7 Hr	7,235	5,065	35	25	0.7 Hr × 1	
Grout Pump Single 15~30liter/n	1	0.2 day	295	59	15	3	0.2 day × 1	
Grout Mixer 100liter Type	1	0.2 day	125	25	15	3	0.2 day × 1	
Subtotal				5,149		31		
2. Material							per 8 set	
Rock Bolt 18t L=3m		8 set	540	4,320	60	480	Baht / 8 set	
Dry Mortar		330 kg	8	2,640	6	1,980		
Square Washer 150 x 150 x 9		8 Pcs	104	832	12	96		
Nut M24		8 Pcs	9	72	1	8		
Miscellaneous		10 %		786		256		
Subtotal				8,650		2,820		
3. Labor							per 8 set	
Foreman Tunnel		0.3 day			720	216	1.5 day × 0.2	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Skilled Labor		0.6 day			260	156	1.5 day × 0.4	
Common Labor		0.9 day			230	207	1.5 day × 0.6	
Subtotal						671		
4. Total				13,799		3,522	17,321 Baht / 8 set	
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 6.7 set / m	
Rate = Baht/m			11,557 Baht/m		2,950 Baht/m =		14,507	

T-122. Unit Rate per Meter of Rock Bolts of Upper Half : Grade D1,D2,E1								
Rate = 32,985 Baht/m F.C. = 25,225 Baht/m 76%								
Adit for Ing-Yot No.2 Tunnel L.C. = 7,760 Baht/m 24%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 11 set	
Jumbo Drill, Crawler 2Booms, 150k	1	1.1 Hr	7,235	7,959	35	39	1.1 Hr × 1	
Grout Pump Single 15~30 liter/hr	1	0.4 day	295	118	15	6	0.4 day × 1	
Grout Mixer 100 liter Type	1	0.4 day	125	50	15	6	0.4 day × 1	
Subtotal				8,127		51		
2. Material							per 11 set	
Rock Bolt 18t L=4m		11 set	711	7,821	79	869		
Dry Mortar		810 kg	8	6,480	6	4,860		
Square Washer 150 x 150 x 9		11 Pcs	104	1,144	12	132		
Nut M24		11 Pcs	9	99	1	11		
Miscellaneous		10 %		1,554		587	Baht / 11 set	
Subtotal				17,098		6,459		
3. Labor							per 11 set	
Foreman Tunnel		0.6 day			720	432	1.5 day × 0.4	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Skilled Labor		1.2 day			260	312	1.5 day × 0.8	
Common Labor		1.8 day			230	414	1.5 day × 1.2	
Subtotal						1,250		
4. Total				25,225		7,760	32,985 Baht / 11 set	
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 11.0 set / m	
Rate = Baht/m			25,225 Baht/m		7,760 Baht/m =		32,985	

T-123. Unit Rate per Meter of Rock Bolts of Upper Half : Grade E2										
Rate = 12,389 Baht/m    F.C. = 9,059 Baht/m    73%										
Adit for Ing-Yot No.2 Tunnel    L.C. = 3,330 Baht/m    27%										
Items		Unit	Quantity		Foreign Currency		Local Currency		Remark	
					Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)									per 4 set	
Jumbo Drill,Crawler 2Booms,150k		1	0.4	Hr	7,235	2,894	35	14	0.4 Hr × 1	
Grout Pump Single15~30liter/m		1	0.3	day	295	89	15	5	0.3 day × 1	
Grout Mixer 100liter Type		1	0.3	day	125	38	15	5	0.3 day × 1	
Subtotal						3,021		24		
2. Material									per 4 set	
Rock Bolt 18t L=4m			4	set	711	2,844	79	316	Baht / 4set	
Dry Mortar			300	kg	8	2,400	6	1,800		
Square Washer 150 x 150 x 9			4	Pcs	104	416	12	48		
Nut M24			4	Pcs	9	36	1	4		
Miscellaneous			6	%		342		130		
Subtotal						6,038		2,298		
3. Labor									per 4 set	
Foreman Tunnel			0.5	day			720	360	1.5 day × 0.3	
Operator of Heavy			0.2	day			460	92	1.5 day × 0.1	
Skilled Labor			0.9	day			260	234	1.5 day × 0.6	
Common Labor			1.4	day			230	322	1.5 day × 0.9	
Subtotal								1,008		
4. Total						9,059		3,330	12,389 Baht / 4 set	
5. Output					Working Time per 1 day = 12 Hr × 2 shift					per 4.0 set / m
Rate = Baht/m					9,059 Baht/m    3,330 Baht/m =					12,389

T-124. Unit Rate per Meter of Rock Bolts of Upper Half : Grade E2 , Forepiling									
Rock Bolts : Forepiling			Rate = 32,171 Baht/m		F.C. = 25,764 Baht/m		80%		
Adit for Ing-Yot No.2 Tunnel					L.C. = 6,407 Baht/m		20%		
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark	
				Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								per 15 set	
Jumbo Drill,Crawler 2Booms,150k	1	1.3 Hr		7,235	9,406	35	46	1.3 Hr ×	1
Grout Pump Single15~30liter/m	1	0.3 day		295	89	15	5	0.3 day ×	1
Grout Mixer 100liter Type	1	0.3 day		125	38	15	5	0.3 day ×	1
Subtotal					9,533		56		
2. Material								per 15 set	
Rock Bolt 18t L=3m		15 set		540	8,100	60	900		
Dry Mortar		620 kg		8	4,960	6	3,720		
Square Washer 150 x 150 x 9		15 Pcs		104	1,560	12	180		
Nut M24		15 Pcs		9	135	1	15		
Miscellaneous		10 %			1,476		482	Baht / 15 set	
Subtotal					16,231		5,297		
3. Labor								per 15 set	
Foreman Tunnel		0.5 day				720	360	1.5 day ×	0.3
Operator of Heavy		0.3 day				460	138	1.5 day ×	0.2
Skilled Labor		0.9 day				260	234	1.5 day ×	0.6
Common Labor		1.4 day				230	322	1.5 day ×	0.9
Subtotal							1,054		
4. Total					25,764		6,407	32,171 Baht / 15 set	
5. Output				Working Time per 1 day = 12 Hr × 2 shift				per 15.0 set / m	
Rate = Baht/m				25,764 Baht/m				6,407 Baht/m = 32,171	

T-125. Unit Rate per Meter of Rock Bolts of Upper Half : Grade B								
Rate = 11,729 Baht/m    F.C. = 9,170 Baht/m    78%								
Adit for Ing-Yot No.2 Tunnel    L.C. = 2,559 Baht/m    22%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 8 set	
Jumbo Drill,Crawler 2Booms,150k	1	0.7 Hr	7,235	5,065	35	25	0.7 Hr ×	1
Grout Pump Single15~30liter/m	1	0.3 day	295	89	15	5	0.3 day ×	1
Grout Mixer 100liter Type	1	0.3 day	125	38	15	5	0.3 day ×	1
Subtotal				5,192		35		
2. Material							per 8 set	
Rock Bolt 18t L=3m		8 set	540	4,320	60	480	Baht / 8 set	
Dry Mortar		330 kg	8	2,640	6	1,980		
Square Washer 150 x 150 x 9		8 Pcs	104	832	12	96		
Nut M24		8 Pcs	9	72	1	8		
Miscellaneous		10 %		786		256		
Subtotal				8,650		2,820		
3. Labor							per 8 set	
Foreman Tunnel		0.5 day			720	360	1.5 day ×	0.3
Operator of Heavy		0.2 day			460	92	1.5 day ×	0.1
Skilled Labor		0.9 day			260	234	1.5 day ×	0.6
Common Labor		1.4 day			230	322	1.5 day ×	0.9
Subtotal						1,008		
4. Total				13,842		3,863	17,705 Baht / 8set	
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 5.3 set / m	
Rate = Baht/m			9,170 Baht/m		2,559 Baht/m =		11,729	

T-126. Unit Rate per Meter of Rock Bolts of Lower Half : Grade C1								
			Rate = 4,665 Baht/m		F.C. = 3,526 Baht/m		76%	
Kok-Ing, Ing-Yot & Adit					L.C. = 1,139 Baht/m		24%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 4 set	
Jumbo Drill, Crawler 2Booms, 150k	1	0.3 Hr	7,235	2,171	35	11	0.3 Hr x 1	
Grout Pump Single 15~30liter/m	1	0.4 day	295	118	15	6	0.4 day x 1	
Grout Mixer 100liter Type	1	0.4 day	125	50	15	6	0.4 day x 1	
Subtotal				2,339		23		
2. Material							per 4 set	
Rock Bolt 18t L=3m		4 set	540	2,160	60	240		
Dry Mortar		17 kg	8	136	6	102		
Square Washer 150 x 150 x 9		4 Pcs	104	416	12	48		
Nut M24		4 Pcs	9	36	1	4		
Miscellaneous		5 %		137		20	Baht / 4set	
Subtotal				2,885		414		
3. Labor							per 4 set	
Foreman Tunnel		0.6 day			720	432	1.5 day x 0.4	
Operator of Heavy		0.2 day			460	92	1.5 day x 0.1	
Skilled Labor		1.2 day			260	312	1.5 day x 0.8	
Common Labor		1.8 day			230	414	1.5 day x 1.2	
Subtotal						1,250		
4. Total				5,224		1,687	6,911 Baht / 4set	
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 2.7 set / m	
Rate = Baht/m			3,526 Baht/m		1,139 Baht/m =		4,665	

T-127. Unit Rate per Meter of Rock Bolts of Lower Half : Grade C2									
			Rate = 5,483 Baht/m		F.C. = 4,321 Baht/m		79%		
Kok-Ing, Ing-Yot & Adit					L.C. = 1,162 Baht/m		21%		
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 4 set		
Jumbo Drill, Crawler 2Booms, 150k	1	0.3 Hr	7,235	2,171	35	11	0.3 Hr x 1		
Grout Pump Single 15~30liter/m	1	0.3 day	295	89	15	5	0.3 day x 1		
Grout Mixer 100liter Type	1	0.3 day	125	38	15	5	0.3 day x 1		
Subtotal				2,298		21			
2. Material							per 4 set		
Rock Bolt 18t L=3m		4 set	540	2,160	60	240			
Dry Mortar		5 kg	8	40	6	30			
Square Washer 150 x 150 x 9		4 Pcs	104	416	12	48			
Nut M24		4 Pcs	9	36	1	4			
Miscellaneous		5 %		133		16	Baht / 4set		
Subtotal				2,785		338			
3. Labor							per 4 set		
Foreman Tunnel		0.5 day			720	360	1.5 day x 0.3		
Operator of Heavy		0.2 day			460	92	1.5 day x 0.1		
Skilled Labor		0.9 day			260	234	1.5 day x 0.6		
Common Labor		1.4 day			230	322	1.5 day x 0.9		
Subtotal						1,008			
4. Total				5,083		1,367	6,450 Baht / 4set		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 3.4 set / m		
Rate = Baht/m			4,321 Baht/m		1,162 Baht/m =		5,483		

T-128. Unit Rate per Meter of Rock Bolts of Lower Half : Grade D1,D2,E1									
Rate = 8,341 Baht/m F.C. = 6,734 Baht/m 81%									
Kok-Ing, Ing-Yot & Adit L.C. = 1,607 Baht/m 19%									
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 4 set		
Jumbo Drill,Crawler 2Booms,150k	1	0.4 Hr	7,235	2,894	35	14	0.4 Hr x 1		
Grout Pump Single15~30liter/m	1	0.3 day	295	89	15	5	0.3 day x 1		
Grout Mixer 100liter Type	1	0.3 day	125	38	15	5	0.3 day x 1		
Subtotal				3,021		24			
2. Material							per 4 set		
Rock Bolt 18t L=4m		4 set	711	2,844	79	316			
Dry Mortar		30 kg	8	240	6	180			
Square Washer 150 x 150 x 9		4 Pcs	104	416	12	48			
Nut M24		4 Pcs	9	36	1	4			
Miscellaneous		5 %		177		27	Baht / 4set		
Subtotal				3,713		575			
3. Labor							per 4 set		
Foreman Tunnel		0.5 day			720	360	1.5 day x 0.3		
Operator of Heavy		0.2 day			460	92	1.5 day x 0.1		
Skilled Labor		0.9 day			260	234	1.5 day x 0.6		
Common Labor		1.4 day			230	322	1.5 day x 0.9		
Subtotal						1,008			
4. Total				6,734		1,607	8,341 Baht / 4 set		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 4.0 set / m		
Rate = Baht/m			6,734 Baht/m 1,607 Baht/m =				8,341		

T-129. Unit Rate per Meter of Rock Bolts of Lower Half : Grade E2								
Rate = 8,626 Baht/m F.C. = 6,775 Baht/m 79%								
Kok-Ing, Ing-Yot & Adit L.C. = 1,851 Baht/m 21%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 4 set	
Jumbo Drill,Crawler 2Booms,150k	1	0.4 Hr	7,235	2,894	35	14	0.4 Hr x 1	
Grout Pump Single15~30liter/m	1	0.4 day	295	118	15	6	0.4 day x 1	
Grout Mixer 100liter Type	1	0.4 day	125	50	15	6	0.4 day x 1	
Subtotal				3,062		26		
2. Material							per 4 set	
Rock Bolt 18t L=4m		4 set	711	2,844	79	316		
Dry Mortar		30 kg	8	240	6	180		
Square Washer 150 x 150 x 9		4 Pcs	104	416	12	48		
Nut M24		4 Pcs	9	36	1	4		
Miscellaneous		5 %		177		27	Baht / 4set	
Subtotal				3,713		575		
3. Labor							per 4 set	
Foreman Tunnel		0.6 day			720	432	1.5 day x 0.4	
Operator of Heavy		0.2 day			460	92	1.5 day x 0.1	
Skilled Labor		1.2 day			260	312	1.5 day x 0.8	
Common Labor		1.8 day			230	414	1.5 day x 1.2	
Subtotal						1,250		
4. Total				6,775		1,851	8,626 Baht / 4 set	
5. Output			Working Time per 1 day = 12 Hr x 2 shift			per 4.0 set / m		
Rate = Baht/m			6,775 Baht/m			1,851 Baht/m = 8,626		



T-130. Unit Rate per Meter of Steel Support of Upper Half : Grade C2								
Rate = 22,246 Baht/m F.C. = 20,048 Baht/m 90%								
Kok-Ing Tunnel L.C. = 2,198 Baht/m 10%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 1.2 m	
Jumbo Drill, Crawler 2Booms, 150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr x 1	
Truck with Crane 4t x 2.9t lift	1	0.3 Hr	425	128	25	8	0.3 Hr x 1	
Subtotal				3,746		26	Baht / 1.2 m	
2. Material							per 1.2 m	
H-Steel Tunnel Support		0.4 ton	40,500	16,200	4,500	1,800		
H-Steel Bending Extra H125-H200		0.4 ton	1,449	580	161	64		
H-Steel Rounding Extra		0.4 ton	1,935	774	215	86		
Joint Plate		0.02 ton	5,427	109	603	12		
Miscellaneous		15 %		2,649		294		
Subtotal				20,312		2,256	Baht / 1.2 m	
3. Labor							per 1.2 m	
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7= 0.1	
Operator of Heavy		0.2 day			460	92	1.5 day x 0.1	
Driver		0.2 day			350	70	1.5 day x 0.1	
Skilled Labor		0.2 day			260	52	1.5 day x 0.1	
Common Labor		0.3 day			230	69	1.5 day x 0.2	
Subtotal						355		
4. Total				24,058		2,637	26,695 Baht / 1.2 m	
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 1.2 m	
Rate = Baht/m			20,048 Baht/m		2,198 Baht/m =		22,246	

T-131. Unit Rate per Meter of Steel Support of Upper Half : Grade D1								
Rate = 32,236 Baht/m F.C. = 29,043 Baht/m 90%								
Kok-Ing Tunnel L.C. = 3,193 Baht/m 10%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 1.0 m	
Jumbo Drill, Crawler 2Booms, 150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr x 1	
Truck with Crane 4t x 2.9t lift	1	0.3 Hr	425	128	25	8	0.3 Hr x 1	
Subtotal				3,746		26	Baht / 1.0 m	
2. Material							per 1.0 m	
H-Steel Tunnel Support		0.5 ton	40,500	20,250	4,500	2,250		
H-Steel Bending Extra H125-H200		0.5 ton	1,449	725	161	81		
H-Steel Rounding Extra		0.5 ton	1,935	968	215	108		
Joint Plate		0.01 ton	5,427	54	603	6		
Miscellaneous		15 %		3,300		367		
Subtotal				25,297		2,812	Baht / 1.0 m	
3. Labor							per 1.0 m	
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7= 0.1	
Operator of Heavy		0.2 day			460	92	1.5 day x 0.1	
Driver		0.2 day			350	70	1.5 day x 0.1	
Skilled Labor		0.2 day			260	52	1.5 day x 0.1	
Common Labor		0.3 day			230	69	1.5 day x 0.2	
Subtotal						355		
4. Total				29,043		3,193	32,236 Baht / 1.0 m	
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 1.0 m	
Rate = Baht/m			29,043 Baht/m		3,193 Baht/m =		32,236	

T-132. Unit Rate per Meter of Steel Support of Upper Half : Grade D2								
Rate = 37,841 Baht/m F.C. = 34,088 Baht/m 90%								
Kok-Ing Tunnel L.C. = 3,753 Baht/m 10%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 1.0 m	
Jumbo Drill, Crawler 2Booms, 150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr × 1	
Truck with Crane 4t x 2.9t lift	1	0.3 Hr	425	128	25	8	0.3 Hr × 1	
Subtotal				3,746		26	Baht / 1.0 m	
2. Material							per 1.0 m	
H-Steel Tunnel Support		0.6 ton	40,500	24,300	4,500	2,700		
H-Steel Bending Extra H125~H200		0.6 ton	1,449	869	161	97		
H-Steel Rounding Extra		0.6 ton	1,935	1,161	215	129		
Joint Plate		0.01 ton	5,427	54	603	6		
Miscellaneous		15 %		3,958		440		
Subtotal				30,342		3,372	Baht / 1.0 m	
3. Labor							per 1.0 m	
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7= 0.1	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Driver		0.2 day			350	70	1.5 day × 0.1	
Skilled Labor		0.2 day			260	52	1.5 day × 0.1	
Common Labor		0.3 day			230	69	1.5 day × 0.2	
Subtotal						355		
4. Total				34,088		3,753	37,841 Baht / 1.0 m	
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 1.0 m	
Rate = Baht/m			34,088 Baht/m		3,753 Baht/m =		37,841	

T-133. Unit Rate per Meter of Steel Support of Upper Half : Grade E1								
Rate = 54,803 Baht/m F.C. = 49,354 Baht/m 90%								
Kok-Ing Tunnel L.C. = 5,449 Baht/m 10%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 1.0 m	
Jumbo Drill, Crawler 2Booms, 150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr × 1	
Truck with Crane 4t x 2.9t lift	1	0.3 Hr	425	128	25	8	0.3 Hr × 1	
Subtotal				3,746		26	Baht / 1.0 m	
2. Material							per 1.0 m	
H-Steel Tunnel Support		0.9 ton	40,500	36,450	4,500	4,050		
H-Steel Bending Extra H125-H200		0.9 ton	1,449	1,304	161	145		
H-Steel Rounding Extra		0.9 ton	1,935	1,742	215	194		
Joint Plate		0.03 ton	5,427	163	603	18		
Miscellaneous		15 %		5,949		661		
Subtotal				45,608		5,068	Baht / 1.0 m	
3. Labor							per 1.0 m	
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7= 0.1	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Driver		0.2 day			350	70	1.5 day × 0.1	
Skilled Labor		0.2 day			260	52	1.5 day × 0.1	
Common Labor		0.3 day			230	69	1.5 day × 0.2	
Subtotal						355		
4. Total				49,354		5,449	54,803 Baht / 1.0 m	
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 1.0 m	
Rate = Baht/m			49,354 Baht/m		5,449 Baht/m =		54,803	

T-134. Unit Rate per Meter of Steel Support of Upper Half : Grade E2									
Rate = 54,803 Baht/m    F.C. = 49,354 Baht/m    90%									
Kok-Ing Tunnel    L.C. = 5,449 Baht/m    10%									
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark	
				Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								per 1.0 m	
Jumbo Drill, Crawler 2Booms, 150k		1	0.5 Hr	7,235	3,618	35	18	0.5 Hr x 1	
Truck with Crane 4t x 2.9t lift		1	0.3 Hr	425	128	25	8	0.3 Hr x 1	
Subtotal					3,746		26	Baht / 1.0 m	
2. Material								per 1.0 m	
H-Steel Tunnel Support			0.9 ton	40,500	36,450	4,500	4,050		
H-Steel Bending Extra H125~H200			0.9 ton	1,449	1,304	161	145		
H-Steel Rounding Extra			0.9 ton	1,935	1,742	215	194		
Joint Plate			0.03 ton	5,427	163	603	18		
Miscellaneous			15 %		5,949		661		
Subtotal					45,608		5,068	Baht / 1.0 m	
3. Labor								per 1.0 m	
Foreman Tunnel			0.1 day			720	72	0.5 Hr/7= 0.1	
Operator of Heavy			0.2 day			460	92	1.5 day x 0.1	
Driver			0.2 day			350	70	1.5 day x 0.1	
Skilled Labor			0.2 day			260	52	1.5 day x 0.1	
Common Labor			0.3 day			230	69	1.5 day x 0.2	
Subtotal							355		
4. Total					49,354		5,449	54,803 Baht / 1.0 m	
5. Output				Working Time per 1 day = 12 Hr x 2 shift				per 1.0 m	
Rate = Baht/m				49,354 Baht/m				5,449 Baht/m = 54,803	

T-135. Unit Rate per Meter of Steel Support of Upper Half : Grade C2								
			Rate = 26,922 Baht/m		F.C. = 24,255 Baht/m		90%	
Ing-Yot Tunnel					L.C. = 2,667 Baht/m		10%	
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark
				Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)								per 1.2 m
Jumbo Drill, Crawler 2Booms, 150k		1	0.5 Hr	7,235	3,618	35	18	0.5 Hr x 1
Truck with Crane 4t x 2.9t lift		1	0.3 Hr	425	128	25	8	0.3 Hr x 1
Subtotal					3,746		26	Baht / 1.2 m
2. Material								per 1.2 m
H-Steel Tunnel Support			0.5 ton	40,500	20,250	4,500	2,250	
H-Steel Bending Extra H125~H200			0.5 ton	1,449	725	161	81	
H-Steel Rounding Extra			0.5 ton	1,935	968	215	108	
Joint Plate			0.02 ton	5,427	109	603	12	
Miscellaneous			15 %		3,308		368	
Subtotal					25,360		2,819	Baht / 1.2 m
3. Labor								per 1.2 m
Foreman Tunnel			0.1 day			720	72	0.5 Hr/7= 0.1
Operator of Heavy			0.2 day			460	92	1.5 day x 0.1
Driver			0.2 day			350	70	1.5 day x 0.1
Skilled Labor			0.2 day			260	52	1.5 day x 0.1
Common Labor			0.3 day			230	69	1.5 day x 0.2
Subtotal							355	
4. Total					29,106		3,200	32,306 Baht / 1.2 m
5. Output				Working Time per 1 day = 12 Hr x 2 shift				per 1.2 m
Rate = Baht/m				24,255 Baht/m		2,667 Baht/m =		26,922

T-136. Unit Rate per Meter of Steel Support of Upper Half : Grade D1									
Rate = 32,236 Baht/m F.C. = 29,043 Baht/m 90%									
Ing-Yot Tunnel L.C. = 3,193 Baht/m 10%									
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark	
				Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								per 1.0 m	
Jumbo Drill, Crawler 2Booms, 150k		1	0.5 Hr	7,235	3,618	35	18	0.5 Hr x	1
Truck with Crane 4t x 2.9t lift		1	0.3 Hr	425	128	25	8	0.3 Hr x	1
Subtotal					3,746		26	Baht / 1.0 m	
2. Material								per 1.0 m	
H-Steel Tunnel Support			0.5 ton	40,500	20,250	4,500	2,250		
H-Steel Bending Extra H125~H200			0.5 ton	1,449	725	161	81		
H-Steel Rounding Extra			0.5 ton	1,935	968	215	108		
Joint Plate			0.01 ton	5,427	54	603	6		
Miscellaneous			15 %		3,300		367		
Subtotal					25,297		2,812	Baht / 1.0 m	
3. Labor								per 1.0 m	
Foreman Tunnel			0.1 day			720	72	0.5 Hr/7=	0.1
Operator of Heavy			0.2 day			460	92	1.5 day x	0.1
Driver			0.2 day			350	70	1.5 day x	0.1
Skilled Labor			0.2 day			260	52	1.5 day x	0.1
Common Labor			0.3 day			230	69	1.5 day x	0.2
Subtotal							355		
4. Total					29,043		3,193	32,236 Baht / 1.0 m	
5. Output				Working Time per 1 day = 12 Hr x 2 shift				per 1.0 m	
Rate = Baht/m				29,043 Baht/m				3,193 Baht/m = 32,236	

T-137. Unit Rate per Meter of Steel Support of Upper Half : Grade D2									
Rate = 37,841 Baht/m F.C. = 34,088 Baht/m 90%									
Ing-Yot Tunnel L.C. = 3,753 Baht/m 10%									
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 1.0 m		
Jumbo Drill, Crawler 2Booms, 150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr x 1		
Truck with Crane 4t x 2.9t lift	1	0.3 Hr	425	128	25	8	0.3 Hr x 1		
Subtotal				3,746		26	Baht / 1.0 m		
2. Material							per 1.0 m		
H-Steel Tunnel Support		0.6 ton	40,500	24,300	4,500	2,700			
H-Steel Bending Extra H125~H200		0.6 ton	1,449	869	161	97			
H-Steel Rounding Extra		0.6 ton	1,935	1,161	215	129			
Joint Plate		0.01 ton	5,427	54	603	6			
Miscellaneous		15 %		3,958		440			
Subtotal				30,342		3,372	Baht / 1.0 m		
3. Labor							per 1.0 m		
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7= 0.1		
Operator of Heavy		0.2 day			460	92	1.5 day x 0.1		
Driver		0.2 day			350	70	1.5 day x 0.1		
Skilled Labor		0.2 day			260	52	1.5 day x 0.1		
Common Labor		0.3 day			230	69	1.5 day x 0.2		
Subtotal						355			
4. Total				34,088		3,753	37,841 Baht / 1.0 m		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 1.0 m		
Rate = Baht/m			34,088 Baht/m		3,753 Baht/m =		37,841		

T-138. Unit Rate per Meter of Steel Support of Upper Half : Grade E1									
Rate = 60,409 Baht/m					F.C. = 54,400 Baht/m		90%		
Ing-Yot Tunnel					L.C. = 6,009 Baht/m		10%		
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 1.0 m		
Jumbo Drill, Crawler 2Booms, 150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr x 1		
Truck with Crane 4t x 2.9t lift	1	0.3 Hr	425	128	25	8	0.3 Hr x 1		
Subtotal				3,746		26	Baht / 1.0 m		
2. Material							per 1.0 m		
H-Steel Tunnel Support		1.0 ton	40,500	40,500	4,500	4,500			
H-Steel Bending Extra H125-H200		1.0 ton	1,449	1,449	161	161			
H-Steel Rounding Extra		1.0 ton	1,935	1,935	215	215			
Joint Plate		0.03 ton	5,427	163	603	18			
Miscellaneous		15 %		6,607		734			
Subtotal				50,654		5,628	Baht / 1.0 m		
3. Labor							per 1.0 m		
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7= 0.1		
Operator of Heavy		0.2 day			460	92	1.5 day x 0.1		
Driver		0.2 day			350	70	1.5 day x 0.1		
Skilled Labor		0.2 day			260	52	1.5 day x 0.1		
Common Labor		0.3 day			230	69	1.5 day x 0.2		
Subtotal						355			
4. Total				54,400		6,009	60,409 Baht / 1.0 m		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 1.0 m		
Rate = Baht/m			54,400 Baht/m		6,009 Baht/m =		60,409		

T-139. Unit Rate per Meter of Steel Support of Upper Half : Grade E2								
Rate = 60,409 Baht/m F.C. = 54,400 Baht/m 90%								
Ing-Yot Tunnel L.C. = 6,009 Baht/m 10%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 1.0 m	
Jumbo Drill, Crawler 2Booms, 150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr ×	1
Truck with Crane 4t x 2.9t lift	1	0.3 Hr	425	128	25	8	0.3 Hr ×	1
Subtotal				3,746		26	Baht / 1.0 m	
2. Material							per 1.0 m	
H-Steel Tunnel Support		1.0 ton	40,500	40,500	4,500	4,500		
H-Steel Bending Extra H125~H200		1.0 ton	1,449	1,449	161	161		
H-Steel Rounding Extra		1.0 ton	1,935	1,935	215	215		
Joint Plate		0.03 ton	5,427	163	603	18		
Miscellaneous		15 %		6,607		734		
Subtotal				50,654		5,628	Baht / 1.0 m	
3. Labor							per 1.0 m	
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7=	0.1
Operator of Heavy		0.2 day			460	92	1.5 day ×	0.1
Driver		0.2 day			350	70	1.5 day ×	0.1
Skilled Labor		0.2 day			260	52	1.5 day ×	0.1
Common Labor		0.3 day			230	69	1.5 day ×	0.2
Subtotal						355		
4. Total				54,400		6,009	60,409 Baht / 1.0 m	
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 1.0 m	
Rate = Baht/m			54,400 Baht/m		6,009 Baht/m =		60,409	

T-140. Unit Rate per Meter of Steel Support of Upper Half : Grade C2									
Rate = 17,574 Baht/m    F.C. = 15,843 Baht/m    90%									
Adit for Ing-Yot No.2 Tunnel    L.C. = 1,731 Baht/m    10%									
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 1.2 m		
Jumbo Drill, Crawler 2Booms, 150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr × 1		
Truck with Crane 4t x 2.9t lift	1	0.3 Hr	425	128	25	8	0.3 Hr × 1		
Subtotal				3,746		26	Baht / 1.2 m		
2. Material							per 1.2 m		
H-Steel Tunnel Support		0.3 ton	40,500	12,150	4,500	1,350			
H-Steel Bending Extra H125-H200		0.3 ton	1,449	435	161	48			
H-Steel Rounding Extra		0.3 ton	1,935	581	215	65			
Joint Plate		0.02 ton	5,427	109	603	12			
Miscellaneous		15 %		1,991		221			
Subtotal				15,266		1,696	Baht / 1.2 m		
3. Labor							per 1.2 m		
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7= 0.1		
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1		
Driver		0.2 day			350	70	1.5 day × 0.1		
Skilled Labor		0.2 day			260	52	1.5 day × 0.1		
Common Labor		0.3 day			230	69	1.5 day × 0.2		
Subtotal						355			
4. Total				19,012		2,077	21,089 Baht / 1.2 m		
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 1.2 m		
Rate = Baht/m			15,843 Baht/m    1,731 Baht/m =				17,574		

T-141. Unit Rate per Meter of Steel Support of Upper Half : Grade D1									
Rate = 26,625 Baht/m					F.C. = 23,995 Baht/m		90%		
Adit for Ing-Yot No.2 Tunnel					L.C. = 2,630 Baht/m		10%		
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark	
				Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								per 1.0 m	
Jumbo Drill, Crawler 2Booms, 150k		1	0.5 Hr	7,235	3,618	35	18	0.5 Hr ×	1
Truck with Crane 4t x 2.9t lift		1	0.3 Hr	425	128	25	8	0.3 Hr ×	1
Subtotal					3,746		26	Baht / 1.0 m	
2. Material								per 1.0 m	
H-Steel Tunnel Support			0.4 ton	40,500	16,200	4,500	1,800		
H-Steel Bending Extra H125-H200			0.4 ton	1,449	580	161	64		
H-Steel Rounding Extra			0.4 ton	1,935	774	215	86		
Joint Plate			0.01 ton	5,427	54	603	6		
Miscellaneous			15 %		2,641		293		
Subtotal					20,249		2,249	Baht / 1.0 m	
3. Labor								per 1.0 m	
Foreman Tunnel			0.1 day			720	72	0.5 Hr/7=	0.1
Operator of Heavy			0.2 day			460	92	1.5 day ×	0.1
Driver			0.2 day			350	70	1.5 day ×	0.1
Skilled Labor			0.2 day			260	52	1.5 day ×	0.1
Common Labor			0.3 day			230	69	1.5 day ×	0.2
Subtotal							355		
4. Total					23,995		2,630	26,625 Baht / 1.0 m	
5. Output				Working Time per 1 day = 12 Hr × 2 shift				per 1.0 m	
Rate = Baht/m				23,995 Baht/m				2,630 Baht/m = 26,625	

T-142. Unit Rate per Meter of Steel Support of Upper Half : Grade D2									
Rate = 32,236 Baht/m					F.C. = 29,043 Baht/m 90%				
Adit for Ing-Yot No.2 Tunnel					L.C. = 3,193 Baht/m 10%				
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 1.0 m		
Jumbo Drill, Crawler 2Booms, 150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr x 1		
Truck with Crane 4t x 2.9t lift	1	0.3 Hr	425	128	25	8	0.3 Hr x 1		
Subtotal				3,746		26	Baht / 1.0 m		
2. Material							per 1.0 m		
H-Steel Tunnel Support		0.5 ton	40,500	20,250	4,500	2,250			
H-Steel Bending Extra H125~H200		0.5 ton	1,449	725	161	81			
H-Steel Rounding Extra		0.5 ton	1,935	968	215	108			
Joint Plate		0.01 ton	5,427	54	603	6			
Miscellaneous		15 %		3,300		367			
Subtotal				25,297		2,812	Baht / 1.0 m		
3. Labor							per 1.0 m		
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7= 0.1		
Operator of Heavy		0.2 day			460	92	1.5 day x 0.1		
Driver		0.2 day			350	70	1.5 day x 0.1		
Skilled Labor		0.2 day			260	52	1.5 day x 0.1		
Common Labor		0.3 day			230	69	1.5 day x 0.2		
Subtotal						355			
4. Total				29,043		3,193	32,236 Baht / 1.0 m		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 1.0 m		
Rate = Baht/m			29,043 Baht/m		3,193 Baht/m =		32,236		

T-143. Unit Rate per Meter of Steel Support of Upper Half : Grade E1									
Rate = 43,588 Baht/m					F.C. = 39,260 Baht/m 90%				
Adit for Ing-Yot No.2 Tunnel					L.C. = 4,328 Baht/m 10%				
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 1.0 m		
Jumbo Drill, Crawler 2Booms, 150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr x 1		
Truck with Crane 4t x 2.9t lift	1	0.3 Hr	425	128	25	8	0.3 Hr x 1		
Subtotal				3,746		26	Baht / 1.0 m		
2. Material							per 1.0 m		
H-Steel Tunnel Support		0.7 ton	40,500	28,350	4,500	3,150			
H-Steel Bending Extra H125-H200		0.7 ton	1,449	1,014	161	113			
H-Steel Rounding Extra		0.7 ton	1,935	1,355	215	151			
Joint Plate		0.03 ton	5,427	163	603	18			
Miscellaneous		15 %		4,632		515			
Subtotal				35,514		3,947	Baht / 1.0 m		
3. Labor							per 1.0 m		
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7= 0.1		
Operator of Heavy		0.2 day			460	92	1.5 day x 0.1		
Driver		0.2 day			350	70	1.5 day x 0.1		
Skilled Labor		0.2 day			260	52	1.5 day x 0.1		
Common Labor		0.3 day			230	69	1.5 day x 0.2		
Subtotal						355			
4. Total				39,260		4,328	43,588 Baht / 1.0 m		
5. Output			Working Time per 1 day = 12 Hr x 2 shift				per 1.0 m		
Rate = Baht/m			39,260 Baht/m		4,328 Baht/m =		43,588		



T-144. Unit Rate per Meter of Steel Support of Upper Half : Grade E2								
			Rate = 43,588 Baht/m		F.C. = 39,260 Baht/m		90%	
Adit for Ing-Yot No.2 Tunnel					L.C. = 4,328 Baht/m		10%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 1.0 m	
Jumbo Drill,Crawler 2Booms,150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr × 1	
Truck with Crane 4t x 2.9t lift	1	0.3 Hr	425	128	25	8	0.3 Hr × 1	
Subtotal				3,746		26	Baht / 1.0 m	
2. Material							per 1.0 m	
H-Steel Tunnel Support		0.7 ton	40,500	28,350	4,500	3,150		
H-Steel Bending Extra H125~H200		0.7 ton	1,449	1,014	161	113		
H-Steel Rounding Extra		0.7 ton	1,935	1,355	215	151		
Joint Plate		0.03 ton	5,427	163	603	18		
Miscellaneous		15 %		4,632		515		
Subtotal				35,514		3,947	Baht / 1.0 m	
3. Labor							per 1.0 m	
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7= 0.1	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Driver		0.2 day			350	70	1.5 day × 0.1	
Skilled Labor		0.2 day			260	52	1.5 day × 0.1	
Common Labor		0.3 day			230	69	1.5 day × 0.2	
Subtotal						355		
4. Total				39,260		4,328	43,588 Baht / 1.0 m	
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 1.0 m	
Rate = Baht/m				39,260 Baht/m	4,328 Baht/m	=	43,588	

T-145. Unit Rate per Meter of Steel Support of Lower Half : Grade D1									
Rate = 9,829 Baht/m F.C. = 8,876 Baht/m 90%									
Kok-Ing Tunnel L.C. = 953 Baht/m 10%									
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark	
				Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								per 1.0 m	
Jumbo Drill, Crawler 2Booms, 150k	1	0.5 Hr		7,235	3,618	35	18	0.5 Hr x	1
Truck with Crane 4t x 2.9t lift	1	0.2 Hr		425	85	25	5	0.2 Hr x	1
Subtotal					3,703		23	Baht / 1.0 m	
2. Material								per 1.0 m	
H-Steel Tunnel Support		0.1 ton		40,500	4,050	4,500	450		
H-Steel Bending Extra H125~H200		0.1 ton		1,449	145	161	16		
H-Steel Rounding Extra		0.1 ton		1,935	194	215	22		
Joint Plate		0.02 ton		5,427	109	603	12		
Miscellaneous		15 %			675		75		
Subtotal					5,173		575	Baht / 1.0 m	
3. Labor								per 1.0 m	
Foreman Tunnel		0.1 day				720	72	0.5 Hr/7=	0.1
Operator of Heavy		0.2 day				460	92	1.5 day x	0.1
Driver		0.2 day				350	70	1.5 day x	0.1
Skilled Labor		0.2 day				260	52	1.5 day x	0.1
Common Labor		0.3 day				230	69	1.5 day x	0.2
Subtotal							355		
4. Total					8,876		953	9,829 Baht / 1.0 m	
5. Output Working Time per 1 day = 12 Hr x 2 shift per 1.0 m									
Rate = Baht/m 8,876 Baht/m 953 Baht/m = 9,829									

T-146. Unit Rate per Meter of Steel Support of Lower Half : Grade D2								
Rate = 15,504 Baht/m    F.C. = 13,984 Baht/m    90%								
Kok-Ing Tunnel    L.C. = 1,520 Baht/m    10%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 1.0 m	
Jumbo Drill, Crawler 2Booms, 150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr × 1	
Truck with Crane 4t x 2.9t lift	1	0.2 Hr	425	85	25	5	0.2 Hr × 1	
Subtotal				3,703		23	Baht / 1.0 m	
2. Material							per 1.0 m	
H-Steel Tunnel Support		0.2 ton	40,500	8,100	4,500	900		
H-Steel Bending Extra H125-H200		0.2 ton	1,449	290	161	32		
H-Steel Rounding Extra		0.2 ton	1,935	387	215	43		
Joint Plate		0.03 ton	5,427	163	603	18		
Miscellaneous		15 %		1,341		149		
Subtotal				10,281		1,142	Baht / 1.0 m	
3. Labor							per 1.0 m	
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7= 0.1	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Driver		0.2 day			350	70	1.5 day × 0.1	
Skilled Labor		0.2 day			260	52	1.5 day × 0.1	
Common Labor		0.3 day			230	69	1.5 day × 0.2	
Subtotal						355		
4. Total				13,984		1,520	15,504 Baht / 1.0 m	
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 1.0 m	
Rate = Baht/m			13,984 Baht/m		1,520 Baht/m =		15,504	

T-147. Unit Rate per Meter of Steel Support of Lower Half : Grade E1,E2									
Rate = 15,573 Baht/m    F.C. = 14,046 Baht/m    90%									
Kok-Ing Tunnel    L.C. = 1,527 Baht/m    10%									
Items		Unit	Quantity		Foreign Currency		Local Currency		Remark
					Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)									per 1.0 m
Jumbo Drill, Crawler 2Booms, 150k		1	0.5	Hr	7,235	3,618	35	18	0.5 Hr x 1
Truck with Crane 4t x 2.9t lift		1	0.2	Hr	425	85	25	5	0.2 Hr x 1
Subtotal						3,703		23	Baht / 1.0 m
2. Material									per 1.0 m
H-Steel Tunnel Support			0.2	ton	40,500	8,100	4,500	900	
H-Steel Bending Extra H125-H200			0.2	ton	1,449	290	161	32	
H-Steel Rounding Extra			0.2	ton	1,935	387	215	43	
Joint Plate			0.04	ton	5,427	217	603	24	
Miscellaneous			15	%		1,349		150	
Subtotal						10,343		1,149	Baht / 1.0 m
3. Labor									per 1.0 m
Foreman Tunnel			0.1	day			720	72	0.5 Hr/7= 0.1
Operator of Heavy			0.2	day			460	92	1.5 day x 0.1
Driver			0.2	day			350	70	1.5 day x 0.1
Skilled Labor			0.2	day			260	52	1.5 day x 0.1
Common Labor			0.3	day			230	69	1.5 day x 0.2
Subtotal								355	
4. Total						14,046		1,527	15,573 Baht / 1.0 m
5. Output					Working Time per 1 day = 12 Hr x 2 shift    per 1.0 m				
Rate = Baht/m					14,046 Baht/m    1,527 Baht/m =    15,573				

T-148. Unit Rate per Meter of Steel Support of Lower Half : Grade D1									
Rate = 10,079 Baht/m					F.C. = 9,101 Baht/m 90%				
Ing-Yot Tunnel					L.C. = 978 Baht/m 10%				
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark	
				Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								per 1.0 m	
Jumbo Drill,Crawler 2Booms,150k	1	0.5	Hr	7,235	3,618	35	18	0.5	Hr x 1
Truck with Crane 4t x 2.9t lift	1	0.2	Hr	425	85	25	5	0.2	Hr x 1
Subtotal					3,703		23	Baht / 1.0 m	
2. Material								per 1.0 m	
H-Steel Tunnel Support		0.1	ton	40,500	4,050	4,500	450		
H-Steel Bending Extra H125-H200		0.1	ton	1,449	145	161	16		
H-Steel Rounding Extra		0.1	ton	1,935	194	215	22		
Joint Plate		0.02	ton	5,427	109	603	12		
Miscellaneous		20	%		900		100		
Subtotal					5,398		600	Baht / 1.0 m	
3. Labor								per 1.0 m	
Foreman Tunnel		0.1	day			720	72	0.5	Hr/7= 0.1
Operator of Heavy		0.2	day			460	92	1.5	day x 0.1
Driver		0.2	day			350	70	1.5	day x 0.1
Skilled Labor		0.2	day			260	52	1.5	day x 0.1
Common Labor		0.3	day			230	69	1.5	day x 0.2
Subtotal							355		
4. Total					9,101		978	10,079 Baht / 1.0 m	
5. Output				Working Time per 1 day = 12 Hr x 2 shift				per 1.0 m	
Rate = Baht/m				9,101 Baht/m				978 Baht/m = 10,079	

T-149. Unit Rate per Meter of Steel Support of Lower Half : Grade D2								
			Rate = 16,001 Baht/m		F.C. = 14,431 Baht/m		90%	
Ing-Yot Tunnel					L.C. = 1,570 Baht/m		10%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 1.0 m	
Jumbo Drill, Crawler 2Booms, 150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr × 1	
Truck with Crane 4t x 2.9t lift	1	0.2 Hr	425	85	25	5	0.2 Hr × 1	
Subtotal				3,703		23	Baht / 1.0 m	
2. Material							per 1.0 m	
H-Steel Tunnel Support		0.2 ton	40,500	8,100	4,500	900		
H-Steel Bending Extra H125-H200		0.2 ton	1,449	290	161	32		
H-Steel Rounding Extra		0.2 ton	1,935	387	215	43		
Joint Plate		0.03 ton	5,427	163	603	18		
Miscellaneous		20 %		1,788		199		
Subtotal				10,728		1,192	Baht / 1.0 m	
3. Labor							per 1.0 m	
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7= 0.1	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Driver		0.2 day			350	70	1.5 day × 0.1	
Skilled Labor		0.2 day			260	52	1.5 day × 0.1	
Common Labor		0.3 day			230	69	1.5 day × 0.2	
Subtotal						355		
4. Total				14,431		1,570	16,001 Baht / 1.0 m	
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 1.0 m	
Rate = Baht/m			14,431 Baht/m		1,570 Baht/m =		16,001	

T-150. Unit Rate per Meter of Steel Support of Lower Half : Grade E1,E2									
Rate = 16,073 Baht/m					F.C. = 14,496 Baht/m		90%		
Ing-Yot Tunnel					L.C. = 1,577 Baht/m		10%		
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark	
				Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								per 1.0 m	
Jumbo Drill, Crawler 2Booms, 150k	1	0.5 Hr		7,235	3,618	35	18	0.5 Hr x 1	
Truck with Crane 4t x 2.9t lift	1	0.2 Hr		425	85	25	5	0.2 Hr x 1	
Subtotal					3,703		23	Baht / 1.0 m	
2. Material								per 1.0 m	
H-Steel Tunnel Support		0.2 ton		40,500	8,100	4,500	900		
H-Steel Bending Extra H125-H200		0.2 ton		1,449	290	161	32		
H-Steel Rounding Extra		0.2 ton		1,935	387	215	43		
Joint Plate		0.04 ton		5,427	217	603	24		
Miscellaneous		20 %			1,799		200		
Subtotal					10,793		1,199	Baht / 1.0 m	
3. Labor								per 1.0 m	
Foreman Tunnel		0.1 day				720	72	0.5 Hr/7= 0.1	
Operator of Heavy		0.2 day				460	92	1.5 day x 0.1	
Driver		0.2 day				350	70	1.5 day x 0.1	
Skilled Labor		0.2 day				260	52	1.5 day x 0.1	
Common Labor		0.3 day				230	69	1.5 day x 0.2	
Subtotal							355		
4. Total					14,496		1,577	16,073 Baht / 1.0 m	
5. Output				Working Time per 1 day = 12 Hr x 2 shift				per 1.0 m	
Rate = Baht/m				14,496 Baht/m		1,577 Baht/m =		16,073	

T-151. Unit Rate per Meter of Steel Support of Lower Half : Grade D1								
			Rate = 9,351 Baht/m		F.C. = 8,377 Baht/m		90%	
Adit for Ing-Yot No.2 Tunnel					L.C. = 974 Baht/m		10%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)							per 1.0 m	
Jumbo Drill, Crawler 2Booms, 150k	1	0.4 Hr	7,235	2,894	35	14	0.4 Hr × 1	
Truck with Crane 4t x 2.9t lift	1	0.2 Hr	425	85	25	5	0.2 Hr × 1	
Subtotal				2,979		19	Baht / 1.0 m	
2. Material							per 1.0 m	
H-Steel Tunnel Support		0.1 ton	40,500	4,050	4,500	450		
H-Steel Bending Extra H125-H200		0.1 ton	1,449	145	161	16		
H-Steel Rounding Extra		0.1 ton	1,935	194	215	22		
Joint Plate		0.02 ton	5,427	109	603	12		
Miscellaneous		20 %		900		100		
Subtotal				5,398		600	Baht / 1.0 m	
3. Labor							per 1.0 m	
Foreman Tunnel		0.1 day			720	72	0.4 Hr/7= 0.1	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Driver		0.2 day			350	70	1.5 day × 0.1	
Skilled Labor		0.2 day			260	52	1.5 day × 0.1	
Common Labor		0.3 day			230	69	1.5 day × 0.2	
Subtotal						355		
4. Total				8,377		974	9,351 Baht / 1.0 m	
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 1.0 m	
Rate = Baht/m			8,377 Baht/m		974 Baht/m =		9,351	

T-152. Unit Rate per Meter of Steel Support of Lower Half : Grade D2								
			Rate = 15,200 Baht/m		F.C. = 13,642 Baht/m		90%	
Adit for Ing-Yot No.2 Tunnel					L.C. = 1,558 Baht/m		10%	
Items		Unit	Quantity	Foreign Currency		Local Currency		Remark
				Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)								per 1.0 m
Jumbo Drill, Crawler 2Booms, 150k		1	0.4 Hr	7,235	2,894	35	14	0.4 Hr × 1
Truck with Crane 4t x 2.9t lift		1	0.2 Hr	425	85	25	5	0.2 Hr × 1
Subtotal					2,979		19	Baht / 1.0 m
2. Material								per 1.0 m
H-Steel Tunnel Support			0.2 ton	40,500	8,100	4,500	900	
H-Steel Bending Extra H125-H200			0.2 ton	1,449	290	161	32	
H-Steel Rounding Extra			0.2 ton	1,935	387	215	43	
Joint Plate			0.02 ton	5,427	109	603	12	
Miscellaneous			20 %		1,777		197	
Subtotal					10,663		1,184	Baht / 1.0 m
3. Labor								per 1.0 m
Foreman Tunnel			0.1 day			720	72	0.4 Hr/7= 0.1
Operator of Heavy			0.2 day			460	92	1.5 day × 0.1
Driver			0.2 day			350	70	1.5 day × 0.1
Skilled Labor			0.2 day			260	52	1.5 day × 0.1
Common Labor			0.3 day			230	69	1.5 day × 0.2
Subtotal							355	
4. Total					13,642		1,558	15,200 Baht / 1.0 m
5. Output				Working Time per 1 day = 12 Hr × 2 shift				per 1.0 m
Rate = Baht/m				13,642 Baht/m		1,558 Baht/m =		15,200

T-153. Unit Rate per Meter of Steel Support of Lower Half : Grade E1,E2									
Rate = 15,345 Baht/m    F.C. = 13,772 Baht/m    90%									
Adit for Ing-Yot No.2 Tunnel    L.C. = 1,573 Baht/m    10%									
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark		
			Rate	Cost	Rate	Cost			
1. Operation Cost (Equipment & Fuel)							per 1.0 m		
Jumbo Drill,Crawler 2Booms,150k	1	0.4 Hr	7,235	2,894	35	14	0.4 Hr × 1		
Truck with Crane 4t x 2.9t lift	1	0.2 Hr	425	85	25	5	0.2 Hr × 1		
Subtotal				2,979		19	Baht / 1.0 m		
2. Material							per 1.0 m		
H-Steel Tunnel Support		0.2 ton	40,500	8,100	4,500	900			
H-Steel Bending Extra H125~H200		0.2 ton	1,449	290	161	32			
H-Steel Rounding Extra		0.2 ton	1,935	387	215	43			
Joint Plate		0.04 ton	5,427	217	603	24			
Miscellaneous		20 %		1,799		200			
Subtotal				10,793		1,199	Baht / 1.0 m		
3. Labor							per 1.0 m		
Foreman Tunnel		0.1 day			720	72	0.4 Hr/7= 0.1		
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1		
Driver		0.2 day			350	70	1.5 day × 0.1		
Skilled Labor		0.2 day			260	52	1.5 day × 0.1		
Common Labor		0.3 day			230	69	1.5 day × 0.2		
Subtotal						355			
4. Total				13,772		1,573	15,345 Baht / 1.0 m		
5. Output    Working Time per 1 day = 12 Hr × 2 shift    per 1.0 m									
Rate = Baht/m				13,772 Baht/m		1,573 Baht/m =		15,345	

T-154. Unit Rate per Meter of Upper Wiremesh : Grade D1,D2,E1,E2								
Rate = 4,576 Baht/m F.C. = 4,208 Baht/m 92%								
Kok-Ing Tunnel L.C. = 368 Baht/m 8%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								
Jumbo Drill,Crawler 2Booms,150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr × 1	
Subtotal				3,618		18	Baht / m	
2. Material								
Wire Mesh 150 x 150 x D6		20.8 m2	27	562	3	62		
Miscellaneous		5 %		28		3		
Subtotal				590		65	Baht / m	
3. Labor								
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7= 0.1	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Skilled Labor		0.2 day			260	52	1.5 day × 0.1	
Common Labor		0.3 day			230	69	1.5 day × 0.2	
Subtotal						285	Baht / m	
4. Total				4,208		368	4,576 Baht / m	
5. Output per 1.0 m								
Rate = Baht/m 4,208 Baht/m 368 Baht/m = 4,576								

T-155. Unit Rate per Meter of Lower Wiremesh : Grade D2,E1,E2								
Rate = 2,730 Baht/m F.C. = 2,429 Baht/m 89%								
Kok-Ing Tunnel L.C. = 301 Baht/m 11%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								
Jumbo Drill,Crawler 2Booms,150k	1	0.3 Hr	7,235	2,171	35	11	0.3 Hr × 1	
Subtotal				2,171		11	Baht / m	
2. Material								
Wire Mesh 150 x 150 x D6		9.1 m2	27	246	3	27		
Miscellaneous		5 %		12		1		
Subtotal				258		28	Baht / m	
3. Labor								
Foreman Tunnel		0.1 day			720	72	0.3 Hr/7= 0.1	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Skilled Labor		0.2 day			260	52	1.5 day × 0.1	
Common Labor		0.2 day			230	46	1.5 day × 0.1	
Subtotal						262	Baht / m	
4. Total				2,429		301	2,730 Baht / m	
5. Output per 1.0 m								
Rate = Baht/m 2,429 Baht/m 301 Baht/m = 2,730								



T-156. Unit Rate per Meter of Upper Wiremesh : Grade D1,D2,E1,E2								
Rate = 5,023 Baht/m F.C. = 4,610 Baht/m 92%								
Ing-Yot Tunnel L.C. = 413 Baht/m 8%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								
Jumbo Drill,Crawler 2Booms,150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr × 1	
Subtotal				3,618		18	Baht / m	
2. Material								
Wire Mesh 150 x 150 x D6		35.0 m2	27	945	3	105		
Miscellaneous		5 %		47		5		
Subtotal				992		110	Baht / m	
3. Labor								
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7= 0.1	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Skilled Labor		0.2 day			260	52	1.5 day × 0.1	
Common Labor		0.3 day			230	69	1.5 day × 0.2	
Subtotal						285	Baht / m	
4. Total				4,610		413	5,023 Baht / m	
5. Output per 1.0 m								
Rate = Baht/m				4,610 Baht/m	413 Baht/m =		5,023	

T-157. Unit Rate per Meter of Lower Wiremesh : Grade D2,E1,E2								
Rate = 3,495 Baht/m F.C. = 3,166 Baht/m 91%								
Ing-Yot Tunnel L.C. = 329 Baht/m 9%								
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								
Jumbo Drill,Crawler 2Booms,150k	1	0.4 Hr	7,235	2,894	35	14	0.4 Hr × 1	
Subtotal				2,894		14	Baht / m	
2. Material								
Wire Mesh 150 x 150 x D6		9.6 m2	27	259	3	29		
Miscellaneous		5 %		13		1		
Subtotal				272		30	Baht / m	
3. Labor								
Foreman Tunnel		0.1 day			720	72	0.4 Hr/7= 0.1	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Skilled Labor		0.2 day			260	52	1.5 day × 0.1	
Common Labor		0.3 day			230	69	1.5 day × 0.2	
Subtotal						285	Baht / m	
4. Total				3,166		329	3,495 Baht / m	
5. Output per 1.0 m								
Rate = Baht/m 3,166 Baht/m 329 Baht/m = 3,495								

T-158. Unit Rate per Meter of Upper Wiremesh : Grade D1,D2,E1,E2								
			Rate = 4,390 Baht/m		F.C. = 4,040 Baht/m		92%	
Adit for Ing-Yot No.2 Tunnel					L.C. = 350 Baht/m		8%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								
Jumbo Drill,Crawler 2Booms,150k	1	0.5 Hr	7,235	3,618	35	18	0.5 Hr × 1	
Subtotal				3,618		18	Baht / m	
2. Material								
Wire Mesh 150 x 150 x D6		14.9 m2	27	402	3	45		
Miscellaneous		5 %		20		2		
Subtotal				422		47	Baht / m	
3. Labor								
Foreman Tunnel		0.1 day			720	72	0.5 Hr/7= 0.1	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Skilled Labor		0.2 day			260	52	1.5 day × 0.1	
Common Labor		0.3 day			230	69	1.5 day × 0.2	
Subtotal						285	Baht / m	
4. Total				4,040		350	4,390 Baht / m	
5. Output								
			per 1.0 m					
Rate = Baht/m			4,040 Baht/m		350 Baht/m		= 4,390	

T-159. Unit Rate per Meter of Lower Wiremesh : Grade D2,E1,E2								
			Rate = 2,627 Baht/m		F.C. = 2,336 Baht/m		89%	
Adit for Ing-Yot No.2 Tunnel					L.C. = 291 Baht/m		11%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								
Jumbo Drill,Crawler 2Booms,150k	1	0.3 Hr	7,235	2,171	35	11	0.3 Hr × 1	
Subtotal				2,171		11	Baht / m	
2. Material								
Wire Mesh 150 x 150 x D6		5.8 m2	27	157	3	17		
Miscellaneous		5 %		8		1		
Subtotal				165		18	Baht / m	
3. Labor								
Foreman Tunnel		0.1 day			720	72	0.3 Hr/7= 0.1	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Skilled Labor		0.2 day			260	52	1.5 day × 0.1	
Common Labor		0.2 day			230	46	1.5 day × 0.1	
Subtotal						262	Baht / m	
4. Total				2,336		291	2,627 Baht / m	
5. Output								
			per 1.0 m					
Rate = Baht/m			2,336 Baht/m		291 Baht/m		= 2,627	

T-160. Unit Rate per Meter of Arch & Rib Concrete Lining : Grade C1,C2							
Rate = 15,466 Baht/m				F.C. = 8,409 Baht/m		54%	
Kok-Ing Tunnel				L.C. = 7,057 Baht/m		46%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							per 10.5 m
Concrete Pump Pipe 90~100m3/hr	1	5 Hr	1,805	9,025	45	225	5 Hr × 1
Vibrator Converter 60mm	1	5 day	108	540	18	90	5 day × 1
Subtotal				9,565		315	Baht / 10.5m
2. Material							per 10.5 m
Ready Mixed Concrete 180kg/cm2		84 m3	781	65,604	639	53,676	
Miscellaneous		20 %		13,121		10,735	
Subtotal				78,725		64,411	Baht / 10.5 m
3. Labor							per 10.5 m
Foreman Tunnel		5.0 day			720	3,600	5.0 day × 5.0
Operator of Heavy		0.8 day			460	368	1.5 day × 0.5
Skilled Labor		7.5 day			260	1,950	1.5 day × 5.0
Common Labor		15.0 day			230	3,450	1.5 day × 10.0
Subtotal						9,368	
4. Total				88,290		74,094	162,384 Baht / 10.5 m
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 10.5 m
Rate = Baht/m			8,409 Baht/m		7,057 Baht/m		= 15,466

T-161. Unit Rate per Meter of Arch & Rib Concrete Lining : Grade D1							
Rate = 18,887 Baht/m				F.C. = 10,366 Baht/m		55%	
Kok-Ing Tunnel				L.C. = 8,521 Baht/m		45%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							per 10.5 m
Concrete Pump Pipe 90~100m3/hr	1	6 Hr	1,805	10,830	45	270	6 Hr x 1
Vibrator Converter 60mm	1	5 day	108	540	18	90	5 day x 1
Subtotal				11,370		360	Baht / 10.5m
2. Material							per 10.5 m
Ready Mixed Concrete 180kg/cm2		104 m3	781	81,224	639	66,456	
Miscellaneous		20 %		16,245		13,291	
Subtotal				97,469		79,747	Baht / 10.5 m
3. Labor							per 10.5 m
Foreman Tunnel		5.0 day			720	3,600	5.0 day x 5.0
Operator of Heavy		0.8 day			460	368	1.5 day x 0.5
Skilled Labor		7.5 day			260	1,950	1.5 day x 5.0
Common Labor		15.0 day			230	3,450	1.5 day x 10.0
Subtotal						9,368	
4. Total				108,839		89,475	198,314 Baht / 10.5 m
5. Output			Working Time per 1 day = 12 Hr x 2 shift			per 10.5 m	
Rate = Baht/m			10,366 Baht/m		8,521 Baht/m =		18,887

T-162. Unit Rate per Meter of Arch & Rib Concrete Lining : Grade D2							
Rate = 20,195 Baht/m				F.C. = 11,091 Baht/m		55%	
Kok-Ing Tunnel				L.C. = 9,104 Baht/m		45%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							per 10.5 m
Concrete Pump Pipe 90~100m3/hr	1	6 Hr	1,805	10,830	45	270	6 Hr × 1
Vibrator Converter 60mm	1	5 day	108	540	18	90	5 day × 1
Subtotal				11,370		360	Baht / 10.5m
2. Material							per 10.5 m
Ready Mixed Concrete 210kg/cm2		104 m3	842	87,568	688	71,552	
Miscellaneous		20 %		17,514		14,310	
Subtotal				105,082		85,862	Baht / 10.5 m
3. Labor							per 10.5 m
Foreman Tunnel		5.0 day			720	3,600	5.0 day × 5.0
Operator of Heavy		0.8 day			460	368	1.5 day × 0.5
Skilled Labor		7.5 day			260	1,950	1.5 day × 5.0
Common Labor		15.0 day			230	3,450	1.5 day × 10.0
Subtotal						9,368	
4. Total				116,452		95,590	212,042 Baht / 10.5 m
5. Output			Working Time per 1 day = 12 Hr × 2 shift			per 10.5 m	
Rate = Baht/m			11,091 Baht/m		9,104 Baht/m =		20,195

T-163. Unit Rate per Meter of Arch & Rib Concrete Lining : Grade E1,E2							
Rate = 24,406 Baht/m				F.C. = 13,551 Baht/m		56%	
Kok-Ing Tunnel				L.C. = 10,855 Baht/m		44%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							per 10.5 m
Concrete Pump Pipe 90~100m3/hr	1	8 Hr	1,805	14,440	45	360	8 Hr × 1
Vibrator Converter 60mm	1	5 day	108	540	18	90	5 day × 1
Subtotal				14,980		450	Baht / 10.5m
2. Material							per 10.5 m
Ready Mixed Concrete 210kg/cm2		126 m3	842	106,092	688	86,688	
Miscellaneous		20 %		21,218		17,338	
Subtotal				127,310		104,026	Baht / 10.5 m
3. Labor							per 10.5 m
Foreman Tunnel		5.0 day			720	3,600	5.0 day × 5.0
Operator of Heavy		1.1 day			460	506	1.5 day × 0.7
Skilled Labor		7.5 day			260	1,950	1.5 day × 5.0
Common Labor		15.0 day			230	3,450	1.5 day × 10.0
Subtotal						9,506	
4. Total				142,290		113,982	256,272 Baht / 10.5 m
5. Output			Working Time per 1 day = 12 Hr × 2 shift			per 10.5 m	
Rate = Baht/m			13,551 Baht/m		10,855 Baht/m =		24,406

T-164. Unit Rate per Meter of Arch & Rib Concrete Lining : Grade B,C1,C2							
Rate = 17,102 Baht/m				F.C. = 9,384 Baht/m		55%	
Ing-Yot Tunnel				L.C. = 7,718 Baht/m		45%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							per 10.5 m
Concrete Pump Pipe 90~100m3/hr	1	6 Hr	1,805	10,830	45	270	6 Hr × 1
Vibrator Converter 60mm	1	5 day	108	540	18	90	5 day × 1
Subtotal				11,370		360	Baht / 10.5m
2. Material							per 10.5 m
Ready Mixed Concrete 180kg/cm2		93 m3	781	72,633	639	59,427	
Miscellaneous		20 %		14,527		11,885	
Subtotal				87,160		71,312	Baht / 10.5 m
3. Labor							per 10.5 m
Foreman Tunnel		5.0 day			720	3,600	5.0 day × 5.0
Operator of Heavy		0.8 day			460	368	1.5 day × 0.5
Skilled Labor		7.5 day			260	1,950	1.5 day × 5.0
Common Labor		15.0 day			230	3,450	1.5 day × 10.0
Subtotal						9,368	
4. Total				98,530		81,040	179,570 Baht / 10.5 m
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 10.5 m
Rate = Baht/m			9,384 Baht/m		7,718 Baht/m		= 17,102

T-165. Unit Rate per Meter of Arch & Rib Concrete Lining : Grade D1							
Rate = 20,852 Baht/m				F.C. = 11,519 Baht/m		55%	
Ing-Yot Tunnel				L.C. = 9,333 Baht/m		45%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							per 10.5 m
Concrete Pump Pipe 90~100m3/hr	1	7 Hr	1,805	12,635	45	315	7 Hr × 1
Vibrator Converter 60mm	1	5 day	108	540	18	90	5 day × 1
Subtotal				13,175		405	Baht / 10.5m
2. Material							per 10.5 m
Ready Mixed Concrete 180kg/cm2		115 m3	781	89,815	639	73,485	
Miscellaneous		20 %		17,963		14,697	
Subtotal				107,778		88,182	Baht / 10.5 m
3. Labor							per 10.5 m
Foreman Tunnel		5.0 day			720	3,600	5.0 day × 5.0
Operator of Heavy		0.9 day			460	414	1.5 day × 0.6
Skilled Labor		7.5 day			260	1,950	1.5 day × 5.0
Common Labor		15.0 day			230	3,450	1.5 day × 10.0
Subtotal						9,414	
4. Total				120,953		98,001	218,954 Baht / 10.5 m
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 10.5 m
Rate = Baht/m			11,519 Baht/m		9,333 Baht/m =		20,852

T-166. Unit Rate per Meter of Arch & Rib Concrete Lining : Grade D2							
Rate = 22,298 Baht/m				F.C. = 12,321 Baht/m		55%	
Ing-Yot Tunnel				L.C. = 9,977 Baht/m		45%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							per 10.5 m
Concrete Pump Pipe 90~100m3/hr	1	7 Hr	1,805	12,635	45	315	7 Hr × 1
Vibrator Converter 60mm	1	5 day	108	540	18	90	5 day × 1
Subtotal				13,175		405	Baht / 10.5m
2. Material							per 10.5 m
Ready Mixed Concrete 210kg/cm2		115 m3	842	96,830	688	79,120	
Miscellaneous		20 %		19,366		15,824	
Subtotal				116,196		94,944	Baht / 10.5 m
3. Labor							per 10.5 m
Foreman Tunnel		5.0 day			720	3,600	5.0 day × 5.0
Operator of Heavy		0.9 day			460	414	1.5 day × 0.6
Skilled Labor		7.5 day			260	1,950	1.5 day × 5.0
Common Labor		15.0 day			230	3,450	1.5 day × 10.0
Subtotal						9,414	
4. Total				129,371		104,763	234,134 Baht / 10.5 m
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 10.5 m
Rate = Baht/m			12,321 Baht/m		9,977 Baht/m =		22,298

T-167. Unit Rate per Meter of Arch & Rib Concrete Lining : Grade E1,E2							
Rate = 26,680 Baht/m				F.C. = 14,802 Baht/m		55%	
Ing-Yot Tunnel				L.C. = 11,878 Baht/m		45%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							per 10.5 m
Concrete Pump Pipe 90~100m3/hr	1	8 Hr	1,805	14,440	45	360	8 Hr × 1
Vibrator Converter 60mm	1	5 day	108	540	18	90	5 day × 1
Subtotal				14,980		450	Baht / 10.5m
2. Material							per 10.5 m
Ready Mixed Concrete 210kg/cm2		139 m3	842	117,038	688	95,632	
Miscellaneous		20 %		23,408		19,126	
Subtotal				140,446		114,758	Baht / 10.5 m
3. Labor							per 10.5 m
Foreman Tunnel		5.0 day			720	3,600	5.0 day × 5.0
Operator of Heavy		1.1 day			460	506	1.5 day × 0.7
Skilled Labor		7.5 day			260	1,950	1.5 day × 5.0
Common Labor		15.0 day			230	3,450	1.5 day × 10.0
Subtotal						9,506	
4. Total				155,426		124,714	280,140 Baht / 10.5 m
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 10.5 m
Rate = Baht/m			14,802 Baht/m		11,878 Baht/m =		26,680

T-168. Unit Rate per Meter of Arch & Rib Concrete Lining : Grade B,C1,C2							
Rate = 14,166 Baht/m				F.C. = 7,694 Baht/m		54%	
Adit for Ing-Yot No.2 Tunnel				L.C. = 6,472 Baht/m		46%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							per 10.5 m
Concrete Pump Pipe 90~100m3/hr	1	5 Hr	1,805	9,025	45	225	5 Hr × 1
Vibrator Converter 60mm	1	5 day	108	540	18	90	5 day × 1
Subtotal				9,565		315	Baht / 10.5m
2. Material							per 10.5 m
Ready Mixed Concrete 180kg/cm2		76 m3	781	59,356	639	48,564	
Miscellaneous		20 %		11,871		9,713	
Subtotal				71,227		58,277	Baht / 10.5 m
3. Labor							per 10.5 m
Foreman Tunnel		5.0 day			720	3,600	5.0 day × 5.0
Operator of Heavy		0.8 day			460	368	1.5 day × 0.5
Skilled Labor		7.5 day			260	1,950	1.5 day × 5.0
Common Labor		15.0 day			230	3,450	1.5 day × 10.0
Subtotal						9,368	
4. Total				80,792		67,960	148,752 Baht / 10.5 m
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 10.5 m
Rate = Baht/m			7,694 Baht/m		6,472 Baht/m =		14,166

T-169. Unit Rate per Meter of Arch & Rib Concrete Lining : Grade D1							
Rate = 17,264 Baht/m				F.C. = 9,473 Baht/m		55%	
Adit for Ing-Yot No.2 Tunnel				L.C. = 7,791 Baht/m		45%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							
Concrete Pump Pipe 90~100m3/hr	1	6 Hr	1,805	10,830	45	270	per 10.5 m 6 Hr × 1
Vibrator Converter 60mm	1	5 day	108	540	18	90	5 day × 1
Subtotal				11,370		360	Baht / 10.5m
2. Material							per 10.5 m
Ready Mixed Concrete 180kg/cm2		94 m3	781	73,414	639	60,066	
Miscellaneous		20 %		14,683		12,013	
Subtotal				88,097		72,079	Baht / 10.5 m
3. Labor							per 10.5 m
Foreman Tunnel		5.0 day			720	3,600	5.0 day × 5.0
Operator of Heavy		0.8 day			460	368	1.5 day × 0.5
Skilled Labor		7.5 day			260	1,950	1.5 day × 5.0
Common Labor		15.0 day			230	3,450	1.5 day × 10.0
Subtotal						9,368	
4. Total				99,467		81,807	181,274 Baht / 10.5 m
5. Output		Working Time per 1 day = 12 Hr × 2 shift				per 10.5 m	
Rate = Baht/m				9,473 Baht/m	7,791 Baht/m =		17,264

T-170. Unit Rate per Meter of Arch & Rib Concrete Lining : Grade D2							
Rate = 18,446 Baht/m				F.C. = 10,128 Baht/m		55%	
Adit for Ing-Yot No.2 Tunnel				L.C. = 8,318 Baht/m		45%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							per 10.5 m
Concrete Pump Pipe 90-100m3/hr	1	6 Hr	1,805	10,830	45	270	6 Hr × 1
Vibrator Converter 60mm	1	5 day	108	540	18	90	5 day × 1
Subtotal				11,370		360	Baht / 10.5m
2. Material							per 10.5 m
Ready Mixed Concrete 210kg/cm2		94 m3	842	79,148	688	64,672	
Miscellaneous		20 %		15,830		12,934	
Subtotal				94,978		77,606	Baht / 10.5 m
3. Labor							per 10.5 m
Foreman Tunnel		5.0 day			720	3,600	5.0 day × 5.0
Operator of Heavy		0.8 day			460	368	1.5 day × 0.5
Skilled Labor		7.5 day			260	1,950	1.5 day × 5.0
Common Labor		15.0 day			230	3,450	1.5 day × 10.0
Subtotal						9,368	
4. Total				106,348		87,334	193,682 Baht / 10.5 m
5. Output			Working Time per 1 day = 12 Hr × 2 shift			per 10.5 m	
Rate = Baht/m			10,128 Baht/m			8,318 Baht/m = 18,446	

T-171. Unit Rate per Meter of Arch & Rib Concrete Lining : Grade E1,E2							
Rate = 22,309 Baht/m				F.C. = 12,397 Baht/m		56%	
Adit for Ing-Yot No.2 Tunnel				L.C. = 9,912 Baht/m		44%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							per 10.5 m
Concrete Pump Pipe 90-100m3/hr	1	8 Hr	1,805	14,440	45	360	8 Hr × 1
Vibrator Converter 60mm	1	5 day	108	540	18	90	5 day × 1
Subtotal				14,980		450	Baht / 10.5m
2. Material							per 10.5 m
Ready Mixed Concrete 210kg/cm2		114 m3	842	95,988	688	78,432	
Miscellaneous		20 %		19,198		15,686	
Subtotal				115,186		94,118	Baht / 10.5 m
3. Labor							per 10.5 m
Foreman Tunnel		5.0 day			720	3,600	5.0 day × 5.0
Operator of Heavy		1.1 day			460	506	1.5 day × 0.7
Skilled Labor		7.5 day			260	1,950	1.5 day × 5.0
Common Labor		15.0 day			230	3,450	1.5 day × 10.0
Subtotal						9,506	
4. Total				130,166		104,074	234,240 Baht / 10.5 m
5. Output			Working Time per 1 day = 12 Hr × 2 shift				per 10.5 m
Rate = Baht/m			12,397 Baht/m		9,912 Baht/m =		22,309



T-172. Unit Rate per Meter of Waterproofing : Grade C1,C2,D1,D2							
Rate = 15,655 Baht/m				F.C. = 15,246 Baht/m		97%	
Kok-Ing Tunnel				L.C. = 409 Baht/m		3%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Material							per 1 m
Waterproof Sheet for NATM 0.8mm		21 m3	660	13,860	0	0	
Miscellaneous		10 %		1,386		0	
Subtotal				15,246		0	Baht / m
2. Labor							per 1 m
Foreman Tunnel		0.1 day			720	72	day × 0.1
Skilled Labor		0.5 day			260	130	1.5 day × 0.3
Common Labor		0.9 day			230	207	1.5 day × 0.6
Subtotal						409	
4. Total				15,246		409	15,655 Baht / m
5. Output							per 1.0 m
Rate = Baht/m				15,246 Baht/m		409 Baht/m =	15,655

T-173. Unit Rate per Meter of Waterproofing : Grade E1,E2							
Rate = 17,734 Baht/m				F.C. = 17,325 Baht/m		98%	
Kok-Ing Tunnel				L.C. = 409 Baht/m		2%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Material							per 1 m
Waterproof Sheet for NATM 1.0mm		21 m3	750	15,750	0	0	
Miscellaneous		10 %		1,575		0	
Subtotal				17,325		0	Baht / m
2. Labor							per 1 m
Foreman Tunnel		0.1 day			720	72	day x 0.1
Skilled Labor		0.5 day			260	130	1.5 day x 0.3
Common Labor		0.9 day			230	207	1.5 day x 0.6
Subtotal						409	
4. Total				17,325		409	17,734 Baht / m
5. Output							per 1.0 m
Rate = Baht/m				17,325 Baht/m		409 Baht/m =	17,734

T-174. Unit Rate per Meter of Waterproofing : Grade B							
Rate = 16,159 Baht/m				F.C. = 15,750 Baht/m		97%	
Ing-Yot No.2 Tunnel with Adit				L.C. = 409 Baht/m		3%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Material							per 1 m
Waterproof Sheet for NATM 1.0mm		20 m3	750	15,000	0	0	
Miscellaneous		5 %		750		0	
Subtotal				15,750		0	Baht / m
2. Labor							per 1 m
Foreman Tunnel		0.1 day			720	72	day × 0.1
Skilled Labor		0.5 day			260	130	1.5 day × 0.3
Common Labor		0.9 day			230	207	1.5 day × 0.6
Subtotal						409	
4. Total				15,750		409	16,159 Baht / m
5. Output							per 1.0 m
Rate = Baht/m				15,750 Baht/m		409 Baht/m =	16,159

T-175. Unit Rate per Meter of Waterproofing : Grade C1,C2,D1,D2							
Rate = 16,476 Baht/m				F.C. = 15,972 Baht/m 97%			
Ing-Yot Tunnel				L.C. = 504 Baht/m 3%			
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Material							per 1 m
Waterproof Sheet for NATM 0.8mm		22 m3	660	14,520	0	0	
Miscellaneous		10 %		1,452		0	
Subtotal				15,972		0	Baht / m
2. Labor							per 1 m
Foreman Tunnel		0.1 day			720	72	day x 0.1
Skilled Labor		0.6 day			260	156	1.5 day x 0.4
Common Labor		1.2 day			230	276	1.5 day x 0.8
Subtotal						504	
4. Total				15,972		504	16,476 Baht / m
5. Output							per 1.0 m
Rate = Baht/m				15,972 Baht/m		504 Baht/m =	16,476

T-176. Unit Rate per Meter of Waterproofing : Grade E1,E2							
Rate = 19,479 Baht/m				F.C. = 18,975 Baht/m		97%	
Ing-Yot Tunnel				L.C. = 504 Baht/m		3%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Material							per 1 m
Waterproof Sheet for NATM 1.0mm		23 m3	750	17,250	0	0	
Miscellaneous		10 %		1,725		0	
Subtotal				18,975		0	Baht / m
2. Labor							per 1 m
Foreman Tunnel		0.1 day			720	72	day × 0.1
Skilled Labor		0.6 day			260	156	1.5 day × 0.4
Common Labor		1.2 day			230	276	1.5 day × 0.8
Subtotal						504	
4. Total				18,975		504	19,479 Baht / m
5. Output							per 1.0 m
Rate = Baht/m				18,975 Baht/m		504 Baht/m =	19,479

T-177. Unit Rate per Meter of Waterproofing : Grade B							
Rate = 14,584 Baht/m				F.C. = 14,175 Baht/m		97%	
Adit for Ing-Yot No.2 Tunnel				L.C. = 409 Baht/m		3%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Material							per 1 m
Waterproof Sheet for NATM 1.0mm		18 m3	750	13,500	0	0	
Miscellaneous		5 %		675		0	
Subtotal				14,175		0	Baht / m
2. Labor							per 1 m
Foreman Tunnel		0.1 day			720	72	day x 0.1
Skilled Labor		0.5 day			260	130	1.5 day x 0.3
Common Labor		0.9 day			230	207	1.5 day x 0.6
Subtotal						409	
4. Total				14,175		409	14,584 Baht / m
5. Output							per 1.0 m
Rate = Baht/m				14,175 Baht/m		409 Baht/m =	14,584

T-178. Unit Rate per Meter of Waterproofing : Grade C1,C2,D1,D2							
Rate = 14,929 Baht/m				F.C. = 14,520 Baht/m 97%			
Adit for Ing-Yot No.2 Tunnel				L.C. = 409 Baht/m 3%			
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Material							per 1 m
Waterproof Sheet for NATM 0.8mm		20 m3	660	13,200	0	0	
Miscellaneous		10 %		1,320		0	
Subtotal				14,520		0	Baht / m
2. Labor							per 1 m
Foreman Tunnel		0.1 day			720	72	day × 0.1
Skilled Labor		0.5 day			260	130	1.5 day × 0.3
Common Labor		0.9 day			230	207	1.5 day × 0.6
Subtotal						409	
4. Total				14,520		409	14,929 Baht / m
5. Output							per 1.0 m
Rate = Baht/m				14,520 Baht/m		409 Baht/m =	14,929

T-179. Unit Rate per Meter of Waterproofing : Grade E1,E2							
Rate = 16,909 Baht/m				F.C. = 16,500 Baht/m		98%	
Adit for Ing-Yot No.2 Tunnel				L.C. = 409 Baht/m		2%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Material							per 1 m
Waterproof Sheet for NATM 1.0mm		20 m3	750	15,000	0	0	
Miscellaneous		10 %		1,500		0	
Subtotal				16,500		0	Baht / m
2. Labor							per 1 m
Foreman Tunnel		0.1 day			720	72	day x 0.1
Skilled Labor		0.5 day			260	130	1.5 day x 0.3
Common Labor		0.9 day			230	207	1.5 day x 0.6
Subtotal						409	
4. Total				16,500		409	16,909 Baht / m
5. Output							per 1.0 m
Rate = Baht/m				16,500 Baht/m		409 Baht/m =	16,909

T-180. Unit Rate of Formwork for Invert							
Rate = 333 Baht/m2				F.C. = 51 Baht/m2		15%	
Kok-Ing & Ing-Yot, Inside Tunnel				L.C. = 282 Baht/m2		85%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							
Truck with Crane 4t x 2.9t lift	1	12 Hr	425	5,100	25	300	12 Hr x 1
Subtotal				5,100		300	
2. Material							
Wood for Form		100 m2	0	0	160	16,000	
Miscellaneous		5 %				800	16,000 Baht/day
Subtotal				0		16,800	
3. Labor							
Foreman Tunnel		1 day			720	720	
Operator of Heavy		1.5 day			460	690	1.5 day x 1
Form-work Labor (Carpenter)		12.0 day			390	4,680	1.5 day x 8
Skilled Labor		6.0 day			260	1,560	1.5 day x 4
Common Labor		15.0 day			230	3,450	1.5 day x 10
Subtotal						11,100	
4. Total				5,100		28,200	33,300 Baht/day
5. Output = 100 m2/day 100 m2/day							
Rate = Baht/m2				51	Baht/m2	282	Baht/m2 = 333

T-181. Unit Rate per Meter of Formwork for Invert						
Kok-Ing & Ing-Yot, Inside Tunnel						Baht/m
Items (Grade of Ground)	Quantity per m (Area of Formwork)	Foreign Currency		Local Currency		Total (Baht/m)
		Rate	Cost	Rate	Cost	
1. Kok-Ing Tunnel						
B	0 m2/m	51	0	282	0	0
C1	0.44 m2/m	51	22	282	124	146
C2	0.44 m2/m	51	22	282	124	146
D1	0.54 m2/m	51	28	282	152	180
D2	0.54 m2/m	51	28	282	152	180
E1	0.66 m2/m	51	34	282	186	220
E2	0.66 m2/m	51	34	282	186	220
2. Ing-Yot Tunnel without Adit						
B	0 m2/m	51	0	282	0	0
C1	0.48 m2/m	51	24	282	135	159
C2	0.48 m2/m	51	24	282	135	159
D1	0.60 m2/m	51	31	282	169	200
D2	0.60 m2/m	51	31	282	169	200
E1	0.71 m2/m	51	36	282	200	236
E2	0.71 m2/m	51	36	282	200	236
3. Ing-Yot No.2 Tunnel with Adit						
B	0.48 m2/m	51	24	282	135	159
C1	0.48 m2/m	51	24	282	135	159
C2	0.48 m2/m	51	24	282	135	159
D1	0.60 m2/m	51	31	282	169	200
D2	0.60 m2/m	51	31	282	169	200
E1	0.71 m2/m	51	36	282	200	236
E2	0.71 m2/m	51	36	282	200	236
4. Adit for Ing-Yot No.2 Tunnel						
B	0 m2/m	51	0	282	0	0
C1	0 m2/m	51	0	282	0	0
C2	0 m2/m	51	0	282	0	0
D1	0.36 m2/m	51	18	282	102	120
D2	0.36 m2/m	51	18	282	102	120
E1	0.40 m2/m	51	20	282	113	133
E2	0.40 m2/m	51	20	282	113	133

T-182. Unit Rate of Invert Concrete Lining : Grade B,C1,C2,D1							
Rate = 1,803 Baht/m3				F.C. = 1,056 Baht/m3		59%	
Kok-Ing & Ing-Yot				L.C. = 747 Baht/m3		41%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							
Concrete Pump Boom 90-110m3/hr	1	1 Hr	1,965	1,965	65	65	1 Hr × 1
Subtotal				1,965		65	Baht / 10m3
2. Material							
Ready Mixed Concrete 180kg/cm2		10 m3	781	7,810	639	6,390	
Miscellaneous		10 %		781		639	
Subtotal				8,591		7,029	Baht / 10m3
3. Labor							
Foreman Tunnel		0.1 day			720	72	day × 0.1
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1
Skilled Labor		0.3 day			260	78	1.5 day × 0.2
Common Labor		0.6 day			230	138	1.5 day × 0.4
Subtotal						380	
4. Total				10,556		7,474	18,030 Baht / 10m3
5. Output Working Time per 1 day = 12 Hr × 2 shift per 10.0 m3							
Rate = Baht/m3				1,056 Baht/m3	747 Baht/m3	= 1,803	

T-183. Unit Rate of Invert Concrete Lining : Grade D2,E1,E2								
			Rate = 1,924 Baht/m3			F.C. = 1,123 Baht/m3 58%		
Kok-Ing & Ing-Yot						L.C. = 801 Baht/m3 42%		
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark	
			Rate	Cost	Rate	Cost		
1. Operation Cost (Equipment & Fuel)								
Concrete Pump Boom 90~110m3/hr	1	1 Hr	1,965	1,965	65	65	1 Hr × 1	
Subtotal				1,965		65	Baht / 10m3	
2. Material								
Ready Mixed Concrete 210kg/cm2		10 m3	842	8,420	688	6,880		
Miscellaneous		10 %		842		688		
Subtotal				9,262		7,568	Baht / 10m3	
3. Labor								
Foreman Tunnel		0.1 day			720	72	day × 0.1	
Operator of Heavy		0.2 day			460	92	1.5 day × 0.1	
Skilled Labor		0.3 day			260	78	1.5 day × 0.2	
Common Labor		0.6 day			230	138	1.5 day × 0.4	
Subtotal						380		
4. Total				11,227		8,013	19,240 Baht / 10m3	
5. Output Working Time per 1 day = 12 Hr × 2 shift per 10.0 m3								
Rate = Baht/m3			1,123 Baht/m3			801 Baht/m3 = 1,924		

T-184. Unit Rate per Meter of Invert Concrete Lining							
Kok-Ing & Ing-Yot						Baht/m	
Ko	Items (Grade of Ground)	Quantity per m (Concrete Volume)	Foreign Currency		Local Currency		Total (Baht/m)
			Rate	Cost	Rate	Cost	
1. Kok-Ing Tunnel							
	B	0 m3/m	1,056	0	747	0	0
	C1	4.6 m3/m	1,056	4,858	747	3,436	8,294
	C2	4.6 m3/m	1,056	4,858	747	3,436	8,294
	D1	5.7 m3/m	1,056	6,019	747	4,258	10,277
	D2	5.7 m3/m	1,123	6,401	801	4,566	10,967
	E1	6.9 m3/m	1,123	7,749	801	5,527	13,276
	E2	6.9 m3/m	1,123	7,749	801	5,527	13,276
2. Ing-Yot Tunnel without Adit							
	B	0 m3/m	1,056	0	747	0	0
	C1	5.0 m3/m	1,056	5,280	747	3,735	9,015
	C2	5.0 m3/m	1,056	5,280	747	3,735	9,015
	D1	6.3 m3/m	1,056	6,653	747	4,706	11,359
	D2	6.3 m3/m	1,123	7,075	801	5,046	12,121
	E1	7.5 m3/m	1,123	8,423	801	6,008	14,431
	E2	7.5 m3/m	1,123	8,423	801	6,008	14,431
3. Ing-Yot No.2 Tunnel with Adit							
	B	5.0 m3/m	1,056	5,280	747	3,735	9,015
	C1	5.0 m3/m	1,056	5,280	747	3,735	9,015
	C2	5.0 m3/m	1,056	5,280	747	3,735	9,015
	D1	6.3 m3/m	1,056	6,653	747	4,706	11,359
	D2	6.3 m3/m	1,123	7,075	801	5,046	12,121
	E1	7.5 m3/m	1,123	8,423	801	6,008	14,431
	E2	7.5 m3/m	1,123	8,423	801	6,008	14,431
4. Adit for Ing-Yot No.2 Tunnel							
	B	0 m3/m	1,056	0	747	0	0
	C1	0 m3/m	1,056	0	747	0	0
	C2	0 m3/m	1,056	0	747	0	0
	D1	3.8 m3/m	1,056	4,013	747	2,839	6,852
	D2	3.8 m3/m	1,123	4,267	801	3,044	7,311
	E1	4.2 m3/m	1,123	4,717	801	3,364	8,081
	E2	4.2 m3/m	1,123	4,717	801	3,364	8,081

T-185. Unit Rate of Reinforced Bar/ton : Grade D2,E1,E2							
				Rate = 20,952 Baht/ton		F.C. = 17,765 Baht/ton 85%	
Kok-Ing & Ing-Yot						L.C. = 3,187 Baht/ton 15%	
Items	Unit	Quantity	Foreign Currency		Local Currency		Remark
			Rate	Cost	Rate	Cost	
1. Operation Cost (Equipment & Fuel)							
Truck with Crane 4t x 2.9t lift	2	48 Hr	425	20,400	25	1,200	24 Hr x 2
Subtotal				20,400		1,200	
2. Material							
Reinforced Bar D16-D25		10 ton	13,104	131,040	1,456	14,560	
Miscellaneous		20 %		26,208		2,912	Baht/day
Subtotal				157,248		17,472	
3. Labor							
Foreman Tunnel		1 day			720	720	
Operator of Heavy		3.0 day			460	1,380	1.5 day x 2
Steel Worker (Bender/Fixer)		12.0 day			350	4,200	1.5 day x 8
Common Labor		30.0 day			230	6,900	1.5 day x 20
Subtotal						13,200	
4. Total				177,648		31,872	209,520 Baht/day
5. Output = ton/day	2 spots		10 ton/day				
Rate = Baht/ton			17,765 Baht/ton		3,187 Baht/ton =		20,952

T-186. Unit Rate per Meter of Reinforced Bar : Grade D2,E1,E2						
Kok-Ing & Ing-Yot						Baht/m
Items (Grade of Ground)	Quantity per m (ton/m)	Foreign Currency		Local Currency		Total (Baht/m)
		Rate	Cost	Rate	Cost	
1. Kok-Ing Tunnel						
D2	0.70 ton/m	17,765	12,436	3,187	2,231	14,667
E1	0.65 ton/m	17,765	11,547	3,187	2,072	13,619
E2	1.12 ton/m	17,765	19,897	3,187	3,569	23,466
2. Ing-Yot Tunnel without Adit						
D2	0.76 ton/m	17,765	13,501	3,187	2,422	15,923
E1	0.72 ton/m	17,765	12,791	3,187	2,295	15,086
E2	1.23 ton/m	17,765	21,851	3,187	3,920	25,771
3. Ing-Yot No.2 Tunnel with Adit						
D2	0.76 ton/m	17,765	13,501	3,187	2,422	15,923
E1	0.72 ton/m	17,765	12,791	3,187	2,295	15,086
E2	1.23 ton/m	17,765	21,851	3,187	3,920	25,771
4. Adit for Ing-Yot No.2 Tunnel						
D2	0.50 ton/m	17,765	8,883	3,187	1,594	10,477
E1	0.44 ton/m	17,765	7,817	3,187	1,402	9,219
E2	0.75 ton/m	17,765	13,324	3,187	2,390	15,714