n generation de la constance de

APPENDIX 7.1-2 CHECK TABLE

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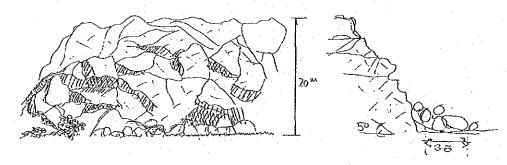
- 175 --

LUCENA 🗠 ATIMONAN SECTION

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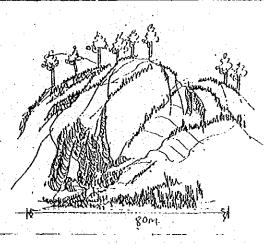
- 177 -

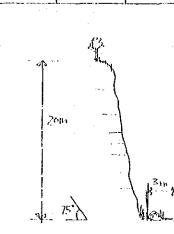
			e de la compositione de la composit La compositione de la compositione d			n in die Geboort	ante de la Color Recentario de la	et de la composition de la composition de la composition de la composition de	Sheet No.	5-5
Route		M.H (TVA - 5)	Km. Post	153.9	700	Width	150	> N	Region	TVA
	1	Kind of Slope	M Cut Sto	pe	(2) Natur					
2		Type of Fall	(1) Debris		Non Rock			·····		
	3	Fallen Rock Size	<u>(1)</u> 2δ ^m >	<u> </u>	(21 20m~	· so ^m	(3) 56 ^m <			
5	4	Oate Occured	Day		Month		Year			
	S.	Traffic Interruption Period	(1) 1 day>		(2) 1 day	~7 days	(3) 7 days <			······
2	δ	Counter Measure Taken	(1) Structu	re ()		al of falle		·····	(3) Oth	
	7	Rainfall Intensity/ Day	(1) 100 ^{mm} >		(2) 100 ^{mm} ,		(3) 200 ^{mm} ~		(4) 300	
	8	Slope Height	(1) 10 ⁰⁰ >		(2) 10 ^m ~	<u>~ 30^m</u> 60	(3) 30 ^m ~ 50	0 ^m	(4) 50 ⁰⁰	<
U	. 9	Slope Gradient	(1) 45 >		(2/ 45 ~	- 60 [°]	(3) 60 <		(4) Ove	rhung
22	10	Degree of Saturation	(1) Dry	.a.,	(2) Wet		(3) Seepage		(4) Sor	ing
Condition	u	Surface Water Concentration	(None		(2) Low		(3) High			
Con	12	Berm	(1) Existin	g Number () With (1	(2) Nothing			
e Li	13	Slope Protection	(1) Structu	re ()	(2) Veget	ation	(3) Nothing		· 	
•	14	Orainage Facilities	(1) Existin	g ¹ ··· (¹)	(2) Nothin	nq			a da anti-anti-anti-anti-anti-anti-anti-anti-	ь
s.	15	Matrix Condition	(1) Hard		(2) Soft		(3) Loose (4) Loos	e with deta	ined cabl
un Debris Fall	16	Gully	(1) Rare		(2) Common	n	(3) Frequent	<u>ly</u>		
	17	Detached Rock or cabble	(1) Nothing		(2) Suppor	rted Stably	(3) Supported	dUnsta	bly	
De			(1) Granite	(2) Diorit	e (3) Dial	base (4)	Andesite (5)	Dacite		· · ·
3	18	Rock Name	(6) Schist	(7) Slate	(8) Lim	estone (9)	Schalstein (10) Tuff		
			(11) Tuffor	eccie (12)	Sandstone	(13) Shale	(14) Mudston	ne		
Fall			(15) Conglo	merate (16)	Masa	(17) Yolca	niclasties			
Rock Fall	19	Weathering Condition	(1) Fresh		(& slight	tly Weather	d (3) Highly	Weathe	red	
5 2	20	Condition of Crack	(1) Sparse	· · · ·	(2) Regula	ar :_	(3) Developed	d		
	21	Direction of Crack	M Incline	d to Fountain	(2) Irrequ	ular Inclina	ition (3) Inc	lined	to Slope	· · · · · ·
<u>ଟ</u> -	22	Impact to Road	(1) Low		(2) Averag	ie	(3) High			
neering Judge- ment	23	Cause of Fall				· · · ·				
1 동생 통	24	Counter Measure	· · ·				<u></u>	<u>`</u>		
Sketch,	etc.						Photo No			



• •		the second s		and the second		
Gate of Survey	Day 29	Month Oct	Year 1984	Surveyor	E. IWATA	
	وراد المالة المركبة المركبة المركبة المركبين والمتحد والمركبة والمركبة المركبة المركبة والمركبة والمركبة	and the second distance in the second distance of the second distanc	ومحمد ومسجوب الأخلية شركا الأسار المكمومية ومسطوة علما ترغمتهم	بدريون والمحجب فسنغاذ كمنامك الوروجون مزرعا		

an a	1.4.1		CHE	CK TABLE OF	FALL	· •				
			n an Angeland a Angeland an Angeland an Ange		in i					
										T
								She	et No.	5-6
Route)	MH(WA-7)	Km. Post	154.1	00	Width	80 M	Reg	ion	WA
	1	Kind of Slope	(V Cut Slop	<u> </u>		atural Slope				
<u>s</u>	2	Type of Fall	(1) Debris F	a11		ock Fall		: 		· · ·
Fall	3	Fallen Rock Size	(1) 50 _{C10} >		(2) 2	0 ^{CF} ~ 50 ^{CB1}	(2) 5	0 ^{Clr} <		· · · · · · · · · · · · · · · · · · ·
b	4	Date Occured	Day		М	onth	Y	ear		
LV 1 GenCe	5	Traffic Interruption Period	(1) 1 day >		(2) 1	day~7 days	(3) 7	days <	*	
5	. 6	Counter Measure Taken	(1) Structur	e (<u>)</u> :	(2) R	emoyal of Fal	len Rock			(3) Others
ч 	7	Rainfall Intensity/ Day	(1) 100 ⁰⁰⁰ >			00 ¹¹¹¹ 200 ¹¹⁰¹	(3) 2	00 ^{lite} ~ 3()0 ¹¹¹¹¹	(4) 300 ^{000 <}
T 22.	8	Slope Height	(1) 10 ¹⁰ >	· · · · · · · · · · · · · · · · · · ·	(2/1	0 ¹¹¹ ~ 30 ¹¹¹	(3) 3	0 ^{11]} ~ 50 ¹¹¹		(4) 5u ⁸⁰ <
o	9	Slope Gradient	(1) 45° >		(2) 4	5°~ 60°	(2) 6	0° <		(4) Overhun
<u>6</u>	10	Degree of Saturation	(1) Dry		(2) W	et	(3) 5	eepage		(4) Spring
Existing Slope Condition	11	Surface Hater Concentration	(H) None	for a sector	(2) L	0W	(3) H	igh		
200	12	8erm .	(1) Existing	Number () Wi	th ()	(21 N	othing		
ä	13	Slope Protection	(1) Structur	≥ ()	(2) V	egetat ion	(2) N	othing	 	
	14	Drainage Facilities	(1) Existing	_()	12/ 11	othing		<u> </u>		
S.	15	Natrix Condition	(V) Hard		(2) S	oft (3)	Loose (4) Loose w	rith de	tached cabb]
	. 16	Gully	(1) Rare		(2) C	OINNON	(3) F	requently	<u>,</u>	<u> </u>
Condition Debri Fall	17	Detached Rock or cabble	()/ Nothing		(2) S	upported Stab	ly (3) 5	upported	Unstab	ly
Fall	18	Rock Name		cole (127 Sa	ite Indston	(3) Diabas (8) Limest e (13) Shale (17) Volcan	one	(14) Muc	alstel	(5) [°] Dacit n (10) Tuff
Rock	19	Weathering Condition	(1) Fresh			lightly Weath	*		y Weat	hered
	20	Condition of Crack	(1) Sparse			egular				
	21	Direction of Crack	7	to Nountain		Irregular In			lined	to Slope
5 L	22	Impact to Road	(1) Low			verage				
Judge-	23	Cause of Fall								
5 2 9	24	Counter Measure								

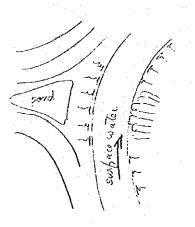


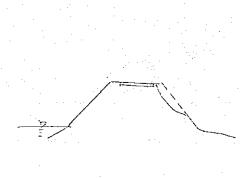


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Date of Survey	Day 29	Nonth Oct	Year 1984	Surveyor	ElWATA

CHECK TABLE OF EMBANKMENT SLOPE FAILURE

		the second se		
·				Sheet No. 5-7
Route		M.H (TV.4-3)	Kn. Post /55./00 Width 20 M	Region TV7
aŭ	1	Kind of Slope	(1) Embankment Slope (2) Natural Slope (3) Overflow Section	· · · · · · · · · · · · · · · · · · ·
1) ure	2	Location	(1) Approach of Bridge (2) Adjacent to River or Sea (1) Inside	of Curve (4) Others
Fat	3	Size of Disaster	(1) 50 ^{m3} > (2) 50 ^{m3} ~ 100 ^{m3} (3) 100 ^{m3} <	<u></u>
σf	4	Date Occured	Day Nonth Year 1983	(02/24)2
Evidence	5	Traffic Interruption Period	(1) 1 day _{>} (2) 1 day \sim 7 days (3) 7 days <	
vide	- 6	Counter Measure Taken	(2) Riprap (3) Other Structure	
ش	. 7	Rainfall Intensity/ Day	(1) 100^{nm} (2) 100^{nm} 200 ^{nm} (3) 200^{nm} 300^{nm}	(4) 300 ^{mm} ∠
	. 8	Slope Height	(1) $5^{m} > (2) 5^{m} \sim 10^{m}$ (3) $10^{m} <$	
<u>a</u> .	9.	Slope Gradient	(1√ 45° > (2) 45° ~ 60° (3) 60° <	
cisting Slo Condition	10	Surface Water Concentration	(1) None (2) Low (3) High	
ist Con	11	Slope Protection	(1) Nothing (2) Vegetation (3) Riprap (4) O	ther Structure ()
щ ^т	12	Drainage Facilities	(L) Nothing (2) Existing	
ş.	13	Impact to Road	(1) Low (2) Average (3) High	<u> </u>
Engi- neering Judge- ment	14	Cause of Disaster	(Y Concentration of Surface Water (2) River Stream (3) Sea Wave	(4) Others
S S D S	15	Counter Measure		
Sketch	, etc.		Photo No.	





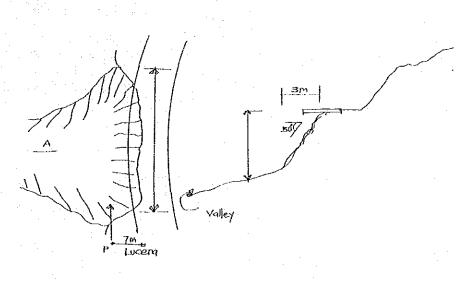
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at in	1	an de	1.4.1	
44.		14		

Date of Survey	Day 29	Month Cat	Year 19R4	Surveyor	B. IWATA

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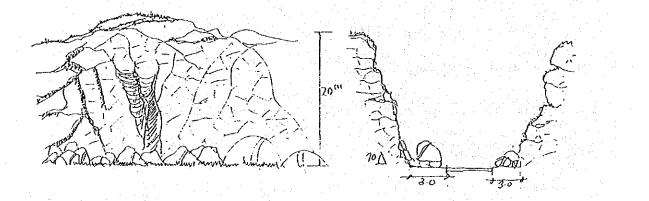
CHECK TABLE OF EMBANKHENT SLOPE FAILURE

		engen i stradist Geboorden gewenen Gibboorden geboorden				Sheet No.	5-10-1
Route		M.H. (TVA-13-1)	Km. Post 156.	700 Width	40 M	Region	IVA
		Kind of Slope	(V Eubankment Slope	(2) Natural Slope	(3) Overflow	Section (5)	Others
eun		l.ocat lon	(1) Approach of Bridge (1) 50 ^{m3} >			Inside of Cu	rve () Others
Failure	3	Size of Disaster Date Occured	$(1) 50^{m_3} > Day 2/$	(2) $50^{m3} \sim 100^{m3}$ Month $0c7$,	Year 17	84	
0 و	5	Traffic Inter- ruption Period	(1) 1 day >	$(a)/1 day \sim 7 days$			
Évidence	6	Counter Measure Taken	(V Only Fill	(2) Riprap	(3) Other St	ructure ()
ш́.	7	Rainfall Intensity/ Day	(1) 100 ^{mn} >	(2) 100 ^{mm} ~ 200 ^{inm}	(₿ <mark>)</mark> ∕200 ^{mm} ~	300 ^{mai} (4)	300 ¹⁰⁰⁰ <
ope	8	Slope Height	(1) 5 ^m >	(2) 5 ^m ~ 10 ^m	(1) 10 ^m <		· · · · ·
S S	9	Slope Gradient	(NV 45° >	(2) 45°~ 60°	(3) 60° <	······································	
Existing Sl Condition		Surface Water Concentration	(1) None	(a) Low	(3) High		
x is Cos	<u> </u>	lope Protection	(1) Nothing	(à) Vegetation	(3) Riprap	(4) Other Sti	ructure ()
	12	in a inage Facilitie ((MNothing	(2) Existing			
Engi- neering Judge- ment		Impact to Road	(1) Low	(2) Average	(Y High		
1 con	14	Cause of Disaster	(N Concentration of Si	urface Water (2) Riv	er Stream (3)	Sea Wave (4)	Others
555	15	Counter Measure				· · · · · · · · · · · · · · · · · · ·	
Sketch	, etc.	· · · · · · · · · · · · · · · · · · ·				Photo No.	



Free			
Date of Survey	Day 29 Month Oct	Year 1984 Surveyor	B, IWATA

			alah di Ma	h fi shekara					
1.14.1								Sheet No.	5-11
Route		M.H (TVA - 15)	Km, Post	157.4	500	Width	150 H	Region	TVA
	1	Kind of Slope	N Cut Slo	pe	(2) Natur				
<u>v</u>	2	Type of Fall	(1) Debris		(2) Rock				
Falls	3	Fallen Rock Size	<u>(1) 2δ^m ></u>		(2) 2Ó ^m ~	· 50 ^m	('35 56 ^m <		
of of	4	Date Occured	Day		Month		Year		
Evidence	5	Traffic Interruption Period	(1) 1 day>		(2) l day	∼7 days	(3) 7 days <		
ž :	6	Counter Measure Taken	(1) Structu	ré (n Rock	(3) Oth	
w	7.	Rainfall Intensity/ Day	(1) 100 ^{mm} >		(2) 100 ^{mm}	n i stan distant.	(3) 200 ^{mm} ~ 300 ^{mm}	. (4) 300	
	8	Slope Height	(1) 10 ^m >		(2) 10 ^m ~	~ 30 ^m	(3) 30 ^m ~ 50 ^m	(4),50 ^m	<
a	9	Slope Gradient	(1) 45 >		(2) 45°~	- 60°	(3/ 60 <	NY Ove	rhung
do c	10	Degree of Saturation	(M Ory		(2) Xet		(3) Seepage	(4) Spr	ing
Existing Slope Condition	11	Surface Water Concentration	(1) None		(2) LOW		(3) High		
Con t	12	Bern	(1) Existin	g Number () With ((de 19 <u>) -</u>	(2) Nothing		
ώ.	13	Slope Protection	(1) Structu	re ()	(2) Veget	ation	(3) Nothing		
	14	Drainage Facilities	(1) Existin	q ()_	(2) Nothi	nQ			
5	15	Matrix Condition	(1) Hard		(2) Soft	a taga	(3) Loose (4) Loos	e with deta	ched cabbl
on Debris Fall	15	Gully	(1) Rare		(2) Commo	n	(3) Frequently		. <u> </u>
Condition	17	Detached Rock or cabble	(1) Nothing		(2) Suppor	rted Stably	(3) Supported Unsta	ibly	
5			(1) Granite	(2) Diorit	e (3) Dial	base (4)	Andesite - (5) Dacite		
S	18	Rock Name	(6) Schist	(7) Slate	191 Line	estone (9)	Schalstein (10) Tuff		
		AUCA Malle	(11) Tuffbr	eccie (12)	Sandstone	(13) Shale	(14) Mudstone		an an Salah ar taon 1
gica Fall			(15) Conglo	merate (16)	Masa ,	(17) Volca	niclasties		
Geological Rock Fall	19	Weathering Condition	(1) Fresh		(Z) Sligh	tly Weather	ed (3) Highly Weathe	red	
9 8 8	20	Condition of Crack	(1) Sparse		(2) Regula		(3) Developed		
	21	Direction of Crack	(1) incline	d to Hountain	(2) Irrea	ular Inclin	ation (3) Inclined	to Slope	e set e e e
52,	22	Impact to Road	(1) LOW		(2) Avera		(B) High		
Engi- neerir Judge- nent	23	Cause of Fall							
연합철험	24	Counter Measure							
Sketch,	etc.						Photo No.		
							and the second secon		

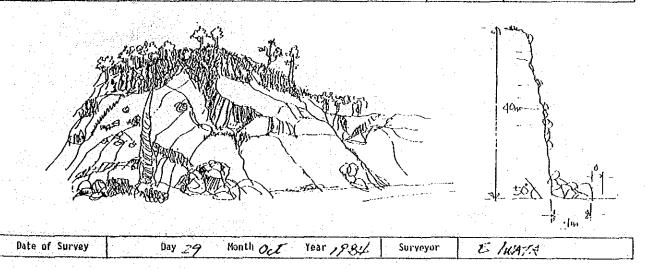


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Date of Survey j	Day 20	Month n. Year 4	Surveyor	I IMATA
	7	$\mathcal{O}\mathcal{U}_{\mathcal{U}}$		
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CHECK TABLE OF SLOPE FAILURE

C				Sliget No. S-12
Route)	M.H (NA-17)	Kun, Post 158.500 Hidth 120M	Region IVA
	1	Kind of Slope	(V) Cut Slope (2) Natural Slope	
e u	2	Kind of Failure	(1) Nothing (2) Surface Failure (37 Deep Fai	
failure	3	Size of Failure	(1) $50^{113} >$ (2) $50^{113} \sim 500^{113}$ (3) $500^{113} \sim$	2,000 ¹¹¹³ (4) 2,000 ¹¹³ <
	4	Date Occured	Day Month Year	· · · ·
Evidence of	5	Traffic Interruption Period	(1) 1 day > (2) 1 day ~ 7 days (3) 7 days <	
E	6	Counter Measure Taken	(1) Structure () (2) Removal of Slide Materials	(3) Others
ž	7	Rainfall Intensity/ Day	(1) 100 mm > (2) 100 ⁰⁰⁰ 200 ⁰⁰⁰ (3) 200 ⁰⁰⁰	
	8	Height	(1) $10^{m} \ge$ (2) $10^{m} \sim 30^{m}$ (3) $30^{m} \sim 50^{m}$	(4) 50 ⁱⁿ <
Existing Slope Condition	9	Gradient	(1) 45° > (2/ 45°~ 60° (3) 60° <	(4) Overhung
to be	10	Berm	(1) Existing Number () Width () (2) Nothing
<u>ພິ' ບິ</u>	11	Slope Protection	(1) Structure () (2) Vegetation (2) Nothing	
	12	Hardness	(1) Hard Rock (2) Soft Rock	
5	13	Name	(1) Granite (2) Diorite (3) Diabase (4) And (7) Slate (0) Linestone (9) Schalstein (10) Tur	
Cond I F			(12) Sandstone (13) Shale (14) Mudstone (15) Con	
rcal Condit	14	Weathering Condition	(12) Sandstone (13) Shale (14) Mudstone (15) Con (17) Volcaniclasties	
Rock	14		(12) Sandstone (13) Shale (14) Mudstone (15) Con (17) Volcaniclasties (1) Fresh (2) Slightly (2) Highly M	glomerate(16) Masa eathered (4) Nearly Soil
Rock	is nighting Richterne	Weathering Condition	(12) Sandstone (13) Shale (14) Mudstone (15) Con (17) Volcaniclastics (17) Volcaniclastics (1) Fresh (2) Slightly Weathered (2) Develope	glomerate(16) Masa eathered (4) Nearly Soil d
1001001001	15	Weathering Condition	(12) Sandstone (13) Shale (14) Mudstone (15) Con (17) Volcaniclasties (1) Fresh (2) Slightly (27) Highly W Weathered	glomerate(16) Masa eathered (4) Nearly Soil d Inclined to Slope
So'T	15 16	Weathering Condition Condition of Crack Direction of Crack	(12) Sandstone (13) Shale (14) Mudstone (15) Con (17) Yolcaniclasties (11) Fresh (2) Slightly (1) Fresh (2) Slightly (2) Highly Meathered (1) Sparse (2) Regular (2) Develope (1) Inclined to Mountain (2) Irregular Inclination (3)	glomerate(16) Masa eathered (4) Nearly Soil d Inclined to Slope
So'T	15 16 17	Weathering Condition Condition of Crack Direction of Crack Thickness	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	glomerate(16) Masa eathered (4) Nearly Soil d Inclined to Slope
So'T	15 16 17 18	Weathering Condition Condition of Crack Direction of Crack Thickness Compactness	(12) Sandstone (13) Shale (14) Mudstone (15) Con (17) Volcaniclasties (1) Fresh (2) Slightly (2) Highly M Weathered (1) Sparse (2) Regular (2) Develope (1) Inclined to Mountain (2) Irregular Inclination (3) (1) 5III > (2) 5III ~ 10III (3) 10III ~ 20 (1) Tight (2) Slightly loose (3) Loose	glomerate(16) Masa eathered (4) Nearly Soil d Inclined to Slope (4) 20 ^m <
Condition Soil	15 16 17 18 19	Weathering Condition Condition of Crack Direction of Crack Thickness Compactness Degree of Saturation Surface Water	(12) Sandstone (13) Shale(14) Mudstone(15) Con(17) Yolcaniclasties(1) Fresh(2) Slightly(2) Highly Weathered(1) Sparse(2) Regular(2) Develope(1) Inclined to Mountain(2) Irregular Inclination(3)(1) $5^{III} >$ (2) Slightly toose(3) $10^{III} \sim 20^{IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII$	glomerate(16) Masa eathered (4) Nearly Soil d Inclined to Slope (4) 20 ^m <
Condition Soil	15 16 17 18 19 20	Weathering Condition Condition of Crack Direction of Crack Thickness Compactness Degree of Saturation Surface Water Concentration	(12) Sandstone (13) Shale(14) Mudstone(15) Con(17) Volcaniclasties(1) Fresh(2) Slightly(2) Highly M(1) Fresh(2) Regular(2) Develope(1) Sparse(2) Regular(2) Develope(1) Inclined to Mountain(2) Irregular Inclination(3)(1) $5^{III} >$ (2) $5^{III} \sim 10^{III}$ (3) $10^{III} \sim 20$ (1) Tight(2) Slightly loose(3) Loose(4) Dry(2) Wet(3) Seepage(4) Mone(2) Low(3) High	glomerate(16) Masa eathered (4) Nearly Soil d Inclined to Slope (4) 20 ^m <
So'T	15 16 17 18 19 20 21	Weathering Condition Condition of Crack Direction of Crack Thickness Compactness Degree of Saturation Surface Water Concentration Drainage Facilities	(12) Sandstone (13) Shale(14) Mudstone(15) Con(17) Volcaniclastics(1) Fresh(2) Slightly(2) Highly M(1) Fresh(2) Slightly(2) Develope(1) Sparse(2) Regular(2) Develope(1) Inclined to Mountain(2) Irregular Inclination (3)(1) $5^{m} >$ (2) $5^{m} \sim 10^{m}$ (3) $10^{m} \sim 20^{m}$ (1) Tight(2) Slightly loose(3) Loose(2) Dry(2) Wet(3) Seepage(3) None(2) Low(3) High(1) Existing ()(2) Nothing	glomerate(16) Masa eathered (4) Nearly Soil d Inclined to Slope (4) 20 ^m <



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					an An an		Sheet No.	S-12-1
Route	3	M.H (TVA-18)	Km. Post	158,900	Width	500 M	Reylon	707
	1	Kind of Slope	(V Cut Slo	pe (2	Natural Slope			
v.	2	Type of Fall	(1) Debris		Rock Fall			
201	3	Fallen Rock Size	(1) 20 ¹⁰ >	(2) 20 ¹¹¹ ~ 50 ¹¹¹	(b) 50"" ·	<	
÷	4	Date Occured	Day		Month	Year		
rv 1dence o	5	Traffic Interruption Period	(1) 1 day >	(2) 1 day~7 days	(3) 7 day	/5 <	
5	6	Counter Measure Taken	(1) Structu	re () (2) Removal of Fal	len Rock	والمتحديدة والمتحد	(3) Others
· لدَ	7	Rainfall Intensity/ Day	(1) 100 ^{nm} >) 100 ^{mm} 200 ^{mm}		(おうましゃ) しょうきょう	(4) 300 ^{tsin} <
	8	Slope Height	(1) 10 ^m >) 10 ^m ~ 30 ^m	(3) 30 ⁸¹ ~ (3) 60" <	50 ⁴¹	() × 50 ^m <
e U	9	Slope Gradient	(1) 45° >	(2) 45°~ 60°	(3/ 60" <		(4) Overhung
6 <u>c</u> .	10	Degree of Saturation	(1)/bry	(2) Wet	(3) Seepa	ge	(4) Spring
Existing slope Condition	11	Surface Water Concentration	(N/None	(2) Low	(3) High	بالأميحاق التاسي عكوف	
	12	Berm	(1) Existin	g Number ()	With ()	(e) Noth		
Ě	13	Slope Protection	(1) Structu) Vegetation	(BY Noth	ing	
	14	Drainage Facilities	(1) Existin		Nothing			
s	15	Natrix Condition	(1) Hard	(2) Soft (3)	Loose (4) Lu	ose with de	Lached cabble
112	16	Gully	(1) Rare	(2) Common	(3) Frequ	uently	
Condition Deb	17	Detached Rock or cabble	(1) Nothing) Supported Stat			
Fall	18	Rock Name	(6) Schist (11) Tuffbr	eccie (12) Sands merate (16) Masa	(&) Linest tone (13) Shale (17) Volcar	one (* ()/ Lictasties	9) Scholstein 1) Mudstone	n (10) Tuff
Rock	19	Reathering Condition	(1) Fresh) Slightly Heatl			hered
	20	Condition of Crack	(1) Sparse) Regular	(V/ Deve		
	21	Direction of Crack	(1) Incline		(a) Irregular Ir	1 1		to Slope
neering Judge- ment	22	Inpact to Road	(1) Low	(2) Average	(1) High	اد رو مسلحین مسلح	
r dr	23	Cause of Fall				: سوسية محمد محمد) Andre af eine eine	
	24	Counter Measure						1

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仏 A -- A 20м <u>(5)(</u> ≱ 1-B B 651 70 m

Month Date of Survey Day 29 Oct Year 1981 Surveyor B.IWATA

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CHECK TABLE OF LANOSLIDE

				· · · ·							Sheet No.	0.1
Route		411/707A 26)	Km. Post	160.300			dth		150	м	Region	10-A
		M.H (TVA - 20)		100.000	17			• • • •	/30		L negion	110 /1
-	!	Kind of Slope	(1) Cut Slope	<u> </u>	<u>(1</u>)	Natural S	lone					
s líc	2	Kind of Landslide	N Rock		(2)	Talus		<u>M</u>	So (1			
Lards 1 fde	3	Size of Landslide	< ²¹¹ , 2,000 ^{,312} <	······	<u>is</u>	2,000,12~	· 5,000 ^m	2	(3) 5,000) ^{#12} <	· · · · · · · · · · · · · · · · · · ·	
٥Ļ	4	Date Occured	Day			Bonth			Year			
Evidence	5	Traffic Interruptions Period	(1) day >		(2)	l dav ~	7 days	(3)	7 days <		<u> </u>	
Evid	6	Rainfall Intensity/ Day	(1) 100 ana >		(2)	100 ^{:INII} ~?	00 ⁸¹¹¹	(5)	200 ^{a¥n} ~	300 ^{imi}	(4) 300 ^{.003}	<
phic and cal	1	Existence of irre- gular surface with steps, sharp cliff and puddles	(l) Unnoticed	I	ìsh	Medium		(3)	Remarkat	ole		
Topographic Geological Cumition	8	Geology	(1) Others		(2)	Sedimenta	ry Rock		Highly 1 Sediment or Talus	tary Soci	k	
	ġ	Degree of Saturation	(1) Ory		(2)	Ve t	<u> </u>	M	Seepage	·	(4) Soring	ſ
Ochers Condicion	10	Gradient of Slide Plane	(1) 10° >		ie/	10°~20°		(3)	20° <			
	11	Continuity of Slide Novement	(1) Unnoticed	I	লৈ	Nedium		(3)	Remarkai)le		
Englineering Judgewent	12	lmanct to Road	(1) LOW		de	Average	<u> </u>	(3)	High	•		
1 1006 dg0a	13_	Cause of Landslide										
Eng Jul	14	Counter Measure			_							
skerch	etc.	· · ·						2h	oto No.			





Date of Survey	Day >9	Houth A.7	lear Insil	ວັນດາອາດດ	F 1. 10-7.5	
		<u></u>			0.10.11	
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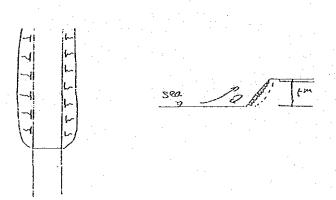
ALLEN - CALBAYOG SECTION

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CHECK TABLE OF EMBANKNENT SLOPE FAILURE

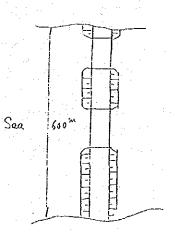
				Sheet No.	S-54
Route		M.H (70 - 1)	Km. Post 664.400 Width 300 M	Region	7匹
	1.	Kind of Slope	(N Embankment Slope (2) Natural Slope (3) Overflow Secti		
i lure	2	Location	(MApproach of Bridge (2) Adjacent to River or Sea (3) Inside	of Curve (4) Others
1 10 1	3	Size of Disaster	(1) $50^{m3} > (50^{m3} \sim 100^{m3} (3) 100^{m3} < 100^$	ion//	
ш.	4	Date Occured	Day Month 12 Year 1981.1	970	
vidence o	5	Traffic Interruption Period	(1) 1 day (2) 1 day \sim 7 days (3) 7 days (3)	2 Timos des riprap	tioned
ide	5	Counter Measure Taken	(1) Only Fill (2) Riorap (3) Other Structur		
د س	1	Rainfall Intensity/ Day	(1) 100^{avn} (2) 100^{avn} 200 ^{1km} (3) 200^{avn} 300 ^{nkm}	(4) 300 ⁰	ነጠ
	8	Slope Height	(1) $5^{m} > (N 5^{n} \sim 10^{n!} (3) 10^{m} <$		
lope	. 9	Slope Gradient	(1) $45^{\circ} >$ ($3/45^{\circ} \sim 60^{\circ}$ (3) $60^{\circ} <$		- 1997 - 1997
Condition	10	Surface Hater Concentration	(1) None (V Low (3) High		
1 SC	- 11	Slope Protection	(1) Nothing (2) Vegetation (9) Rioran (4) 0	ther Structu	re ()
ж ш	12	Orainage Facilities	(V Nothing (2) Existing		
8	13	Impact to Road	(1) Low (2) Average (8) High		· · · · · · · · · · · · · · · · · · ·
Enyi- neering Jućge- ment	. 14	Cause of Disaster	(1) Concentration of Surface Water (2) River Stream (8) Sea Wave	(4) Othe	rs
e e e e	15	Counter Measure		<u> </u>	· · · · · ·
Sketch	, etc.		Photo No.		

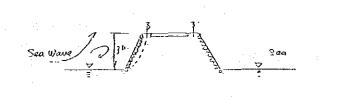


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Date of Survey	Day E	5 Month	Oct	Year	1984	Surveyor	B. IWATA	
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		е. 1917 г.						
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CHECK TABLE OF EMBANKHENT SLOPE FAILURE

							Sheet No.	22-2
Route		四十(五-2)	Kni. Post 681.	700	Width	600 M	Region	TE
	1	Kind of Slope	Embankment Slope			(3) Overflow Sec		
lure	5	Location	M Approach of Bridge		$\sim 100^{m3}$	<u>er or Sea (3) Insi</u> (3) 100 ^{m3} <	<u>de of Curve (</u>	4) Others
La.	3	Size of Disaster Date Occured	<u>(1) 50^{m3} ></u> Day	02 (S) Moni		(3) 100 < Year H20;	ut Tuplies	U CVER.
Jo e o L	5	Traffic Interruption Period	(1) l day>			(3) 7 days<		
Idence	6	Counter Measure Taken	(1) Only Fill	Rior		(3) Other Struct		
а 4	1	Rainfall Intensity/ Day	(1) 100 ^{mm} >	(2) 100 ⁸	uu ~ 500 _{unu}	(3) 200 ^{mm} ~ 300 ^{mm}	ⁿ (4) 300	/110 <
	8	Slove Height	₩ 5 ¹¹ >	(2),5 ^m ·		(3) 10 ^m <		
	9	Slope Gradient	(1) 45° >	(45°	~ 60°	(3) 60° <		
Condition	10	Surface Nater Concentration	No None	(2) Low		(3) Xigh		
Ŭ.	11	Slope Protection	(1) Nothing	(2) Vege	tation	(Riprap (4)	Other Struct	ure (
Č. d	12	Orainage Facilities	(W Nothing	(2) Exis	sting			
g	13	Impact to Road	(1) Low	(2) Aver	age	(High	<u> </u>	
neering Judge- ment	14	Cause of Disaster	(1) Concentration of S	urface Vater	(2) River	Stream (B) Sea Wa	ve (4) Oth	ers
a na	15	Counter Measure						
Sketch	, etc.				an an taon 1990. An taona amin'	Photo No.		





Date of Survey		Day	6	Month Oat	Year 19	846 Sur	veyor	З.	WATA	
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				n An Alberta	, i					
									Sheet No.	556
Route	- 11 - 11 - 1	M.H (711-6)	Km. Post	686.900		Width	250	M	Region	VIII
	1	Kind of Slope	Cut Slope	(2) Natura	1 Slope				an a
s	2	Type of Fall	(1) Debris Fal		Rock F					
Falis	3	Fallen Rock Size	(1) 20 ^m >) 20 ^m ~		(₩) sδ ^m <			
of	4	Date Occured	Day	an the second	Month		Year	à,	e Miller	
Evidence (5	Traffic Interruption Period	(l) l day>	(2	?) 1 day	\sim 7 days	(3) 7 days <			
<.id	6	Counter Measure Taken	(1) Structure	() (Remova	l of Falle			(3) Othe	
ω	1	Rainfall Intensity/ Day	(1) 100 ^{mm} >			~ 200 ^{min}	(3) 200 ^{mm} ~ 3	2021 (S.	(4) 300	·
	8	Slope Height	$(1) 10^{m} >$	(2) 10 ^m ~	_ 30 ^m	0 30 ^m ~ 50) ⁶⁰	(4) 50 ^m	∠ reserve
e V	9	Slope Gradient	(1)_45 >) 45 ~		(b) 60° <		(4) Over	hung
	10	Degree of Saturation	(V. Dry	(2) Wet		(3) Seepage		(4) Spr	Ing
Existing Slope Condition	11	Surface Water Concentration	(M None	(2) LOW		(3) High			
fst Con	12	Berm	(1) Existing N	lumber ()	With ()	Nothing	A. 19 1.		
<u>ت</u> ک	13	Slope Protection	(1) Structure	() (2) Vegeta	tion	(3) Nathing	<u></u>		
	14	Drainage Facilities	(1) Existing	() N	Nothin	a	<u> </u>			
S	15	Matrix Condition	(1) Hard	(2) Soft	sign en en el const en el constante	(3) Loose (4) Loos	e with detac	hed cabb
on Debris Fall	16	Gully	(1) Rare) Common		(3) Frequentl	у 'т		
ē d	17	Octached Rock or cabble	(1) Nothing	(2) Suppor	ted Stably	(3) Supported	Unsta	bly	<u> </u>
Condition			(1) Granite	(2) Diorite	(3) Oiab	ase (4)	Andesite (5)	Dacite		
<u>ē</u>	18	Rock Name	(δ) Schist	(7) Slate	(8) Lime	stone (9)	Schalstein (10)	Tuff		
			(11) Tuffbrecc	ie (X) Sand	stone	(13) Shale	(14) Mudston	e		
ogica Fall		·	(15) Conglomer	ace (16) Masa	/	(17) Volcar	niclasties			
Geological Rock Fall	19	Weathering Condition	(1) Fresh) Slight	ly Weather	ed (3) Xighly	Weathe	red	
3 x	20	Condition of Grack	(1) Soarse			<u>r</u>	Vereloped	· · · · · · · · · · · · · · · · · · ·		· · · ·
	21	Direction of Crack	(1) Inclined t	o Hountain (2) (rrequ	lar Inclina	ation No Inc	lined		
Engi- neering Judge- ment	22	Impact to Road	(1) LOW	(2) Averag	e	(3) High		Show	UN 7.0
nd ge	23	Cause of Fall	Cochman	<u>c : </u>		<u> </u>				
చె ది న జీ	24	Counter Measure		· · · · ·		12-14 				
Sketch,	etc.		•	1997 - 1997 -	·	10 C	Phaco No.	ľ		

Month Oct

Date of Survey

Day

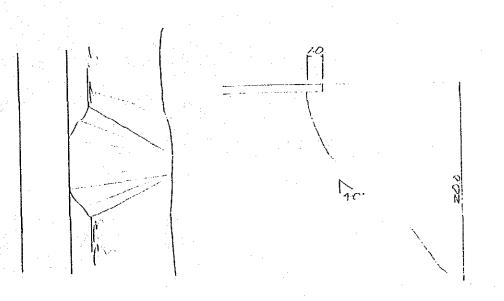
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Year 1984

Surveyor

CHECK TABLE OF EMBANKMENT SLOPE FAILURE

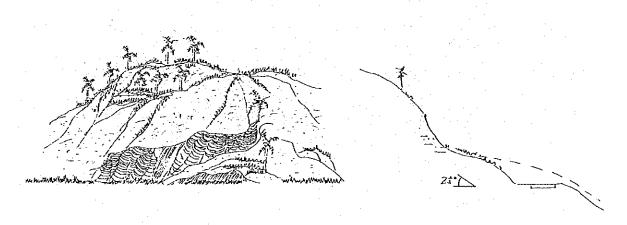
				n de Service de la construction de la construction Reconstruction de la construction d		Sheet No.	5-57-2
Route		1111(12 -13-1)	Km. Post 694	700 Width	10 M	Region	VID.
		Kind of Slope	W Enbankment Slope	(2) Natural Slope			
jlure		Location		e (2) Adjacent to Riv		Inside of Cu	rve (4) Others
Faile		Size of Disaster	(<u>1</u>) 50 ^{m3} >	$(2) 50^{m3} \sim 100^{m3}$		· ····································	
		Date Occured	Day	Month	Year		
4 0 2)	5	Traffic Inter- ruption Period	(1) 1 day >	(2) 1 day ~ 7 days	(3) 7 days <		
£ v i dence	6	Counter Measure Taken	(1) Only Fill	(2) Riprap	(3) Other St	ructure ()
ົ້ນ	j	Rainfall Intensity/ Day	(1) 100 ^{nm} >	(2) 100 ^{mm} 200 ^{nm}	(3) 200 ⁸⁸⁸ ~	300 ^{mm} (4)	300 ⁰⁸⁰ <
9 0	8	Slope lleight	(1) 5 th >	(2) 5 ^m ~ 10 ⁿ	(3) 10 ⁱⁿ <		
ors	9	Slope Gradient	(1) 45° >	(2) 45°~ 60°	(3× 60° <		
isting Slope Condition	10	Surface Water Concentration	UY None	(2) Low	(3) High		
x is Cos	11	Slope Protection	(1) Nothing	(2) Vegetation	(3) Riprap	(4) Other St	ructure ()
ω.	12	Drainage Facilities	(U) Nothing	(2) Existing			
ំខ្ល	13	Impact to Road	(1) LOW	(2) Average	(3) High	-	-
içi- tering uqe-	14	Cause of Disaster	(1) Concentration of	Surface Water (2) Riv	er Stream (3)	Sea Wave (4) Others
с е с е с е с е с	15	Counter Neasure	A				
Sketch	, etc.					Photo No.	



· · · · · · · · · · · · · · · · · · ·				
Date of Survey	Day G M	onth Oct Year ,984	Surveyor	B. IVINTA .
				······································

CHECK TABLE OF GEBRIS FLOW

	•		1. 1. A.		1997 - 1994 - 1994 1997 -				1
	·. ·		:	·				Sheet No.	8-18
Route	e	M.H (VII-16)	Km. Post	698.30	x0	Hidth	150 M	Region	亚
	L,	Existence of Depo- sitional Toe	(1) Nothing		(V Exist	ing			-
is	2	Size of Disaster	(1) 50 ⁶¹³ >		(2) 50 ^{m3} ~	~ 500 ^{m3}	(V 500 ^{m3} ~ 2,000	ⁿ³ (4) 2,000	0 ^{m3} <
Debri	3	Oate Occured	Oay			-	Year Every		
Evidence of Flow	4	Traffic Interruption Period	(1) 1 day>				(3) 7 days <	at type	you
ider	5	Counter Measure Taken	(1) Structur	e ()	(Remov	al of Oepo	sit Materials	(3) Other	\$
ษ์	- 7 ⁻	Rainfall Intensity/ Day	(1) 100 mai >	>	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	(3) 200 ^{mm} ~ 300 ^{mn}		
<u>2</u> 1. E	3	Average Gradient	(1) 20°>		1 20° 4				
Existing Stream Condition	9	Area of Basin	(M 0.24 Km ²	?>	(2) 0.24	(m ² <	- Angla (
SC SE	.10	Deposit on River Bed	(1) Nothing		(Rare		(3) Abudance		1 N. T
	11	Plant Condition	(1) 50% >			nd or Thin	Forest (34 50% -		······································
ing t	12	Impact to Road	(1) LOW		(V Avera	0e	(3) High		
Engineering Judgment	13	Cause of Disaster							
6 ng j Jud	14	Counter Measure		· . · · .					
Sketc	ch, etc						Photo No.		

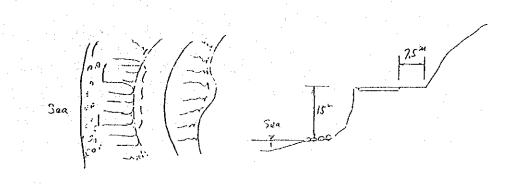


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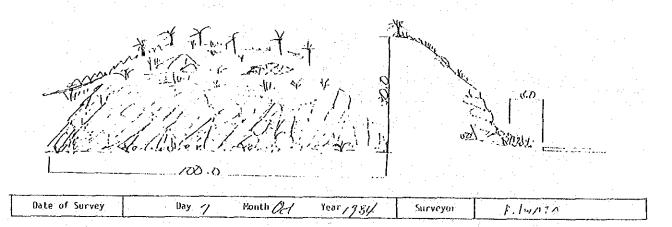
CHECK TABLE OF ENBANKMENT SLOPE FAILURE

						Sheet No. 5-50
Route		M.H.(元-18)	Km. Post 701.20	20 Hidth	30 M	Region 711
	1	Kind of Slope	() Embankment Slope	(2) Natural Slope	(3) Overflow Secti	on (5) Others
0 L C	2	Location	(1) Approach of Bridge			of Curve (4) Others
(i s	3	Size of Disaster	(1) 50 ^{m3} >	$(2) 50^{m3} \sim 100^{m3}$	(Y 100 ^{m3} <	· · · · · · · · · · · · · · · · · · ·
0 J J	4	Date Occured	Day	Nonth	Year	
idence c	5	Traffic Interruption Period	(1) 1 day>	(2) 1 day \sim 7 days	(3) 7 days<	
	8	Counter Measure Taken	(1) Only Fill	(W Riorao	(3) Other Structur	
ພ •	7	Rainfall Intensity/ Day	(1) 100 ^{4nm} >	(5) 100 _{ww} 500 _{ww}	(3) 200 ^{mm} ~ 300 ^{mm}	(4) 300 ^{8m} ~
	8	Slope Height	(1) 5 ^m >	$(2) 5^{nt} \sim 10^{nt}$	(V 10 ⁱⁿ <	
lope	9	Slope Gradiant	(1) 45° >	(2) 45° ~ 60°	(1 60° <	
isting Slo Condition	10	Surface Water Concentration	₩ None	(2) Low	(3) High	· · · · · · · · · · · · · · · · · · ·
is r Conc	n.	Slope Protection	Mothing	(2) Vegetation	(3) Riprap (4) 0	ther Structure (
Ψ,	12	Drainage Facilities	Nothing	(2) Existing	· · · · · · · · · · · · · · · · · · ·	
ĝ',	13	Inpact to Road	(1) LOW	(M Average	(3) High	
Engi- neering Judge- nent	14	Cause of Disaster	(1) Concentration of Surfa	ice Water (2) River	Stream (Se Sea Wave	(4) Others
u u u u	. 15	Counter Measure				
Sketch	etc.	a state of the state of the			Photo No.	



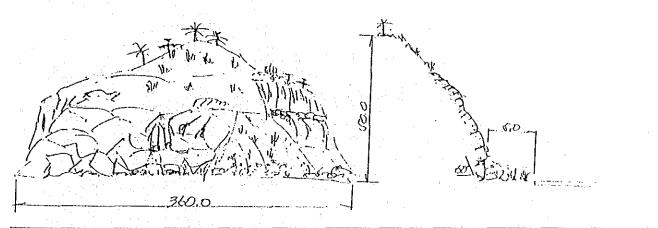
Date of Survey	Day	7	Month Oct	Year 1.984	Surveyor	B. /WATA	
							
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		· .			ــــــــــــــــــــــــــــــــــــ		_ <u> </u>		Same un	5-60-1
. :	Route		M.H. (101-21)	Ku, Post	703.8	100	Wtath	100 M	Region	YII.
		1	Kind of Stopp	(W Cut Slop	10		atural Slope	ار ایرانی در دونونده فلیمنشان م		
, Ľ	1	2	Type of Fall	(1) Debris H			ock Fall	والمتحديقة والمتحدين	والمعدية المجد	المستحقق والمراجع
5.27		3	Fallen Rock Sizo	<u>(1) 26^m ></u>		(2) 2	S ⁿⁿ - 58 ⁿⁿ	(2)/56" <		المحمود مع المحمد ا المحمود المحمد المحم
4	5	4	Date Occured	Day			onth	Year	ana ang sang sa	
Evidence		5	Traffic Interruption Period	(1) 1 day >			day~ 7 days	• • • • • • • • • • • • • • • •	• •	المراجع المراجع المراجع المراجع
1.1		6	Counter Measure Taken	(1) Structur	<u>re ()</u>	(2) R	emoval of Fal	len Rock	n geboord. Neerste geboord is	(3) Others
L		7	Rainfall Intensity/ Day	(1) 100 ⁰⁰⁰ >			00 ¹¹¹¹ 200 ¹¹⁰¹	이 가는 것이 같다. 아름다 가지 않는 것		(4) 3(H) ⁰⁰⁰ <
		8	Slope Height	(1) 10 ¹¹¹ >		(2) 1	0 ¹¹¹ ~ 30 ¹¹¹	(3) 30"	50 ⁰⁰	(4) 50 ¹¹¹ <
	u	9	Slope Gradient	(1) 45° >		(2)1		(3) ເບ" •		(4) Overhung
10		10	Degree of Saturation	(1) Dry	- 11 - 140 - 140 - 140 - 140 - 140 - 140 - 140 - 140 - 140 - 140 - 140 - 140 - 140 - 140 - 140 - 140 - 140 - 1 	(2) H	et	(3) Seepa	ge	(4) Spring
y ou;	Condition	11	Surface Water Concentration	(D) None		(2) L	سوحدي فأيسبه أتدعه	(3) Itigh	ne internet di Schrift All part di Schrift All transmissione di Schrift	
1	Con	12	Bern	(1) Existing	<u> Number (</u>) Wi	<u>th ()</u>	(2) Nothi	ng	
ů	Č.	13	Slope Protection	(1) Structur	<u>e ()</u>		egetat ion	(2) Nothi	ng	· · · · · · · · · · · · · · · · · · ·
		14	Drainage Facilities	(1) Existing	<u>i ()</u>	(2X H	othing			
	- N	<u>·15</u>	Natrix Condition	(L) Hard		(2) S	oft (3)	Loose (4) Lu	ose with def	ached cabble
	TH	16	Gully	(1) Rare		(2) C	Gilinon	(3) Frequ	ently	
1410	Deb Fa	17	Detached Rock or cabble	(1) Nothing		(S) 2	upported Stab			
Ì				(1) Granite			(3) Diabas			(5) Dacite
		18	Rock Name	(6) Schist	(7) S	Slate	(8) Linest	one (9) Schalstein	a (10) tuff
	Fal			(11) Tuffbre	eccie (U)	Sandston	e (13) Shale	(14) Budstone	
leninalaes	Rock 1			(15) Conglor	merate (16)		(17) Yolcan			
ľ	х Хо	19	Weathering Condition	(1) Fresh	· · · ·		lightly Weath			rend
Ì		20	Condition of Crack	(1) Sparse			egular			· · · · · · · · · · · · · · · · · · ·
		21	Direction of Crack	(1) Inclined	i to Mounta		Irregular In	climation (3) Inclined	o Slope
	neering Judgé- ment	22	Impact to Road	(1) LOW		(2) N	verage	(3) Iligh		
15	e do	23	Cause of Fall	۰. ــــــــــــــــــــــــــــــــــــ					te une l'ala le añolago e	
မြ	ئے۔۔۔۔	24	Counter Measure	<u> </u>						
	Sketc	h, etc.					1	Photo	No.	
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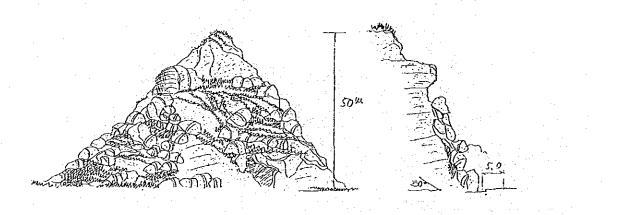
						·		Sheet No.	5-62
Route	2	MH (M-27)	Km. Post	705.200	Wi	idth	360 11	Region	VIL
	1	Kind of Slope	(1) Cut Slor	<u>xe</u>	2) Natural	Slope			
N S	2	Type of Fall	(1) Debris F	all	2 Rock Fa				
E all	3	Fallen Rock Size	(1) 26 ⁱⁿ >		2) 28"~ 9	5ð ^m	(37 56" <	<u>.</u>	
to to	4	Date Occured	Day				Year		
Evidence	5	Traffic Interruption Period	(1) 1 day >		2) 1 day~	- 7 days	(3) 7 day		مستند به وماند معرب ب
P 	6	Counter Measure Taken	(1) Structur	e ()	2 Removal	l of Falle	n Ruck		(3) Others
ω.	7	Rainfall Intensity/ Day	(1) 100 ^{川にの} ト				(3) 200 ¹¹⁴¹		(4) 300 ^{000 <}
	8	Slope Height	(1) 10 ¹¹¹ >		2) 10 ¹¹¹ ~ 3	30 ^m	(3) 30 ⁸⁸ ~~	50 ⁰⁰	(A) 50 ¹⁴¹ <
U	9	Slope Gradient	(1) 45° >		2) 45°~ (60*	127 60" <		(4) Overhung
doc	10	Degree of Saturation	UT Dry					ge .	(4) Spring
Existing Slope Condition	11	Surface Water Concentration	(1) None	and a state of the	(2) Low		(3) Itigh		
S CO S	12	Berin	(1) Existing	j Number () With ()	(2) Nothi	ng	
Ш. Ш	13	Slope Protection	(1) Structur	<u>e ()</u>	(2) Vegetat	t ion	(3) Nothi	щ	
	14	Drainage Facilities	(1) Existing		2) Nothing]			
	15	Natrix Condition	(1) Hard		2) Soft	<u>(3) lo</u>	ose (4) 1.0	ose with de	tached cabble
175	16	Gully	(1) Rare		2) Coimon		(3) Frequ	ient ly	
Debr	17	Detached Rock or cabble	(1) Nothing		(2) Support	ted Stably	/ (3) Suppo	n ted Unstab	ly
Con				(2) Dior					
!	18	Rock Name	(6) Schist	(7) Slate	e (8)) Linestor	ie (9	Ŋ Schalstei	n (18) Tuff
eica Fall			(11) Tuffbre	ccie (127 San	dstone (13)) Shale	(14) Mudstone	
			(15) Conglor	merate (16) Ma	sa (17)) Volcanic	lasties	н. На 1919 — П. 1	
Rock	19	Weathering Condition	(1) Fresh		(2) <u>Slight</u>	ly Weather	red (2)	Highly Weat	hered
	20	Condition of Crack	(1) Sparse		(2) Regula	r	Of Devel	oped	
	21	Direction of Crack	(1) Inclined	to Mountain	12 Irren	quìar Incl	lination (3) Inclined	to Slope
Engi- neering Judge- ment	22	Inpact to Road	(1) Low		2) Average	0	(3) High		
	23	Cause of Fall				· · · · · · · · · · · · · · · · · ·			
พัธรียื	24	Counter Measure	· · · · · · · · · · · · · · · · · · ·					·	
Sket	ch, etc.				·		Plieto	110.	· · · · · · · · · · · · · · · · · · ·



ĺ	Date of Survey		Day 7	Month 6	Year	984	Surveyor	1.1	WEEK	
		1.								

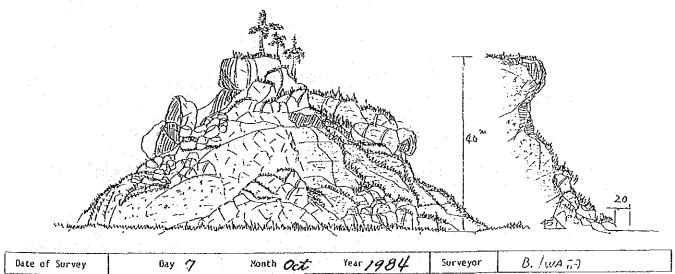
- 195 -

				en de la composition Angla de la composition	a Alexandro		Sheet No	. 8-62-1
Route		M.H (VIE - 28)	Km. Post 705.	600	Width	240 N	Region	TT
	1	Kind of Slove	Cut Slope	(2) Natura	1 Slope			
s	2	Type of Fall	(1) Debris Fall	PROCK F	a]]	6		
Fèlls	.3	Fallen Rock Size	(1) 2δ ^m >	(2) 28m~-	<u> 5 გ</u> ო	(Y 56" <	····	
of.	4	Date Occured	Day	Month		Year	a a caracteria de la carac	
Evidence	5	Traffic Interruption Period	(1) 1 day>	(2) 1 day		<u></u>		
vic	6	Counter Measure Taken	(1) Structure ()	() Remova	l of Falle	n Rock	(3) Ot	
ш 	1	Rainfall Intensity/ Day	(1) 100 ^{mm} >			(3) 200 ¹¹⁰⁰ - 300 ⁰⁰¹	(4) 30	pang ato d
	8	Slope Height	(1) 10 ^m >	(2) 10 ^m ~		(x) 30 ^m ~ 50 ^m	(4) 50	¶.<
ų.	9	Slope Gradient	(1) 45 >	(2) 45 ~	60	() 60 <	(4) Ov	erhung
do c	10	Degree of Saturation	(V) Ory	(2) Ket		(3) Seepage	(4) Spi	ring
Existing Slope Condition	11	Surface Water Concentration	(Li None	(2) Low		(3) High		
Con	12	8erm -	(1) Existing Number () With (<u> </u>	(P) Nothing		
ŵ	13	Slope Protection	(1) Structure ()	(2) Vegeta	tion	(Nothing		
	14	Drainage Facilities	(1) Existing (Nothing	a			· · · · · · · · · · · · · · · · · · ·
l s	15	Matrix Condition	(J) Hard	(2) Soft		(3) Loose (4) Loos	e with deta	iched cabble
on Debris Fall	16	Gully	(1) Rare	(2) Comon		(3) Frequently		
Condition De	17	Detached Rock or cabble	(1) Nothing .	(2) Support	ted Stably	(3) Supported Unsta	бју	
q			(1) Granite (2) Diorite	(3) Diaba	ise (4) /	Andesite (5) Dacite		
ຮັ	18	Rock Name	(6) Schist (7) Slate,	(8) Limes	stone (9) S	Schalstein (10) Tuff		
		hour hair,	(11) Tuffbreccie (12) S	andstone ((13) Shale	(14) Mudstone		
gica Fall	-	· · ·	(15) Conglomerate (16) M	asa ((17) Volcar	viclasties		
Geologica Rock fall	19	Weathering Condition	(1) Fresh	(2) Slight	y Weathere	d () Highly Weathe	red	
3 8	20	Condition of Crack	(1) Sparse	(2) Regular	•	(#) Developed		
	21	Direction of Crack	(1) Inclined to Fountain	(Irregul	ar Inclina	ition (3) Inclined	to Slope	·
ë i	22	Impact to Road	(1) LOW	() Average	•	(3) High		
Engi- neering Judge- ment	23	Cause of Fall						
5 ° ° ° ° °	24	Counter Measure						
Sketch	ı, etc.					Photo No.		

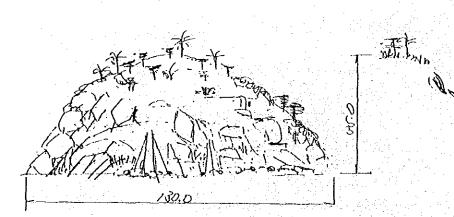


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Date of Survey Day 7	Month Oct Vear 19.84	Surveyor	B. IWATA

		d Page					a general	Sheet No.	5-63
Rou	ite		M.H (70 - 29)	Km. Post 7	08,200	Width	180 M	Region	<u>TT</u>
		1	Kind of Slope	(V Cut Slope	(2) Natural	Slope			
5		2	Type of Fall	(1) Oebris Fall	(V) Rock Fa	П	M		
Falls		3	Fallen Rock Size	(1) 20 ³¹ >	(2) 20 ^m ~ 5	6m	(5 56 ^m <		·
of.		4	Date Occured	Day	Month		Year		
Evidence		5	Traffic Interruption Period	(1) 1 day>	(2) 1 day ~	∼7 days	(3) 7 days <		
2 S		б	Counter Measure Taken	(1) Structure () (v) Removal	of Faller	n Rock	(3) Othe	ers
τu	н 1	7	Rainfall Intensity/ Day	(1) 100 ^{mm} >	(2) 100 ^{mm} ~		(3) 200 ^{mm} ~ 300 ^{mm}		
		8	Slope Height	$(1) 10^{m} >$	(2) 10 ^m ~	30 ^m	(30 ^m ~ 50 ^m	(4) 50 ^m	<
Ф		9	Slope Gradient	(1) 45°>	(2) 45°~	60	(V 60° <	(V Over	hung
do ja		10	Degree of Saturation	NV Dry	(2) Wet		(3) Seepage	(4) Spri	ng
Existing Slope Condition		11.	Surface Water Concentration	(N/ None	(2) Low		(3) High		
ist Con	[12	Berm	(1) Existing Numb	er () With (·)	(Nothing		
μ		13	Slope Protection	(1) Structure () (2) Vegetat	ion	(V) Nothing		
. •		14	Drainage Facilities	(1) Existing () (W Nothing				
15		15	Matrix Condition	() Hard	(2) Soft	· ·	(3) Loose (4) Lo	ose with detac	hed cabble
La la	Fall	16	Gully	(1) Rare	(2) Common		(3) Frequently	· · · · · · · · · · · · · · · · · · ·	
Condition De	ю .	17	Detached Rock or cabble	(1) Nothing	(2) Support	ed Stably	(3) Supported Uns	tably	
git		1947 1979 - 1979		(1) Granite (2)	Diorite (3) Diabas	se (4) A	Andesite (5) Daci	te	
3	1.1	18	Rock Name	(6) Schist (7)	Slate (6) Limest	tone (9) s	Schalstein (10) Tuf	f	
3.			NGCA DUNC	(11) Tuffbreccie	(N) Sandstone (13) Shale	(14) Mudstone		
010	191			(15) Conglomerate	(16) Masa (1	17) Volcan	niclastjes		
Geological	ť	19	Weathering Condition	(1) Fresh	(2) Slightly	<u>Weather</u>	d () Highly Weat	hered	
99	8 (20	Condition of Crack	(1) Sparse	(2) Recular		NO Developed		
		21.	Direction of Crack	(1) Inclined to H	ountain (🕅 Irregula	ar Inclina	ition, (3) Incline	d to Slope	
5u		22	Impact to Road	(1) Low	(2) Average		🚺 High		
Engi-	25.0	23	Cause of Fall	Open Cracks			·		
е Б	리온	24	Counter Measure						
Ske	tch,	etc.					Photo No.		



		승규가 가려 가지 않는다.	al e dal <u>e t</u>			н (1997) Алар		·	
	ه د سانونه او						<u> </u>	Sheet, No	5-63-1
Route	n Anna An	M + (M - 30)	Km, Post	708.6	00 Nidth	1	JO N	Region	Ţ <u>ZIII</u>
1	1	Kind of Slope	(N Cut Slope		(2) Natural Slo	pe	Standard († 1935) Geografie († 1935)		و می و میشود. موجود و می و می مانود در
5	2	Type of Fall	(1) Debris Fa	<u>11 </u>	(2) Rock Fall	و بند ها ما م	979 - 199 - 199 - 199		
Fall	3	Fallen Rock Size	(1) 26 ^{lit} >		<u>(2) 2δ^m∼ 5δ^m</u>		(x) 58 [™] ≤		ې د د د ۴ ۴ ه د کې چ ولوي د په د د د
مر	4	Date Occured	Day		Honth		Year		والمحادثة والمحادثة
Evidence -	5	Traffic Interruption Period	(1) 1 day >		(2) 1 day~7 d	lays	(3) 7 day	1997 - 1997 19 19 - 1997 - 1997 19 - 1997 - 1997 - 1997	
vid.	6	Counter Measure Taken	(1) Structure	1.	(8) Removal of	Fallen	Rock		(3) Other's
Ū.	7	Rainfall Intensity/ Dây	(1) 100 ¹¹⁸⁰ >		(2) 100 ⁰¹⁰ 200				
	8	Slope Height	(1) 10 ⁸⁰ >		(2) $10^{10} - 30^{10}$				(4) 50 ^m <
a	9	Slope Gradient	(1) 45° >		(2) 45°~~ 60°	ار در در در میکند.	(2) 60"		(4) Overhung
100 u	10	Degree of Saturation	(1) Dry		(2) Wet	دي. 1 12 م کري اور 1 19 م جو ريستان	(3) Scepa	idu	(4) Spring
Existing Slope Condition	11	Surface Water Concentration	(1) None		(2) Low		(3) 11 igh		
Con	12	Bern	(1) Existing		<u>) With ()</u>				
ω	13	Slope Protection	(1) Structure	<u> </u>	(2) Vegetation		Q. Hoth	ing	محمدة فروي مسجوما
	14	Drainage Facilities	(1) Existing		(2) Nothing				
	15	Matrix Condition	(1) Hard		(2) Soft (and the second second	(and the second	kitached cabble
ion Debris Fall	16	Gully	(1) Rare		(2) Соннол			(1) T. M.	al an
Condition Deb Fa	-17	Detached Rock or cabble	(1) Nothing		(2) Supported S		<u></u>		<u> </u>
ouo					orite (3) Dia				
- 1 1	18	Rock Name			ate (8) Lim			- こうし パーパー もだいとう	en e
dica Fall	<u> </u>			· · · · · · · · · · · · · · · · · · ·	indstone (.]@) Sha	a sea de la serie de la se	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	t) Mudstone	
Geological Rock Fall					lasa (17) Vol				فالمسعب مستنادرات
Ro	19	Weathering Condition	The part of the start of the		(2) Slightly He				
	20	Condition of Crack	(1) Sparse		(2) Regular				
	21	Direction of Crack	(1) Inclined	to Mountair	(2) Irregular		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		I to Slope
۲	22	Inpact to Road	(1) LOW		(2) Average		(3) High	يم برك مندر	بالمستعدية المستعد
Engi- neering Judge- ment	23	Cause of Fall	· · · · · · · · · · · · · · · · · · ·			<u> </u>			محجبا لأدمه مخصيصية وال
	24	Counter Measure			41 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		<u> </u>	<u></u>	
Sketc	h, etc.				· · · · · · · · · · · · · · · · · · ·		Photo	No.	

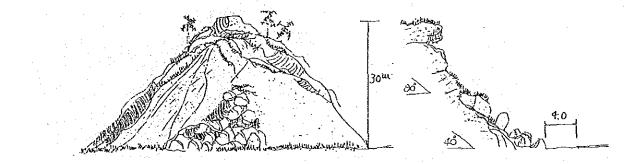


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· · · · ·	Date of Survey	Day 7	Month Q1	Year 17.54	Surveyor	A. /IVATA	1 A. A
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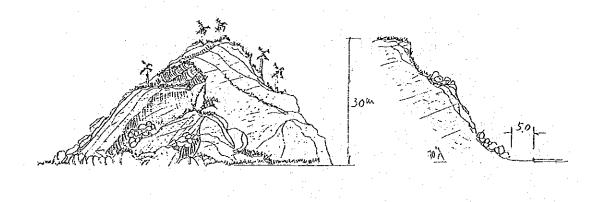
					Sheet No. 8-68
Ro	oute		H.H (712-31)	Km. Post 708.650 Width 60 M	Region 7711
		1	Kind of Slope	(V Cut Slope (2) Natural Slope	
s		2	Type of Fall	(1) Debris Fall (2) Rock Fall	
FALL		3	Fallen Rock Size	(1) $2\delta^{m} >$ (2) $2\delta^{m} \sim 5\delta^{m}$ ($5\delta^{m} <$	and the second second
0. 1		4	Date Occured	Day Month Year	
Evidence		5	Traffic Interruption Period	(1) 1 day> (2) 1 day ~7 days (3) 7 days <	
Pí v		6	Counter Measure Taken	(1) Structure () No Removal of Fallen Rock	(3) Others
α.		35 7 1	Rainfall Intensity/ Day	(1) 100 ^{mm} > (2) 100 ^{mm} ~ 200 ⁿ (3) 200 ^{mm} ~ 300 ^{mm}	(4) 300 ^{mm} <
_		8	Slope Height	(1) $10^{m} \ge (2) 10^{m} \sim 30^{m}$ (b) $30^{m} \sim 50^{m}$	(4) 50 ^m <
ų	2000 1910 - 1910 - 1910	9	Slope Gradient	(1) 45 > (2) 45 ~ 60 (3 60 <	(4) Overhung
do u	ad en j	10	Degree of Saturation	(V) Ory (2) Wet (3) Seepage	(4) Soring
Existing Slope Condition		u	Surface Water Concentration	(V None (2) Low (3) High	
Con		15	8erm	(1) Existing Number () With () (1) Nothing	
ŵ		13	Slope Protection	(1) Structure () (2) Vegetation (Nothing	
		14	Drainage Facilities	(1) Existing () (b) Nothing	
	<u>v</u>	15	Matrix Condition	(1) Hard (V Soft (3) Loose (4) Loose	with detached cabble
	Fall Fall	16	Gully	(1) Rare (2) Common (3) Frequently	and the state of the second
Condition	3	17	Detached Rock or cabble	(1) Nothing (2) Supported Stably NY Supported Unstab	ly
191				(1) Granite (2) Diorite (3) Diabase (4) Andesite (5) Dacite	
ŝ		18	Rock Name	(6) Schist (7) Slate (8) Limestone (9) Schalstein (10) Tuff	
3	=			(11) Tuffbreccie (12) Sandstone (12) Shale (14) Mudstone	Ì
50	Fåll			(15) Conglomerate (16) Masa (17) Volcaniclasties	
Geological	Rock	19	Weathering Condition	(1) Fresh (2) Slightly Weathered (3) Highly Weather	ed
Ö	ž	20	Condition of Crack	(1) Soarse (2) Regular (V) Developed	
		21	Direction of Crack	(1) Inclined to Fountain (M) Irregular Inclination (3) Inclined t	o Slope
DU I		22	Impact to Road	(1) Low (2) Average (3) High	
100	Judge- ment	23	Cause of Fall		
μūĕ	ΞĔ	24	Counter Measure		
Ske	etch,	etc.	and a state of the	Photo No.	



late of Survey	Day	7	Month Oct	Year 1.984	Surveyor	B. IWATA	
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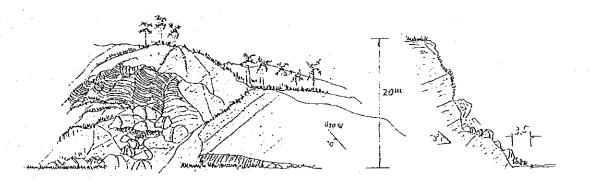
					· · · ·		and the second second	· .	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	1.1.1
					1 1			5	iheet No.	5-65
Route		MH(顶-32)	Xm. Post	709.	600	Width	120	N F	legion	VII
	ι	Kind of Slone	(Cut Slope		(2) Natur	1 Slope				
s	2	Type of Fall	(1) Debris Fal		(Rock	all			<u> </u>	
Falls	- 3 -	Fallen Rock Size	(1) 28 ^m >		1 26m~~	50 ^m	(3) 50 ^m <			
 0	4	Date Occured	Day		Nonth	1	Year			
Evidence	5	Traffic Interruption Period	(1) 1 day>		(2) 1 day	∼7 days	(3) 7 days <			
víd	6	Counter Measure Taken	(1) Structure)			n Rock		(3) Oth	
u ب	1	Rainfall Intensity/ Day	(1) 100 ^{mm} >	· · · · · · · · · · · · · · · · · · · ·	(2) 100 ^{mm}		(3) 200 ^{mm} ~ 300	ma	(4) 300	1.131
	8	Slope Height	$(1) 10^{m} >$		(2) 10 ^m 个	- 30 ^{fft}	1 30 m ~ 50m		(4) 50 ^m	
ચ	. 9	Slope Gradient	(1) 45 >		(2) 45 ~		(1 60 <		(Over	hung
de l'	10	Degree of Saturation	(Dry	· · · ·	(2) Wet	· .	(3) Seepage	· · ·	(4) Spr	ing
Existing Slope Condition	- u	Surface Water Concentration	(V) None		(2) Low		(3) High			
Con	12	Berm	(1) Existing Nu	mber () With (<u> </u>	(Y Nothing			·
ů.	13	Slope Protection	(1) Structure (<u> </u>	(2), Vegeta	ition	(D) Nothing			
	14	Drainage Facilities	(1) Existing ()	(V Nothin	10			an an taon an An taon an taon	<u> </u>
os Debris Fall	15	Matrix Condition	(1) Hard		12/ Soft	سىدەبورىدىمەر ب	(3) Loose (4)	.0058 W	ith detai	hed cabble
all	16	Gully	(1) Rare	<u></u>	(2) Common	<u>optika i</u>	(3) Frequently		<u> </u>	
<u>š</u> d	17	Detached Rock or cabble	(1) Nothing		(2) Suppor	ted Stably	(3) Supported U	istably	<u>elle (</u>	
Conditton De			(1) Granite (2) Diorite	e (3) Oiat	ase (4) A	Andesite (5) Dao	ite	an a	
ອັ 🛛	18	Rock Name	(6) Schist (7) Slate	(8) Lime	stone (9) S	Schalstein (10) Tu	lff		1.00
	.0	Index many	(11) Tuffbrecci	e (12)	ands tone	(NS) Shale	(14) Mudstone		1.00	
ogica Fell			(15) Conglomera	te (16)	lasa	(17) Yolcan	iclasties			<u></u>
Geo Jo Rock	. 19	Weathering Condition	(1) Fresh	- 	(2) Slight	ly Weathere	ed. (3) Highly Wea	thered		
9 X	20	Condition of Crack	(1) Sparse		(2) Regula	r	(V) Developed		<u> </u>	
	21	Direction of Crack	(1) Inclined to	Hountain	(2) Irregu	lar Inclina	ition () Inclin	ied to	Slope	
	22	Impact to Road	(1) low		(2) Averag	e	(A) High			· · · · · · · · · · · · · · · · · · ·
Engi- Nudge Ment	23	Cause of Fall				and a second second		<u> </u>		<u></u>
문동물론	24	Counter Measure					·			
Sketch,	etc.						Photo No.	-		· · · ·



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Date of Survey	Day 7	Month Oct	Year 1984 Surveyor	B, IWATA

CHECK TABLE OF SLOPE FAILURE

		the second second second					· · · · · · · · · · · · · · · · · · ·
	- 1 - 5 - 5 - 5 				·	Sheet No.	8-66
Route		M.H (VII - 33)	Km. Post 717.	700 Width	120 H	Region	亚
	l	Kind of Slope	(M Cut Slope	(2) Natural Slope			
ม เ. ย	2	Kind of Failure	(1) Nothing	Surface Failur	e (3) Deep Failure		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3	Size of Failure	(1) 50 ^{m3} >	$(2) 50^{m3} 500^{m3}$	(1) 500 ^{m3} ~ 2,000 ^m	³ (4) 2,00	0 ^{m3} <
+ 0	4	Date Occured	Day	Month 12	Year 1982		
0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5	Traffic Interruption Period	(1) 1 day >	\sim 1 day \sim 7 day			
0	6	Counter Measure Taken	(1) Structure () Re Removal of Sli	de Materials	(3) Othe	
у 11	7	Rainfall Intensity/ Day	(1) 100 mm >		(3) 200 ^{mm} ~ 300 ^{mm}	(4) 300 ^m	ⁿⁿ <
	8	Height	(1) $10^{m} >$	$(3)^{10^{m}} \sim 30^{m}$	(3) 30 ^m ~ 50 ^m	(4) 50 ^m	<
Existing Slope Condition	9	Gradient	(1) 45 >	(2) 45 ~ 60	(1) 50° <	(4) (ver	ոսոց
d a t	10	Berm	(1) Existing	Number ()	Width ()	Noth	ing
<u> </u>	11	Slove Protection	(1) Structure () (2) Vegetation	(V) Nothing		
	12	Hardness	(W Hard Rock	Soft Rock			
			(1) Granite (2) Die		(4) Andesite	(5) Dacite	(6) Schis
CCK CONGITION	13	Name	(7) Slate (8) Lii	restone (9) Schalste	in (10) Tuff	(11) Fuffore	
			(12) Sandstone (13) Shi (17) Yolcaniclasties	are (14) Audstone	(15) Conglomerate	(10) Masa	
Rock	14	Weathering Condition	(1) Fresh	(2) Slightly Weathered	(A) Highly Weather	ed (4) Near Soil	ly
50	15	Condition of Crack	(1) Soarse	(2) Regular	V) Developed		
ee ee	16	Direction of Crack	AV Inclined to Mounta	in (2) Irregular Incl	ination (3) inclined 't	o Slope	
- <u></u>	17	Thickness	(1) 5 ^m >	(2) $s^{m} \sim 10^{m}$	(3) $10^{m} \sim 20^{m}$	(4) 20 ¹¹	ς
Soil	18	Compactness	(1) Tight	(2) Slightly loose	(3) Loose		
<u> </u>	19	Degree of Saturation	N Drv	(2) Het	(3) Seeoage	(4) Spri	ng
Water Condition	20	Surface Water Concentration	(V) None	(2) LOW	(3) High		
a D	21	Orainage Facilities	(1) Existing (Nothing			
Logi Dudge- Ment Ment	22	Impact to Road	(1) Low	(1) Average	(3) High		
	23	Cause of Disaster	Deancrocks				
25.25	24	Counter Measure					
·	tc.	·····	······································		Photo No.		

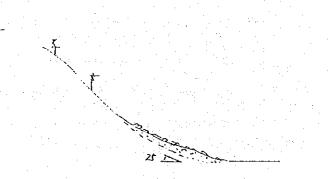


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Date of Survey	Day 7	Nonth Oct	Year 1984	Surveyor	3./WATA
	· · · · · · · · · · · · · · · · · · ·				

CHECK TABLE OF DEBRIS FLOW

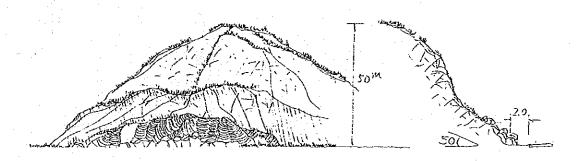
							Sheet No.	8-67
Route	ę	MH (W -36)	Xm. Post	718.100	uidth	20 H	Region	VI
	1	Existence of Depo- sitional Toe	(l) Nothing	(P) Exis	ting			
st	. 2	Size of Disaster	(1) 50 ^{m3} >	(\$ 50 ^{m3}	~ 500 ^{m3}	(3) 500 ^{m3} ~ 2,000 ^{m3}	(4) 2,000	0 ^{m3} <
Debiris	<u> </u>	Date Occured	Day	Mont	and the second second	Year Every year		
evidence of Flow	4	Traffic Interruption Period	(1) 1 day>	(2) I.da	y \sim 1 days	; (3) 7 days∠	e (
videi	. 5	Counter Measure Taken	(1) Structure () (3) Remo	val of Deoo	sit Materials	(3) Other	
ω	~ i	Rainfall Intensity/ Day	(1) 100 avn >			(3) 200 ⁸³⁷¹ ~ 300 ³³⁷¹		
	8	Average Gradlent	(1) 20*>	12/ 200 4				
Existing Stream Condition	9	Area of Basin	(V/ 0.24 xm ² >	(2) 0.24	1			
325	-10	Deposit on River Bed	(1) Nothing	1	1. The second	(3) Abudance		
	11	Plant Condition	(V 50% > Occuo			Forest (2) 50% <		
Engineering Judguest	<u>!</u> 2	Impact to Road	(1) Low	(M Aver.		(3) High		
i neci dque	13	Cause of Disaster						
53 31 31	14	Counter Measure						
Sketc	h, etc	•				Phoco No.	and the second s	





· [1	all station and	a far an tata an	1
Date of Survey	Day 7	Honth Oct	Tear 1984	Surveyor	3. IWATA	

· · · · ·	-			<u>.</u>		· · · •		Sheet	110. 3-62
Route		M.H(VII-37)	Km. Post	718.0	500	Width	180 M	Regio	
	1	Kind of Slope	Nº Cut Slo	pe	(2) Natura	1 Slope			
្ត	2	Type of Fall	(1) Debris	2. 2. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	Rock F				
Falls	3	Fallen Rock Size	(1) 2δ ^m >		(2) 20 ^m ~		(\$ 55 ^m <		· · · · · · · · · · · · · · · · · · ·
0. 1	4	Date Occured	Day		Month		Year		
Evidence	5	Traffic Interruption Period	(1) 1 day>		(2) 1 day	∼7 days	(3) 7 days <		: · · ·
2	6	Counter Measure Taken	(l) Structu	<u>re ()</u>	M Remova	l of Faller	n Rock	(3)	Others
ш 	· 7	Rainfall Intensity/ Day	(1) 100 ^{mm} >	•	(2) 100 ^{mm}	- 200 ^{mm}	(3) 200 ^{mm} ~ 300 ^m	^m (4)	300 ^{mm} <
	8	Slope Height	(1) 10 ^m >		(2) 10 ^m ~	30 ⁱⁿ	(1) 30 ^m ~ 50 ^m	(4)	50 ^m <
u U	9	Slope Gradient	(1) 45 >	<u>.</u>	(2) 45 ~	60	(60° <	M	Overhung
d c	10	Degree of Saturation	N Dry		(2) Wet		(3) Seepage	(4)	Spring
Existing Slope Condition	11	Surface Water Concentration	None	n de la constante Altra de la constante Altra de la constante	(2) Low	- 1	(3) High	•	
Corts	12	8erm	(1) Existin	g_Number () With (Nothing		
ພິ .	13	Slope Protection	(1) Structu	re ()	(2) Vegeta	tion	Nothing		
	14	Drainage Facilities	(1) Existin) ()	(Nothing	j	· · · · · · · · · · · · · · · · · · ·	1997 - 1997 1997 - 1997	
N	15	Matrix Condition	(1) Hard		(2) Soft	· · ·	(3) Loose (4) Lo	ose with d	etached cabb
on Debris Fall	16	Gully	(1) Rare		(2) Common	·	(3) Frequently		
Condition De	17	Detached Rock or cabble		<u> </u>			(3) Supported Uns		
i pi							ndesite (5) Daci		
ទ	18	Rock Name					chalstein (10) Tuf	f	
gical Fall			(11) Tuffbro	eccie (12) S	andstone (13) Shale	(14) Mudstone		
	ļ		(15) Conglo	merate (16) M	asa (17) Volcan	iclasties		
Geold Rock	- 19	Weathering Condition	(1) Fresn		(2) Slight	y Weathere	d (8) Highly Weat	hered	
ບີ ແ .	20	Condition of Crack	(1) Sparse		(2) Regular		(Developed		
	21	Direction of Crack	(1) Incline:	i to Pountain	(M. Irregul	ar Inclina	tion (3) Incline	d to Slope	
Engi- neering Judge- nent	22	Impact to Road	(1) Low		(V) Average	<u>.</u>	(3) High	<u>.</u>	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	23	Cause of Fall					·		
<u>шер</u> е	24	Counter Measure		·	······································				
Sketch,	etc.						Photo No.		

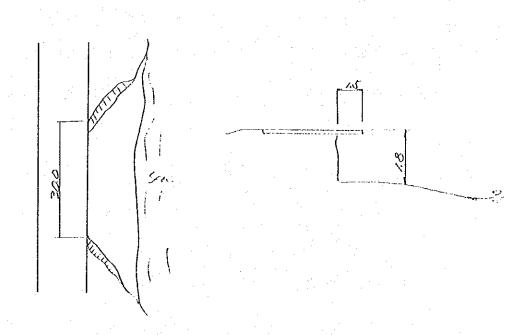


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Date of Survey	Day 7	Month Oct	Year 1984	Surveyor	B. IWATA	

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CHECK TABLE OF EMBANKHENT SLOPE FAILURE

		et al second de la construcción de	and the second	· · · ·				
							Shee La No ,	5-67-1
Route		11.11 (1 39-1)	Km. Post 721.	800	Width	SUN	Region	TTI_
· · ·		Kind of Slope	(1) Embankment Slope	(2) Natura	1 Slope (3) Overflow	Section (5)	Others
aru	2	Location	(1) Approach of Brid		nt to Rive	<u>r or Sea (3)</u>	Inside of Cu	n <mark>ve (</mark> 4) Others
ι. Γ	3	Size of Disaster	(1) 50 ^{m3} >	<u>(2) 50^{m3}~</u>	· 100 ^{m3} (3√100 ^{m3} <		
10 LL	4	Date Occured	Day	Month		Year		
ce of	5	Traffic Inter- ruption Period	(1) 1 day >	(2) 1 day-	~ 7 days	(3) 7 days <		
v i dence	6	Counter Measure Taken	(J) Only Fill	(2) Riprap		(3) Other St	riicture (5
ш ,	7	Rainfall Intensity/ Day	(1) 100 ^{mm} >	(2) 100 ^{mm}		(3) 200 ^{mkn}	300 ^{mm} (4)	300 ⁰⁸⁰ <
ado	- 8	Slope Height	(1) 5" >	(2) 5 ¹¹¹ ~ 10	0 ^m	(<u>3) 10¹¹¹ <</u>		
55	9	Slope Gradient	(W 45° >	(2) 45°~	60°	(3) <u>60° <</u>		
Existing Canditi		Surface Water Concentration	(J) None	(2) Low		(3) High		
x is Co		Slope Protection	(1) Nothing	(2) Vegeta	tion	(3) Riprap	(4) Other Sti	ructure ()
ш	12	Drainage Facilities	() Nothing	(2) Existin	ng		and the second	
ι Σ	13	Impact to Road	(1) Low	(2) Average	e	(3)High		
Engi- neering Judge- Tent	14	Cause of Disaster	(1) Concentration of	Surface Water	r (2) River	r Stream (3)	Sea Wave (4	Others
с е д е П с р е	15	Counter Neasure	• • • •					•.
Sketch,	etc.			1			Photo No.	

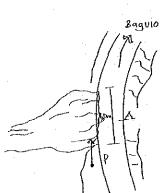


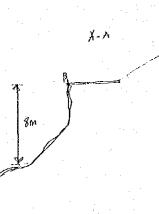
Bate of Survey			
	Day of Month A Year could	Surveyor <i>k</i> .	

NAGUILIAN ROAD

CHECK TABLE OF EMBANKHENT SLOPE FAILURE

- <u>-</u>						Sheet. No.	B-: 86-1
Route		N(IN-3-2)	Km. Post 276.3	foo Width	30 M	Region	L
		Kind of Slope	(L) Enbankment Slope	(2) Natural Slope (3) Overflow	Section (5)	Others
e e	2	Location	(1) Approach of Bridge			Inside of Ci	irve (4) Others
110	3	Size of Disaster	(1) 60 ^{m3} >	(2) 50 ^{m3} ~ 100 ^{m3} (
ι. L	4	Date Occured	Day 27~30	Month Auy,	Year 18	84. hy	Haring
ce of		Traffic Inter- ruption Period	(1) 1 day >	(2) 1 day ~ 7 days		v	•
v î dence	6	Counter Measure Taken	(1) Only Fill	(2) Riprap	(3) Other St	ructure (
ιώ Ι	7	Rainfall Intensity/ Day	(1) 100 ^{mn} >	(2) 100 ¹⁰¹¹ ~ 200 ¹¹¹¹	(3) 500 ₀₀₀ ~	300 ^{ma)} (\$)	300 ^{mm} <
e d	8	Slope Height	(1) 5 ^m >	$(a/5^{m} \sim 10^{m})$	(3) 10 ^m <		
s1a on	9	Slope Gradient	(1) 45° >	(2× 45°~ 60°	(3) 60° <		
Existing Slope Condition		Surface Water Concentration	(1) None	(2/ LOW	(3) High		
X is	11	Slope Protection	(W Nothing	(2) Vegetation	(3) Riprap	(4) Other St	ucture ()
<u>.</u>	12	Drainage Facilities	(N/Nothing	(2) Existing			
С.	13	Impact to Road	(1) Low	(2) Average	(3) High		
Engi- neering Judge- ment	14	Cause of Disaster	(N Concentration of Su	irface Water (2) Rive	r Stream (3)	Sea Wave (4	Others
л С С С С С С С С С С С С С С С С С С С	15	Counter Measure					
Sketch	etc.					Photo No.	

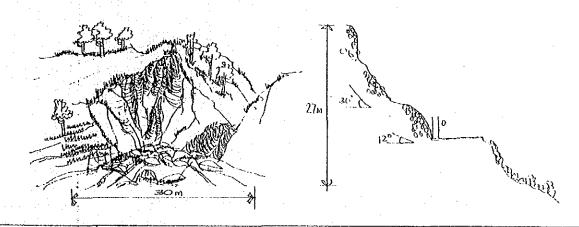




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Date of Survey	Day 23	Nonth Gc. C 1	lear 1984	Surveyor	B. /WATA
				· · · · · · · · · · · · · · · · · · ·	······································

CHECK TABLE OF SLOPE FAILURE

	lan i Mariana (m. Aria) (d						B-86-2					
	N(IN-4-1)	Km. Post	281.500	Nidth	30 H	Region	I					
1	Kind of Slope	(IV Cut Slop)e (2)	Natural Slope		- .						
2	Kind of Failure			Surface Failure	(M Deep Fai	lure	·····					
3	Size of Failure	$(1) 50^{103} >$	(2)	50 ^{IN3} ~ 500 ^{IN3}	(1× 500 ^{m3} ~;	2.000 ⁰¹³ (4) 2	,000 ^{III3} <					
4	Date Occured	Day	Day 27~30 Konth Aug, Year 1986 by Mainy W1 day > (2) 1 day~7 days (3) 7 days.									
5	Traffic Interruption Period											
6	Counter Measure Taken	(1) Structur										
1	Rainfall Intensity/ Day		(1) 100 mm > (2) $100^{800} \sim 200^{800}$ (3) $200^{800} \sim 300^{100}$ ($\frac{1}{3}$) $300^{100} <$									
8	lleight		(2)	10 ¹¹¹ ~ 30 ¹¹⁴	(3) 30 ¹⁰ -~ 50	n (4) (50 ¹¹¹ <					
9	Gradient	$(1)^{45^{\circ}} > (2)^{45^{\circ}} \sim 60^{\circ} (3)^{60^{\circ}} < (4)^{60^{\circ}} Overhung$										
10	Berm	(1) Existing where (1) Width (1) (2) Nothing										
11	Slope Protection	(1) Structure () (2)/Vegetation (3) Nothing										
12	Hardness	(1) Hard Rock (2)/Soft Rock										
		(1) Granite (2) Diorite (3) Diabase (4) Andesite (5) Dacite (6) Schis										
13	Name	(7) Slate (8) Limestone (9) Schalstein (10) Tuff (11) Tuffbreccia										
		(12) Sandstone (13) Shale (14) Mudstone (15) Conglomerate(16) Hasa (17) Volcaniclastics										
14	Weathering Condition			Keathered		5	learly joil					
15	Condition of Crack											
16	Direction of Crack	(1) inclined	<u>to Mountain</u>	(2) Irregular Inc	lination (3)	Inclined to Sl	оре					
17	Thickness	() s ^m >	(2)	$5^{m} \sim 10^{m}$	(3) 10 ^{HI} ~ 20 ^H	" <u>(4) 2</u>	20 ^m <					
18	Compactness	(1) Tight										
19	Degree of Saturation	(1) Dry	(2)	Ket	() Section	(1) 9	pring					
20	Surface Water Concentration	(1) None			(W High							
21	Drainage Facilities	(1) Existing	() (2)	Nothing								
22	Impact to Road	(1) LOW	(१)	Average	(3) High							
23	Cause of Disaster											
24	Counter Measure											
	5 6 7 10 11 12 13 13 13 14 14 15 16 17 18 19 20 21 22 23	3 Size of Failure 4 Date Occured 5 Traffic Interruption Period 6 Countor Measure Taken 7 Rainfall Intensity/ Day 8 Infall Intensity/ Day 8 Height 9 Gradient 10 Berm 11 Slope Protection 12 Hardgess 13 Name 14 Weathering Condition 15 Condition of Crack 16 Direction of Crack 17 Thickness 18 Compactness 19 Degree of Saturation 20 Surface Water Concentration 21 Drainage Facilities 22 Impact to Road 23 Cause of Disaster 24 Counter Measure	3 Size of Failure (1) 50 ^{III3} > 4 Date Occured Day 5 Traffic Interruption Period (1) 1 day > 6 Counter Measure Taken (1) Structum 7 Rainfall Intensity/ Day (1) 100 mm = 8 Meight (1) 10 ^{III} > 9 Gradient (1) 45° > 10 Berm (1) Existing 11 Slope Protection (1) Structur 12 Hardness (1) Hard Roc 13 Name (7) Slate 14 Weathering Condition (1) Fresh 15 Condition of Crack (1) Inclined 14 Weathering Condition (1) Fresh 15 Condition of Crack (1) Inclined 17 Thickness (1) Inclined 18 Compactness (1) Tight 19 Degree of Saturation (1) Dry 20 Surface Mater Concentration (1) None 21 Drainage Facilities (1) Low 23 Cause of Disaster (1) Low 24 Counter Measure	3Size of Failure(1) $50^{013} >$ (2)4Date OccuredDay $27 \sim 30$ 5Traffic Interruption Period($\sqrt{1}$ day >(2)6Counter Measure Taken(1) Structure ()($\sqrt{4}$ 7Ra infall Intensity/ Day(1) 100 mm >(2)8Height(1) $10^{m} >$ ($\sqrt{45^{m}} >$ 9Gradient($\sqrt{45^{m}} >$ (2)10Berm(1) Existing NumeNume11Slope Protection(1) Structure ()($\sqrt{4}$)12Hardness(1) Hard Rock($\sqrt{4}$)13Name(1) Granite(2) Dior it13Name(1) Structure ()($\sqrt{4}$)14Weathering Condition(1) Fresh(2)15Condition of Crack(1) Inclined to Mountain17Thickness($\sqrt{4}$ Structure18Compactness(1) Tight(2)20Surface Water Concentration(1) None(2)21Drainage Facilities(1) Existing ()($\sqrt{4}$)22Impact to Road(1) Low($\sqrt{4}$)23Cause of Disaster24Counter Measure	3 Size of Failure (1) $50^{013} >$ (2) $50^{013} \sim 500^{013}$ 4 Date Occured Day $27 \sim 30$ Nonth 4.4 (2, 6) 5 Traffic Interruption ($\sqrt{1}$ day > (2) 1 day ~ 7 days 6 Counter Measure Taken (1) Structure () ($\frac{1}{2}$ Removal of S1 ide 7 Rainfall Intensity/ (1) 100 mm > (2) 100 ^{mm} 200 ^{mm} Day (2) 100 ^{mm} 200 ^{mm} (1) 100 mm > (2) 100 ^{mm} 200 ^{mm} 9 Gradient (1) $45^{\circ} >$ (2) $45^{\circ} \sim 60^{\circ}$ 10 Berm (1) Existing Number () 11 Slope Protection (1) Structure () ($\frac{1}{2}$ Vegetation 12 Hardness (1) Hard Rock ($\frac{1}{2}$ Soft Rock (1) Granite (2) Diorite (3) Diabas (1) Granite (2) Diorite (3) Diabas (1) Structure (1) Shale (14) Mudsto (17) Slate (8) Limestone (9) Schals (12) Sandstone (13) Shale (14) Mudsto (17) Volcaniclasties 14 Weathering Condition (1) Fresh (2) Slightly Keathered 15 Condition of Crack (1) Sparse (2) Regular 16 Direction of Crack (1) Sparse (2) Regular 17 Thickness (1) Tight (2) Slightly loose 19 Degree of Saturation (1) Dry (2) Ket 20 Surface Nater Concentration (1) Existing () ($\frac{1}{2}$ Nothing 22 Impact to Road (1) Low (R) Average 23 Gause of Disaster 24 Counter Measure	3 Size of Failure (1) $50^{103} > (2) 50^{103} - 500^{103}$ (1/ $500^{103} - 1$ 4 Date Occured Day $27 \sim 30$ Nonth Aug, Year / 3 5 Traffic Interruption (1/1 day > (2) 1 day ~ 7 days (3) 7 days 6 Counter Measure Taken (1) Structure () (1/2 Removal of Slide Materials 7 Rainfall Intensity/ (1) 100 mm > (2) $100^{010} - 200^{010}$ (3) $200^{010} - 00^{010}$ 8 Height (1) $10^{11} > (2/10^{110} - 30^{01})$ (3) $200^{010} - 50^{010}$ 9 Gradient (1/245° > (2) $45^{\circ} \sim 60^{\circ}$ (3) $60^{\circ} < 10^{\circ}$ 10 Berm (1) Existing Number () Midth (11 Slope Protection (1) Structure () (2/Vegetation (3) Mothing 12 Hardness (1) Hard Rock (2/Soft Rock (1) Granite (2) Diorite (3) Diabase (4) And (7) Slate (8) Limestone (9) Schalstein (10) inf (12) Sandstone (13) Shale (14) Mudstone (15) Com (17) Volcaniclasties 14 Meathering Condition (1) Fresh (2) Slightly (1/1111/1) for 15 Condition of Crack (1) Sparse (2) Regular (5/Develope 16 Direction of Crack (1) Inclined to Mountain (2/Irregular Inclination (3) 17 Thickness (1/25 ^m > (2) $5^{10} \sim 10^{10}$ (3) $10^{10} \sim 20^{10}$ 18 Compactness (1) Tight (2) Slightly loose (2/Lonson 19 Degree of Saturation (1) Dry (2/Wet (1/25) Slightly loose (2/Lonson 19 Degree of Saturation (1) Dry (2/Wet (1/25) Slightly loose (2/Lonson 19 Degree of Saturation (1) Dry (2/Wet (1/25) Slightly loose (2/Lonson 19 Degree of Saturation (11) Dry (2/Wet (1/25) Slightly loose (2/Lonson 19 Degree of Saturation (1) Dry (2/Wet (1/25) Slightly loose (2/Lonson 19 Degree of Saturation (1) Dry (2/Wet (1/25) Slightly loose (2/Lonson 19 Degree of Saturation (1) Dry (2/Wet (1/25) Slightly loose (2/Lonson 19 Degree of Saturation (1) Dry (2/Wet (1/25) Slightly loose (2/Lonson 19 Degree of Saturation (1) Dry (2/Wet (1/25) Slightly loose (2/Lonson 19 Degree of Saturation (1) Dry (2/Wet (1/25) Slightly loose (2/Lonson 19 Degree of Saturation (1) Dry (2/Wet (2/15) Slightly loose (2/15) Slig	3 Size of Fathure (1) $50^{103} > (2) 50^{103} - 500^{103}$ (1/ $500^{103} - 2.101)^{103}$ (a) 2 4 Date Occured Day 27~30 Nonth Aug, Year 778 k Aug 5 Traffic Interruption (1/1 day > (2) 1 day~7 days (3) 7 days · 6 Counter Measure Taken (1) Structure (1) (1/2 Removal of Silide Materials (3) (2) (3) 7 days · 6 Counter Measure Taken (1) Structure (1) (1/2 Removal of Silide Materials (3) (2) (3) 7 days · 7 Rainfall Intensity/ (1) 100 mm > (2) 100 ⁰⁰⁰ (3) 200 ⁰⁰⁰ - 300 ⁰⁰⁰ (4) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2					

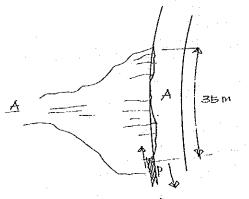


Date of Survey	Day 23	Month Oct	Year 1984	Surveyor	B. IWATA	
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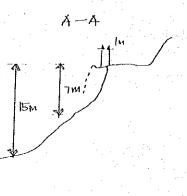
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CHECK TABLE OF EMBANKHENT SLOPE FAILURE

	· · ·	an Anglastan ang ang ang Anglastan ang ang ang ang ang ang	Sheet. No. 8-56-3
Route		N(IN-4-4)	Km. Post 286,600 Width 35 M Region I
	1	Kind of Slope	(/YEmbankment Slope (2) Natural Slope (3) Overflow Section (5) Others
a 	2	Location	(1) Approach of Bridge (2) Adjacent to River or Sea (3) Inside of Curve (1) Others
11	3	Size of Disaster	$(1) \ 50^{m3} > (4) \ 50^{m3} \ (3) \ 100^{m3} \ (3)$
ц. Ц	4	Date Occured	Day 27~30 Month Aug, Year 1984 by Maring
ce of	5	Traffic Inter- ruption Period	(1) 1 day > (2) 1 day ~ 7 days (3) 7 days <
vidence	6	Counter Measure Taken	(1) Only Fill (2) Riprap (3) Other Structure ()
ш́.	7	Rainfall Intensity/ Day	
ų	8	Slope Height	(1) $5^m >$ (2) $5^m \sim 10^m$ (3) $10^m <$
io Lo	9	Slope Gradient	(1) $45^{\circ} >$ (2) $45^{\circ} \sim 60^{\circ}$ (3) $60^{\circ} <$
isting Slope Condition	10	Surface Water Concentration	(1) None (2) Low (1) High
EX is	11	Slope Protection	(1) Nothing (2) Vegetation (3) Riprap (4) Other Structure ()
ш́	12	Drainage Facilities	(N Nothing (2) Existing
5	13	Impact to Road	(1) Low (2) Average (3) High
Engi- neering Judge- ment	14	Cause of Disaster	(A) Concentration of Surface Water (2) River Stream (3) Sea Wave (4) Others
2528	15	Counter Measure	
Sketch,	etc.		Photo No.



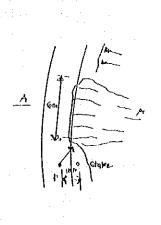
Baguio



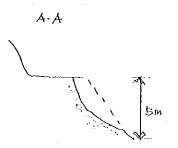
					and an	
Date of Survey	Day Z	3 Month	Ort Ye	ar 1984	Surveyor	B. /WATA

CHECK TABLE OF EMBANKHENT SLOPE FAILURE

n an						Sheet, No.	B-86-4
Route		N(IN-4-S)	Km. Post 5	287,800 Width	6 M	Region	I
	1	Kind of Slope	(VEnbankment Sl			/	
ilure	2	Location	(1) Approach of B $(N'_{50}m^3 >$	(2) Adjacent to Riv (2) 50 ^{m3} ~ 100 ^{m3}		Inside of Cu	rve (4) Others
Fail	3	Size of Disaster	Day 27~3			14 h	Haring
o t	5	Traffic Inter- ruption Period	(1) 1 day >	(2) 1 day ~ 7 days			/V
Evidence	6	Counter Measure Taken	(1) Only F111	(2) Riprap	(3) Other Str	ructure ()
ŵ	7	Rainfall Intensity/ Day		(2) 100 ^{mm} ~ 200 ^{mm}		300 ^{mn1} (4)/	300 ^{nxn} <
e	8	Slope Height	(√ 5 ^m >	(2) $5^{m} \sim 10^{m}$	(3) 10 ^m <		
lo lo	9	Slope Gradient	(1) 45° >	(2V/45°~ 60°	(3) 60° <		
isting Slope Condition	10	Surface Water Concentration	(1) None	(2) Low	(3) High	:	
100	11	Slope Protection	(W Nothing	(2) Vegetation	(3) Riprap	(4) Other Str	<u>ructure ()</u>
ພ	12	Dråinage Facilities	(N/Nothing	(2) Existing			
5	13	Impact to Road	(1) Low	(à/Average	(3) High		
Engi- neering Judge- ment	14	Cause of Disaster	(N Concentration	of Surface Water (2) Riv	ver Stream (3)	Sea Wave (4)	Others
E E E E	15	Counter Measure					
Sketcł	ı, etc.					Photo No.	

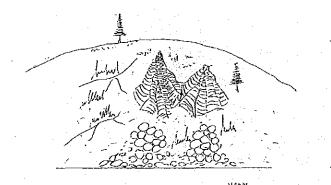


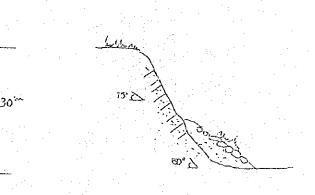
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Date of Survey	Day 23 Month Oct	Year 1984	Surveyor	BIWATA
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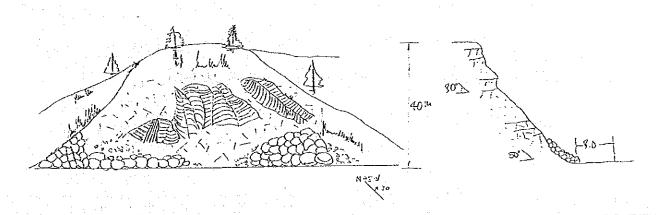
		and the second		An example of the second	1. A 4. A	1		· · · · · · · · · · · · · · · · · · ·	the state of the s
	. ÷ .		an Albania. Ar Anglaiste	in the same status (they are grade as				Sheet N	D. B-87
Route		N-(IN-5)	Xm. Post	288,30	0	Width	20 M	Region	Ţ
	ı	Kind of Slope	W cut st)çe	(2) Natu	al Slope	generation for the second second		
<u>,</u>	2	Type of Fall	(1) Debris	Fall	(2) Rock				· · · · · · · · · · · · · · · · · · ·
	3	Fallen Rock Size	(1) 20 ^m >		(2) 20m	58 ^m	(3) 56 ^m <		
5	4	Date Occured	Day		Mont	<u>v s s s s s s s s s s s s s s s s s s s</u>	Year	1. N. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	
	5	Traffic Interruption Period	(1) 1 day>	•	(2) 1 da	$1 \sim 7$ days	(3) 7. days <		
	6	Counter Heasure Taken	(1) Struct	ire ((a) Remo	al of Falle	n Rock	(3) 01	and the second se
د	7	Rainfall Intensity/ Day	(1) 100 ^{mm} >			<u>e</u>	(3) 200 ^{mm} ~ 300 ^m)0 ^{,mm} <
	8	Sloge Height	(1) 10 ^m >		(2) 10 ^m	<u>~ 30^m</u> ~ 60	(b) 30 ^m ~ 50 ^m	(4) 50) ^m <
.	.9	Slope Gradient	(1) 45 >		.(2) 45 ~	~ 60 [°]	(31 60° <	(4) 0	verhung
1) - C	10	Degree of Saturation	(1) Dry		(2) Wet		(3) Seepage	(4) Sr	oring
Condition	11	Surface Water Concentration	(1) None		(2) Low		(B) High		
Con	- 12	3erm	(1) Existi	ig Number () With ()	(W Nothing		e gatif
с э	13	Slope Protection	(1) Structu	ire ()_	(2) Vegel	ation	(3) Nothing	· · · · · · · · · · · · · · · · · · ·	
	14	Orainage Facilities	(1) Existin	ig ()	(2) Noth	ng			
~	15	Matrix Condition	(1) Hard				(3) Loose (4) Lo	oose with del	ached cabb
Debri Fall	16	Gully	(1) Rare		(2) Commo	in	(3) Frequently		
	17	Detached Rock or cabble	(1) Nothing		(2) Suppo	rted Stably	(3) Supported Uns	tably	
De			(I) Granite	(2) Diorite	(3) Oia	base (4)	Andesite (5) Daci	ite	
	18	Rock Name	(6) Schist	(7) Slate	(8) Lin	estone (9)	Schalstein ()0) Tur	f	
		NOCA HANC					(14) Mudstone	tan an a	a di second
Fa))			(15) Congle	merate (16) M	asa	(17) Volcar	niclastięs		· · · · · · · · · · · · · · · · · · ·
Rock Fall	19	Weathering Condition	(1) Fresh		(2) SI iai	itly Weather	ed (V) Highly Weat	hered	
8	20	Condition of Crack	(1) Sparse		(2) Regul	ar	(3) Developed		
	21	Direction of Crack	N/ Incline	d to Hountain	(2) Irreg	ular Inclina	ition (3) Incline	d to Slope	· · · · · · · · · · · · · · · · · · · ·
δų.	22	Impact to Road	(1) Low		(2) Avera	qe	(3) High		
neering Judge- ment	23	Cause of Fall		<u></u>					
Эс о Эс о Эс	24	Counter Measure			<u>, , , , , , , , , , , , , , , , , , , </u>				
Sketch,	etc.				· · · · · · · · · · · · · · · · · · ·		Photo No.		





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Date of Survey	Day 22, MO	nth Cet 1	ear 1984	Surveyor	D. TUATA
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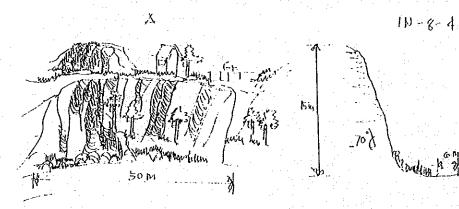
•						· ·		Sheet	No: 3-38
80	oute		N (IN-7)	Xm. Post	zff, 700	Width	SD H	Region	I
		1	Kind of Slope	M Cut Slope	(2) Natur	al Slope			
s	· * •	2	Type of Fall	(1) Debris Fall	(2) Rock	Fall_			
Fa 1		3	Fallen Rock Size	(1) 28 ^m >	(2) 26 ^m ~	- 56 ^m	(3/ 50 ^m <		1. E.
40	an Art	4	Date Occured	Day	Month		Year		
Evidence		5	Traffic Interruption Period	(1) 1 day>	(2) 1 day	~7 days	(3) 7 days <		
< 10		6	Counter Measure Taken	(1) Structure () (2) Remov	al of Faller)thers
ι		7	Rainfall [ntensity/ Day	(1) 100 ^{mm} >		~ 200***	(3) 200 ^{mm} 300 ^{mm}		300 ^{#101} <
		8	Slope Height	(1) 10 ^m >	(2) 10 ^m	~ 30 ^m	(3) 30 ^m ~ 50 ^m	(4)	50 ^m <
J. D		9	Slope Gradient	(1) 45 >	(2/ 45°~	<u>- 60</u>	<u>(3) 60 <</u>	(4) (lverhung
do u	-	10	Degree of Saturation	(V) Dry	(2) Wet		(3) Seepage	. (4) :	ipring
Existing Slope		11	Surface Water Concentration	(V) None	(2) Low		(3) High		
1st	5 -	12	8erm	(1) Existing Numb	er () With ()	Nothing		
μ <i>ω</i> ΄.		13	Slope Protection	(1) Structure () (2) Veget	ation	(V) Nothing	· .	
		14	Drainage Facilities	(1) Existing () (2) Nothi	no -		· ·	
	vi	15	Matrix Condition	UT Hard	(2) Soft		(3) Loose (4) Loo	ose with de	tached cabble
	Debris Fall	16	Gully	(1) Rare	(2) Commo	<u>n</u>	(3) Frequently		
Condition	<u>م</u>	17	Detached Rock or cabble	(1) Nothing	(2) Suooo	rted Stably	(3) Supported Unst	tably	
15					the state of the first state of the state of the	and the second	Indesite (5) Daci		
ı.		18	Rock Name	(6) Schist (7)	Slate (8) Lim	estone (9) S	ichalstein (18) Tuf	f.	
[8]	2			(11) Tuffbreccie	(12) Sandstone	(13) Shale	(14) Mudstone		1
ogical	Fall				(16) Masa			<u> </u>	. _
Geo 1	Rock	19	Weathering Condition	(W Fresh			ed (3) Highly Weath	hered	
Ö	α.	20	Condition of Crack	(1) Sparse	(2) Regul		(b) Developed		
		21	Direction of Crack	(1) Inclined to N			ition (3/ Incline	d to Slove	·
1.0	ກ 	22	Invact to Road	(1) Low	(2) Avera	ge	(3) High		
161	Judge- ment	23	Cause of Fall		· . ·	· · · · · · · · · · · · · · · · · · ·		· · · · · · ·	
<u>1</u> ui č	- 7 - E	24	Counter Measure	<u> </u>			· · · · · · · · · · · · · · · · · · ·		
Sk	etch,	etc.	· 	- 			Photo No.		



ĺ	Date of Survey	Day 23	Nonth Cet	Year 1984	Surveyor	B. IWATA	
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CHECK TABLE OF SLOPE FAILURE

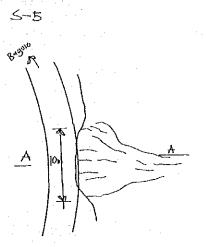
÷.							Sheet No.	B-58-1
Route		N(IN-8-4)	Km. Post	291,000	Width	50 M	Region	I
	1	Kind of Slope	(N/cut slo	pe (b) Natur	ral Stope			e Alighten die see die see weersteren die see die s
ย	2	Kind of Failure	(1) Nothing	(dy surfa	ice Fallure	(3) Deep Fal	lure	
Failure	3	Size of Failure	(1)/50113 >	(2) 50 ¹¹¹³ /	~ 500 ¹⁰³	(3) 500 ¹¹¹³ ~~;	2,000 ⁰⁰³ (4)	2,000 ⁰³
	4	Date Occured	Day	17-30 Kontl	h Aug	Year 19	84 ly	Haring
ice of	5	Traffic Interruption Period	(1) 1 day >	(2) 1 day	y∼7 days	(3) 7 days <	an a	
É v i dence	6	Counter Measure Taken	(1) Structur	re () (27 Remov	val of Slid	e Haterials		Others
ь М	7.	Rainfall Intensity/ Day	(1) 100 mm			(3) 200 ¹¹⁸⁴		
e		lleight	$(1) 10^{m} >$	(1) 10 ^m ~		(3) 30 ⁶⁴ ··· 50	" (1)	50 ¹¹¹ <
E e e	9	Gradient	(1) 45° >	(2) 45°C	- 60°	(3) 60" <	(4)	Over hung
Existing Slope Condition	10	Berm	(1) Existing	g Nukbér ()	_Nidth () (t/	Nothing
~~°S	11	Slope Protection	(1) Structur	re () (3/ Yene	tat ion	(3) Nothing	la constantina.	
	12	Hardness	(1) Hard Ro	ck (1) Soft	Rock	ر. را الثانية والالية مسترسب		باری. چ دہ می ر در م
Geological Condition Rock	13	Name	(1) Granite (7) Slate (12) Sandsto (17) Volcan	(8) [Inestone one (13) Shale	(9) Schal	stein (14)/1uf	r (11)	Tuffbreccia
ical (Rc	14	Weathering Condition	(1) Fresh	(2) SI igi	ntly hered	(Witghty H		Nearly Soil
	15	Condition of Crack	(1) Sparse-	(2) Regu	lar	(V) Deve lope	a in the second	
8	16	Direction of Crack	(1) Incline	d to Mountain (1) In	regular Im	climition (3)	Inclined to S	lope
12	17	Thickness	(1) 5 ⁰¹ >	(2) 5 ^m ~	10 ^m	(3) H ¹¹¹ ~ 20	m (4)	20 ⁸¹ <
<u>s</u>	18	Compactness	(1) Tight	(2) SI igi	itly loose	(3) Loose		
, u	19	Degree of Saturation	(IV Dry	(2) Wet		(3) Seepage	(4)	Spr ing
Kater Condition	20	Surface Water Concentration	(1) None	(WLOW	· · · · · · · · · · · · · · · · · · · ·	(3) IIigh		
<u> </u>	21	Drainage Facilities	(1) Existing	g () (2) Noth	Ing			
5 L	22	Impact to Road	(1) LOW	(2) Avera	age	(3) High		مستحدي وراجا والم
Judge- ment	23	Cause of Disaster						<u> </u>
itse	24	Counter Measure	L			an a sea a se		· · · · ·
Sketc	h, etc.			· · ·		Photo No.	11 N. 17	



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Date of Survey	Day 23	Month Cel	Ypar 1984	Surveyor	B. IWATA	
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				taria Artes Serence and Artes			Sheet No.	B-88-2
Route		N(IN-8-5	Km. Post	291.050	Width	10 M	Region	J
Failure	2	Kind of Slope Location Size of Disaster	(1) $50^{m3} > 10^{m3}$	f Bridge (2) Adjac (a) 50 ^{m3}	cent to River ~ 100 ^{m3} (3	or Sea (3) 3) 100 ^{m3} <		rve (4) Others
of	5	Date Occured Traffic Inter- ruption Period	Day 27^ (1) 1 day >		Aug, ~ 7 days (4 by	Haring
Evidence		Counter Measure Taken Rainfall Intensity/ Day	(1) 0nly Fill (1) 100 ^{nun} >	(2) Ripra (2) 100 ^m		(3) Other Sti (3) 200 ^{mm} ~ ;	ructure (300 ^{mni} (¥) 300 ^{nko} <
ope			(1) 5 ^m >	(2) 5 ^m ~		()/10 ^m <		·
isting S1(Condition	10	<u>Slope Gradient</u> Surface Water Concentration	(1) 45° > (1) None	(2)/45°~ (2)/Low		(3) 60° < (3) High		
EX 1ST COL		Slope Protection Drainage Facilities	(1) Nothing (NV Nothing	(2) Veget (2) Exist		(3) Riprap	(4) Other Str	ructure ()
5 <u>-</u>			(1) Low			(3) High		
Engi- neerin Judge- ment		Cause of Disaster Counter Neasure	(N) Concentrat	ion of Surface Wal		Stream (3)	Sea Wave (4)	Others
Sketch	etc.						Photo No.	



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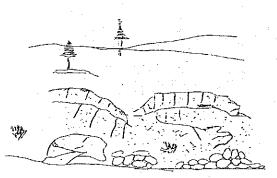
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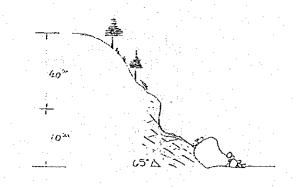
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Date of Survey	Day 23	Month CAT	Year 1984	Surveyor	B, IWATA	
·····					•	

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CHECK TABLE OF FALL

			an a	
			SI	heet No. B-39
Route		N (IN-10)	Xm. Post 293,500 Width 40 M R	egion I
	1	Kind of Slope	V Cut Slope (2) Natural Slope	
м П	2	Type of Fall	(1) Debris Fall (2) Rock Fall	
Falls	3	Fallen Rock Size	(1) $2\delta^m >$ (2) $2\delta^m \sim 5\delta^m$ (5) $5\delta^m <$	
of	4	Date Occured	Day Month Year	
Evidence (5	Traffic Interruption Period	(1) l day> (2) l day ~7 days (3) 7 days <	
۶, d	6	Counter Measure Taken	(1) Structure () (2) Removal of Fallen Rock	(3) Others
ū.	. 7	Rainfall Intensity/ Day	(1) 100^{mm} (2) 100^{mm} 200 mm (3) 200^{mm} 300 mm	(4) 300 ^{mm} <
	8	Slope Height	$(1) 10^{m} > (2) 10^{m} \sim 30^{m} (3) 30^{m} \sim 50^{m}$	(14) 50 ^m <
 ບ	9	Slope Gradient	(1) 45° > (2) $45^{\circ} \sim 60^{\circ}$ (3/ $60^{\circ} <$	(4) Overhung
	10	Degree of Saturation	(1/ Dry. (2) Wet (3) Seepage	(4) Spring
Existing Slope Condition	11	Surface Water Concentration	(1) None (2 Low (3) High	
ist Con	12	8erm	(1) Existing Number () With () (2) Nothing	<u> </u>
х ш	13	Slope Protection	(1) Structure () (2) Vegetation (3) Nothing	
1	14	Drainage Facilities	(1) Existing () (2) Nothing	e set fille an eigen set Sector and set
lu.	15	Matrix Condition	(1) Hard (2) Soft (3) Loose (4) Loose wi	th detached cabbl
on Debris Fall	16	the second se	(1) Rare (2) Common (3) Frequently	
o d	17	Detached Rock or cabble	(1) Nothing (2) Supported Stably (3) Supported Unstably	
Condition De			(1) Granite (2) Diorite (3) Diabase (4) Andesite (5) Dacite	
Con	18	Rock Name	(6) Schist (7) Slate (8) Limestone (9) Schalstein (10) Tuff	
	10	AUCK Malite	(11) Tuffbreccie (12) Sandstone (13) Shale (14) Mudstone	
91ca Fall			(17) Conglomerate (16) Masa (17) Volcaniclasties	
Geological Rock Fall	19	Weathering Condition	(W Fresh (2) Slightly Weathered (3) Highly Weathered	
3 8	20	Condition of Crack	(1) Sparse (2) Regular (3) Developed	
	21	Direction of Crack	(1) Inclined to Bountain (2), Irregular Inclination (1) Inclined to S	looe
5 i	22	Impact to Road	(1) Low (2/ Average (3) High	
Engi- neering Judge- ment	23	Cause of Fall		
2 8 7 8 9 8 7 8 9 8 7 8	24	Counter Measure		
Sketch,	, etc.	<u></u>	Photo No.	

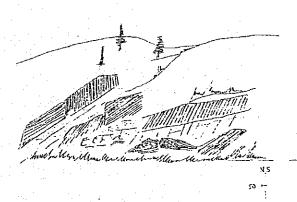




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Date of Survey		Day 24	Month Cet	Ye	ear 1984	Surveyor	BINATA	j
					the second s	the factor and the second	Received a second contract of the second of the	

CHECK TABLE OF FALL

					Sheet No. B-90
Rou	te		N (IN-12)	Km. Post 294.100 Width 50 M	Region <u>I</u>
		1	Kind of Slope	(V) Cut Slope (2) Natural Slope	
in .		2	Type of Fall	(1) Debris Fall (2) Rock Fall	· · · · · · · · · · · · · · · · · · ·
Fall		3	Fallen Rock Size	(1) $2\delta^m >$ (2) $2\delta^m \sim s\delta^m$ (3) $5\delta^m <$	
٥٤٠٦		4	Date Occured	Day <u>Month</u> Year	
Evidence (5	Traffic Interruption Period	(1) 1 day \sim (2) 1 day \sim 7 days (3) 7 days <	
Ð		6	Counter Measure Taken	(1) Structure () (2) Removal of Fallen Rock	(3) Others
ພ 		7.	Rainfall intensity/ Day	(1) 100^{mm} (2) 100^{mm} 200 ^{ant} (3) 200 ^{mm} 300 ^{mm}	(4) 300 ^{mm} <
		8	Slove Height	(1) $10^{m} >$ (2) $10^{m} \sim 30^{m}$ (3) $30^{m} \sim 50^{m}$	(4) 50 ⁴ <
ณ		9	Slope Gradient	(1) 45° > (2/ 45° ~ 60° (3) 60° <	(4) Overhung
lope n		10	Degree of Saturation	(V) Ory (2) Wet (3) Seepage	(4) Spring
isting Slope Condition		11	Surface Water Concentration	(4) None (2) Low (3) High	
Con		12	8erm	(1) Existing Number () With () (2) Nothing	·····
ж ш		13	Slope Protection	(1) Structure () (2) Vegetation (3) Nothing	
		14	Orainage Facilities	(1) Existing () (2) Nothing	
v		15	Matrix Condition	(1) Hard (2) Soft (3) Loose (4) Loose	with detached cabbl
on Debris	5	16	Gully	(1) Rare (2) Common (3) Frequently	
Condition De		17	Detached Rock or cabble	(1) Nothing (2) Supported Stably (3) Supported Unstab	oly
19	24.7			(1) Granite (2) Diorite (3) Diabase (4) Andesite (5) Dacite	
<u>š</u>		18	Rock Name	(6) Schist (7) Slate (8) Limestone (9) Schalstein (10) Tuff	
(e) -	- 1			(11) Tuffbreccie (12) Sandstone (13) Shale (14) Mudstone	
Geologica)				(15) Conglomerate (16) Masa (17) Volcaniclasties	. <u> </u>
Geolo	÷.	19	Weathering Condition	(1) Fresh (2) Slightly Weathered (3) Highly Weather	ed
ů c	ž į	20	Condition of Crack	(1) Soarse (2) Regular (3) Developed	
		21	Direction of Crack	(1) Inclined to Fountain (2) Irregular Inclination (3) Inclined t	o Slope
103		22	[moact to Road	(1) Low (2) Average (3) High	
Engi- lieerit lidae		23	Cause of Fall		
ដ ≛ ា	ΞĒ.	24	Counter Measure		
Ske	tch,	etc.		Photo No.	





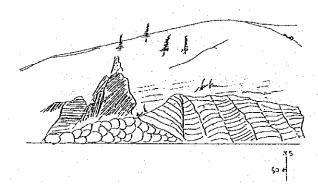
Date of Survey		24.	ionth Get	Year 1984	Surveyor	B. IWATA
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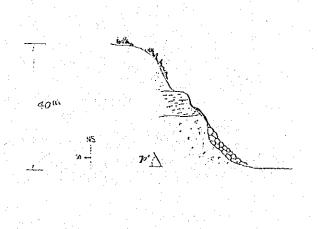
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CHECK TABLE OF SLOPE FAILURE

	÷	÷			and and a second se			Sheet No. B-91
Re	oute		$N(I_{N}-13)$	Km. Post	294.400	Width	50	M Region <u>T</u>
		1	Kind of Slope	(1) Cut Slop	e (2/ N	atural Slope		
5	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	2	Kind of Failure	(1) Nothing		urface Failure	(3) Deep Failur	
Fàilure		3	Size of Failure,	(1) 50 ^{m3} >	(2/ 5	0 ^{m3} ~ 500 ^{m3}	(3) 500 ^{m3} ~ 2,0	000 ^{m3} (4) 2,000 ^{m3} <
C L	(1,1,1)	4	Date Occured	Day	M	onth	Year	
Evidence		5	Traffic Interruption Period	(1) 1 day ⇒	(2) 1	day ~ 7 days	(3) 7 days <	
v jā		6	Counter Measure Taken	(1) Structur		emoval of Slide		(3) Others
ú		7	Rainfall Intensity/ Day	(1) 100 mm =	- (2) l	00 ^{mm} ~ 200 ^{mm}	(3) 200 ^{mm} ~ 300	^{mm} (4) 300 ^{mm} <
	c	8	Height	(1) 10 ^{#1} >	(2) 1	<u>0^m ~ 30^m</u>	(3) 30 ^m ~ 50 ^m	(4) 50 ^m <
ê,	t ioi	ŝ	Gradient	(1) 45. >	(2) 4	5 ~ 60	(3) 60 <	(4) Overhung
Existing		10	Berm	(1) Existing	Numbe	r ()	Nidth ((2) Nothing
	20 ·	11	Slove Protection	(1) Structur	e () (2) V	egetation	(3) Nothing	
		12	Hardness	(1) Hard Roc	k (2/ s	oft Rock		
				(1) Granite	(2) Diorite	(3) Diabase	(4) Andesite	(5) Dacite (6) Schist
5		13	Name	(7) Slate	(8) Limestone	(9) Schalstein	(10) Juff	(11) Tuffbreccie
풍		1.3	nalia:	(W) Sandsto	ne (13) Shale	(14) Mudstone	(IN Conglomerat	e (16) Masa
Condition	÷			(17) Volcani	clasties			
Geological	Rock	14	Weathering Condition	(1) Fresh		liontly eathered	(3) Highly Weat	hered (4) Nearly Soil
100	· · [15	Condition of Crack	(1) Soarse	(2) R	egular	(3) Developed	
Geo	· . [16	Direction of Crack	(1) Inclined	to Mountain (2) [rregular Inclin	ation () Incline	d to Slove
- [.	. [17	Thickness	(1) 5 ^m >	(2) 5	ⁿ ~ 10 ^m	(3) 10 ^m ~ 20 ^m	(4) 20 ^m <
	Soil	18	Compactness	(1) Tight	(2) S	lightly loose	(3) Loosé	
on		19	Degree of Saturation	(1) Ory	(2) 14	e t	(3) Seepage	(4) Spring
Water Condition		20	Surface Water Concentration	(U) None	(2) L	3W	(3) High	
33		21	Orainage Facilities	(1) Existing	() (2) N	othing		
- ⁵	Judge - ment	22	Impact to Road	(1) Low	(2) A	verage	(b) High	
nçi Pêr	e ndg	23	Cause of Disaster					
പ്	7 E	24	Counter Measure					
Ske	tch, et	с.					Photo No.	

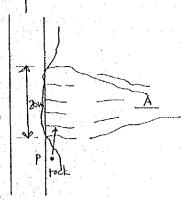




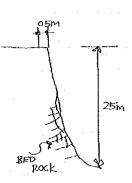
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Date of Survey	Day 24	Konth Out	Year 1984	Surveyor	Blwath	
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						Sheet No.	5-91-1
Route		N(IN-14)	Km, Post 294	600 Width	20 M	Region	I
	1	Kind of Slope	(YEnbankment Slope	(2) Natural Slope (3) Overflow S	Section (5)	Others
ą	2	Location	(1) Approach of Bridge			Inside of Cu	irve (4) Others
Failure	3	Size of Disaster	(1) 50 ^{In 3} >	<u>(2) 50^{m3}~ 100^{m3} (</u>	3) 100 ^{m3} <		
00 12	4	Nate Occured	Day	Month	Year		
e of	5	Traffic Inter- ruption Period	(1) 1 day >	(2) 1 day ~ 7 days	(3) 7 days <		·
Evidence	6	Counter Measure Takèn	(1) Only Fill		(3) Other St	ructure ()
ш Полого	1	Rainfall Intensity/ Day	(1) 100 ¹¹¹¹ >	(2) 100 ^{mm} ~ 200 ^{mm}	(3) 200 ^{mm} ~	300 ^{min} (4)	300 ^{mm} <
edo	8	Stope Height	(1) 5 ⁽¹⁾ >	(2) $5^{m} \sim 10^{m}$	(1) 10 ^m <		
10 10	Ç,	S'one Gradient	(1) 45° >	(2) 45°~ 60°	(3) 600 <		
cisting Slo Condition	10	Surface Water	(1) None	(2)/LOW	(3) High	· · · · · · · · · · · · · · · · · · ·	
Co C	11	Slope Protection	() Nothing	(2) Vegetation	(3) Riprap	(4) Other Sti	ructure ()
ພິ	12	Drainage Facilities	(W Nothing	(2) Existing	an a transformer An an		
ខ្ល	13	Impact to Road	(1) LOW	12 Average	(3) High		·····
Engi- neering Judge- ment	14	Cause of Disaster	(N Concentration of S	urface Water (2) Rive	r Stream (3)	Sea Wave (4) Others
L B J B	15	Counter Measure			· · · · · · · · · · · · · · · · · · ·		
Sketch,	etc.		ады баралы байна. Аларын <u>алар</u> ын айтай			Photo No.	

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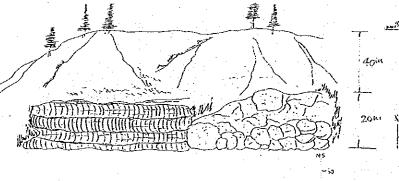


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Date of Survey	Day 244-	Month Oct Year 19	784 Surveyor	B. IWATA

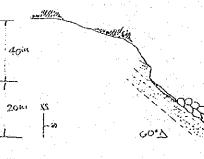
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CHECK	TABLE	0F	FALL	-

				Sheet No.	8-92
Route		N (IN-15)	Xm. Post 294.600 Width 50 M	Region	J
	l	Kind of Slope	(V Cut Slove (2 Natural Slove	utoje s utorustjenos s te postala se teo	· ·
1	2	Type of Fall	(1) Debris Fall (2) Rock Fall		2
	3	Fallen Rock Size	(1) $2\delta^m >$ (2) $2\delta^m \sim 5\delta^m$ (3) $5\delta^m <$		
5	4	Date Occured	Day Month Year		· <u>()</u>
	5	Traffic Interruption Period	(1) 1 day> (2) 1 day ~7 days (3) 7 days <		ang Singh Aga
	5	Counter Measure Taken	(1) Structure () (2) Removal of Fallen Rock	(3) Othe	
	7	Rainfall Intensity/ Day	(1) 100^{nm} (2) 100^{nm} 200 ^{~~} (3) 200^{nm} 300 ^{~~}	(4) 300	
	8	Slope Height	(1) $10^m > (9/10^m \sim 30^m)$ (3) $30^m \sim 50^m$	(4) 50 ^m	<
,	9	Slope Gradient	$(1) 45^{\circ} > (2) 45^{\circ} \sim 60^{\circ} (3)^{\circ} 60^{\circ} <$	رُبْلُ Over	hung
e .	10	Degree of Saturation	(1) Dry (2) Wet (3) Seepage	(4) Sor	Ing
Condition	11	Surface Water Concentration	(1) None (2) Low (9) High		
çõ	12	Berm	(1) Existing Number () With () (2) Nothing		
	13	Slope Protection	(1) Structure () (2) Vegetation (3) Nothing		
]	14	Drainage Facilities	(1) Existing () (2) Nothing		
5	15	Matrix Condition	(1) Hard (2) Soft (3) Loose (4) Loo	se with detac	hed cabl
Debris Fåll	16	Gully	(1) Rare (2) Common (3) Frequently		
å,	17	Detached Rock or cabble	(1) Nothing (2) Supported Stably (3) Supported Unst.	ably	·
Rock Fall De	18	Rock Name	 (1) Granite (2) Diorite (3) Diabase (4) Andesite (5) Dacit. (6) Schist (7) Slate (8) Limestone (9) Schalstein (40) Tuff (42) Tuffbreccie (12) Sandstone (13) Shale (14) Nudstone (15) Conglomerate (16) Nasa (17) Volcaniciasties 		
Rock	19	Weathering Condition	(V) Fresh (2) Slightly Weathered (3) Highly Weath	ered	· · · ·
8	20	Condition of Crack	(1) Soarse (2) Regular (3) Developed		· · · · · · · · · · · · · · · · · · ·
	21	Direction of Crack	(1) Inclined to Bountain (2) Irregular Inclination (3) Inclined	to Slope	· · · · · · · · · · · · · · · · · · ·
ธิบ	22	Imoact to Road	(1) Low (2) Average (3) High		·
neering Judge- Ment	23	Cause of Fall	Indined to close		1.1
525	24	Counter Measure			
	etc.		Photo No.	1	



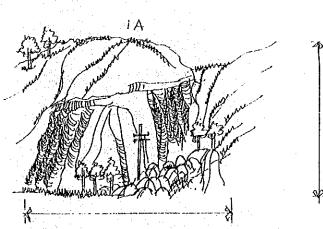
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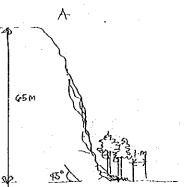


Date of Survey	Day 24.	Month Oct	Year 1984	Surveyor 5	- WATA
		an a she a			

CHECK TABLE OF FALL

	e de Texto el			n an an Anna Anna Anna Anna Anna Anna Anna Anna			Sheet No.	B-92-/
Route	6	N(IN-15-1)	Km. Post	294,800	Width	50 H	Region	l
	1	Kind of Slope	(N/ Cut Slop	ie (2)	Natural Slope			
5	2	Type of Fall	(1) Debris F	'a11 (½∕	Rock Fall			
Falls	3	Fallen Rock Size	(1) 20 ^m >	(2)	20 ^m ~~ 50 ^m	(3/ 50"	<	
of	4	Date Occured	Day Z	7~30	Month Aug.	Year	1984	by Manie
Evidence	5	Traffic Interruption Period	(1) 1 day >	(2)	1 day~7 days	(3) 7 day		ч r
vid	6	Counter Measure Taken	(1) Structur	<u>e () (2)</u>	Removal of Fal	len Rock		(3) Others
W	7	Rainfall Intensity/ Day	(1) 100 ^{/mn} >		100 ⁰¹¹¹¹ 200 ¹¹¹⁰¹		300 ⁶¹⁴	
	8	Slope Héight	(1) 10 ¹⁰ >	(2)	10 ¹¹¹ ~ 30 ¹¹¹	(3) 30 ^{III} ~	· 50 ⁸¹	(4) 50" <
S	9	Slope Gradlent	(11/45° >		45°∼ 60°	(3)_60° <		(4) Overhung
Stope	10	Degree of Saturation	(1) Dry	(3)	Wet	(3) Seepa	ge	(4) Spring
Existing Slo Condition	n	Surface Water Concentration	(1) None	(2)	Low	(3VII igh		
ist Con	12	Berm	(1) Existing	Number () k	ith ()	(aVNothi	<u>ng</u>	
ы	13	Slope Protection	(1) Structur	e () (2)	Vegetation	(3) Nothi	ng	
	14	Drainage Facilities	(1) Existing	() (1)	Nothing	-		
N	15	Matrix Condition	(1) Hard	(2)	Soft (3)	Loose (4) Lo	ose with del	ached cabble
11	16	Gully	NV Rare	(2)	Connion	(3) Frequ	rently	
	17	Detached Rock or cabble	(N/Nothing	(2)	Supported Stab	1y (3) Suppo	rted Unstabl	у
Condi				(2) Diorite) Andesite	
an an tha an an	18	Rock Name		(7) Slate				1 (19) Tuff
ogical Fall			(1) Tuffbre	ccie (12) Sandsto	ne (13) Shale	(14) Mudstone	
K loo				erate (16) Masa	(17) Volcan	iclasties		
Geolc Rock	19	Weathering Condition	(N Fresh		Slightly Weath			nered
	20	Condition of Crack	(1) Sparse		Regular			
	21	Direction of Crack	(1) Inclined	to Mountain (2	!) Irregular In		1 Inclined	to Slope
ጀ ነ	22	Impact to Road	(1) LOW	(2)	Average	()/High		
Engi- neering Judge- ment	23	Cause of Fall			· · · · · · · · · · · · · · · · · · ·			
ក្ខភូមិ	24	Counter Measure						
Skete	ch, etc.			· · · ·		Photo	No	



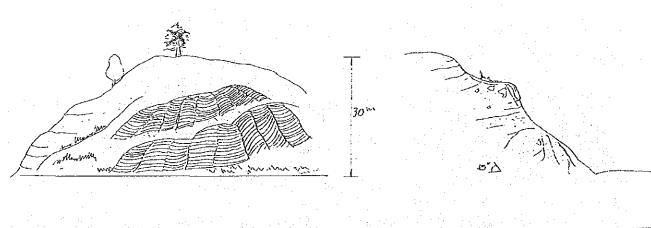


Date of Survey	Day 24	Honth Oct	Year 1984	Surveyor	B. IWATA	

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CHECK TABLE OF SLOPE FAILURE

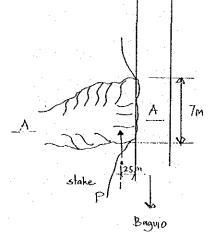
		the second second	1. A		internet in the					
		e Level a ^e level a	н			N. L. T.		1.	Sheet No.	B-93
Route	· • • · · · · · · · ·	N(IN-16)	Km. Post	2.98.20	00	Width	60	M	Region	Ţ
	1	Kind of Slope	NS cut sto	ipe	(2) Natural	Slope				
e e	2	Kind of Failure	(1) Nothing		(2) Surface	Failure			and the second	
ra1 ure	3	Size of Failure	(1) 50 ^{m3} >		(21 50 ^{m3} ~ 51	<u>oo^{m3}</u>	(3) 500 ^{m3} ~	2,000 ^{m3}	(4) 2,000) ^{m3} <
	4	Date Occured	Day		Month		Year	<u> </u>	<u>, and and a</u>	
10 97	5	Traffic Interruption Period	(1) 1 day =	3	(2) 1 day ~		(3) 7 days <	.		
cv 10ence	6	Counter Measure Taken	(1) Structu	ire () (2) Removal		Materials	<u></u>	(3) Other	
5	7	Rainfall Intensity/ Day	(1) 100 mm	>	(2) 100 ^{mm} ~	200 ^{mm}	(3) 200 ^{mm} ~		(4) 300 ^m	
	8	He ight	(1) 10 ^m >		(2) $10^{m} \sim 3$	0 ^m	('3/ 30 ^m ~ 50) ⁶⁰	(4) 50 ^m	<
Slope Condition	9	Gradient	(1) 45. >		(2/ 45 ~ 5	<u>0</u>	(3) 60 <		(4) Over1	nung
dit	10	8erm	(1) Existin	- Maria	Number (<u>, , , , , , , , , , , , , , , , , , , </u>	Hidth ()	(2) Noth	ing
ទីខ្លួន	11	Slope Protection	(1) Structu) (2) Vegetati	on di di di	() Nothing			
	12	Hardness	(1) Hard Ro	ock	(2) Soft Roc	<u>k : : : </u>			· · · · · · · · · · · · · · · · · · ·	· · · ·
.]			(1) Granite		iorite (3) Di		(4) Andesite	3	(5) Dacite	(6) Sch
			(7) Slate	(8) L	imestone (9) Sc	halstein	(10) Tuff		11) Tuffore	ccie
	13 Name		(12) Sandst	one (13) St	nale (14) Mu	dstone	(18) Conglome	erate (16) Masa	1997 - 19
2			(17) Volcar				/	.:::	la de la constante de la const Constante de la constante de la c	<u></u>
sector total total	14	Weathering Condition	(1) Fresh		(2) Slightly Meathere	d	(V) Highly !	leathere	ed (4) Near Soil	ly
	15	Condition of Crack	(1) Soarse		(2) Regular		(V) Develope	be	1997 - 1997 -	• • • • • • • •
	16	Direction of Crack	(1) Incline	ed to Mounta	ain (2) Trregula	r Inclina	tion (3) Inc	lined 'to	Slope	
	17	Thickness	(1) 5 ⁽¹⁾ >		(2) $5^{11} \sim 10$	ff1	(3) 10 ^T ~	20 ^m	(4) 20 ^m <	:
5011	18	Compactness	(1) Tight		(2) Slightly		(3) Loose			· · · · · · ·
	19	Degree of Saturation	(V Dry		(2) flet		(3) Seepage		(4) Spri	ng
Condition	20	Surface Water Coacentration	(1) None		(2) Low	i i i i i i i i i i i i i i i i i i i	(3) High			
õ	21	Drainage Facilities	(1) Existin	tg () (2 Nothing			;		······································
neering Judge- ment	22	Impact to Road	(1) Low		(2) Average		(3) High	۰۰ را ۲۰ 	<u> </u>	
L G L L	53	Cause of Disaster	1			_,	2013 		<u></u>	
12.2.2	24	Counter Measure		<u> </u>		· .			<u>i i i i</u>	<u></u>
							Photo N	2 I.I.		



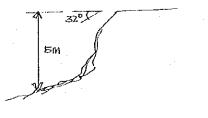
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	eta e. April:						e en en en	Sheet No.	B-94-1
Ro	nute		N(IN-19-1)	Km. Pošt	301.000	Width	7 M	Region	Ţ
		1	Kind of Slope	(NVEnbankmen	it Slope (2) Natur	al Slope (.	3) Overflow S	Section (5)	Others
ure		2	Location		of Bridge (2) Adjac	ent to River	r or Sea (3)	Inside of Cu	rve (4) Others
Failu	·	3	<u>Slze of Disaster</u>	(1) $50^{m3} >$			3) 100 ^{m3} <	· · · · · · · · · · · · · · · · · · ·	
		4	Date Occured	Day 2	7~30 Month	Augi	Year 178	14, hy	Haring
ce of		5	Iraffic Inter- ruption Period	(1) 1 day >	(2) 1 day	∼ 7 days	(3) 7 days <	·	· · · · · · · · · · · · · · · · · · ·
Evidence		6	Counter Measure Taken	(1) Only Fill	(2) Ripra	р	(3) Other St	ructure ()
ш Ш	н 17 1	7	Rainfall Intensity/ Day	(1) 100 ^{mm} >	(2) 100 ^{na}	°∼ 200 ^{mn}	(3) 200 ^{mm} ~ ;	300 ^{mni} (4)	300 ^{mm} <
адо		8	Slope Height	(1)/5 ^m >	(2) 5 ^m ∼	10 ^m	(3) 10 ^m <		
1015		9	Slope Gradient	(1) 45° >	(2) 450~	<u>60°</u>	(3) 60° <		
Existing Slo Condition		10	Surface Water Concentration	(1) None	(à)/Low	· · ·	(3) High		
S S		<u>11</u>	Slope Protection	(1) Nothing	(2) Veget	ation	(V Riprap	(4) Other St	ructure ()
		12	Drainage Facilities	(IV Nothing	(2) Exist	ing			
្រួ	1	13	Impact to Road	(1) LOW	(E) Avera	ge	(3) High		
Eng -	a de	14	Cause of Disaster	(V Concentra	ition of Surface Wat	er (2) River	r Stream (3)	Sea Wave (4) Others
E e	38	15	Counter Neasure		<u> </u>		·		r
Ske	etch,	etc.		<u> </u>				Photo No.	



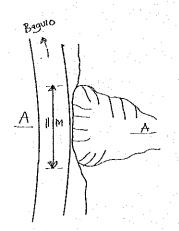
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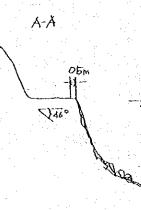


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	er. E						Shuet, No.	B-94-2
Route		N(IN-19-2)	Km. Post	301,600	Width	11 M.S.	Region	l I
	1	Kind of Slope	(M Embankmen	t Slope (2) Nati	ural Slope	(3) Overflow	Section (5)	Others
۵U	2	Location		of Bridge (2) Adj			Inside of Cu	irve (4) Other
Failure	3	Size of Disaster	(1) $50^{103} > $			(3) 100 ^{m3} <		
Fai	4	Date Occured	Day 27	~30 Mon	th Augr	Year 198	14 hy	Haring
ance of	5	Traffic Inter- ruption Period	(1) 1 day >	(2) 1 d	ay~~7 day	s (3) 7 days <		
Evidence	6	Counter Measure Taken	(\ / Only Fill	a da anti-a da anti- A da anti-a		(3) Other St)
ш́	7	Rainfall Intensity/ Day	(1) 100 ^{mm} >	(2) 100	™~ 200 ^{ma}	(3) 200 ^{mm} ~	300 ^{mm} ()	/300 ^{mm} <
о ре	8	Slope Height	(1) 5 ^m >	(2) 5 ^m ∽	~ <u>10^m</u>	(1) 10 ^m <		
តី ត	9	Slope Gradient	(1) 45° >	(2/ 45°	~ 60°	(3) 60° <		
cisting Slo Condition	10	Surface Water Concentration	(1) None	(av/Low		(3) Il1ġh		
S O	n	Slope Protection	(IV Nothing	(2) Veg	etation	(3) Riprap	(4) Other St	ructure (
చె	12	Dråinage Facilities	(1) Nothing	(2) Exi	sting			
Ê.	13	Impact to Road	(1) Low	(à) Ave	rage	(3) High	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	sta filo e tra
Engi- neering Judge- ment	14	Cause of Disaster	(V Concentra	tion of Surface W	ater (2) Ri	ver Stream (3)	Sea Wave (4) Others
E E C E	15	Counter Neasure		•				
Sketch,	etc.						Photó No.	

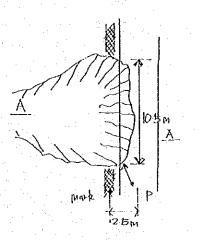


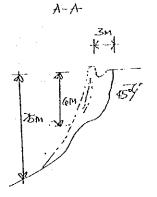


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						Sheet No.	B-95-1
Route		N(IN-23-1)	Km. Post 304.	S <i>OO</i> Width	10.5 M	Region	Ľ
	1	Kind of Slope	(IV Embankment Slope	(2) Natural Slope	(3) Overflow S	Section (5)	Others
ደ	2	Location	(1) Approach of Bridg	e (2) Adjacent to Riv	ver or Sea (3)	Inside of Cu	rve (4) Others
Failure	3	Size of Disaster	(1) <u>50^{m3} ></u>	$(2)^{\prime} 50^{m3} \sim 100^{m3}$	(3) $100^{m3} \leq$		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4	Date Occured	Day 27~30	Month Augi	Year 170	14 liy	Maring
ce of	5	Traffic Inter- ruption Period	(1) 1 day >	(2) 1 day ~ 7 days		Ý	C
Evidence	6	Counter Measure Taken	(1) Only Fill	(2) Riprap	(3) Other Sti	ructure ()
ш́	1	Rainfall Intensity/ Day	(1) 100 ^{min} >	(2) 100 ^{mm} 200 ^{mm}	(3) 200 ^{10m}	300 ^{mm} (b)	300 ^{man} <
þe	8	Slope Height	(1) 5 ^{lft} >	(2) $5^{m} \sim 10^{m}$	(3) 10 ^m <		
ou sio	9	Slope Gradient	(1) 45° >	(2) 45°~ 60°	(3) 60° <		
isting Slope Condition	10	Surface Water Concentration	(1) None	(2) Low	(B) High		
C S	,11	Slope Protection	(1) Nothing	(2) Yegetation	(V Riprap	(4) Other Str	ructure ()
μ	12	Dráinage Facilities	(1) Nothing	(2) Existing			
5 L	_13	Impact to Road	(1) LOW	(2) Average	(3) High		
Engi- neering Judge- ment	14	Cause of Disaster	(1) Concentration of :	Surface Water (2) Riv	ver Stream (3)	Sea Wave (4)	Others
56.25	15	Counter Neasure					
Sketch	, etc.					Photo No.	





Date of Survey	Day 24	Nonth Act	Year 1984	Surveyor	B. IWATA
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	APPENDICES FOR CHAPTER 8	
3.2-1	Unit Cost Analysis	225
3.2-2	Construction Cost	231
3.5-1	Project Cost	235
3.5-2	Cash Flow	237

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APPENDIX 8.2-1 UNIT COST ANALYSIS

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т 100 m ²	<u> 7822/m²</u>	FINANCIAL	COST		22,707.54	283.50	4,480.00	316.20	4,526.94	32,314.18		13,/63./4	48.00	516.80	1,142.40	5,529-60	1,000.42	22,000.96	
ION PROVECT	UNIT PRICE	S	TAX		3,179.26	48.20	761.60	53.75	814.85	4,857.46		1,926,92	6.24	67.18	148.51	774-14	150.06	3,073.05	
PREVENT		MPONENT	LOCAL		6,821.26	28.34	448.00	31.62	543.23	7,863.45	• • • •	2,515.11	9.60	103.36	228.48	1,050.63	190.08	4,197.26	
ROAD DISASTER		00	FOREIGN		12,716.22	206.96	3,270.40	230.83	3,168.86	19,593.27		9,221./1	32.16	346.26	765.41	3,704.83	660.28	14,730.65	
E B D D		UNIT RATE/	DAILY RATE		1,261.53	54.00	32.00	10.54	10.83		, r , c , c , r	89.750°C	96.00	304.00	224.00	3,072.00	294.24		
STUDY OF Concrete Sp Thickness		T N 1			е Е	L L	°~∉	each	kg k			days	days	days	days	days	days		
ECT : THE FEASIBILITY NAME OF ITEM :		QUANTITY /	NO. OF DAYS		ю Н	5.25	140	30	418		r (Z./	A	1.7	5.1	18.0	3.4		
NAME OF PROJECT : T		DESCRIPTION		1. Materials	Concrete Class A		Wire Net Ø 2.0 ^{mm} - 50 ^{mm} × 50 ^{mm} (JTS 3552)	Anchore Bolt Ø 16 ^{mm} - 400 ^{mm}	• •	Sub-Total	2. <u>Equipments</u>	Alr compressor Lu.5 m	Hard Hammer 15 kg	Dynamo-Electric Machine 7.5 RVA	Belt Conveyor 7 m	Concrete Spraying Machinr 0.8 ~ 1.2 m/hour	Water Pump Ø 50 mm	Sub-Total	
								- 2	26										

100 m ²	PRICE: 7822/m ²	FINANCIAL	COST		445.50	869.00	3,005.00	1,611.00	3,000.00	8,930,50	63,245.64	632-46	189.74			· · · · · · · · · · · · · · · · · · ·	:			-
PREVENTION PROJECT	UNIT PRIC	T S	TAX		I	I	100 A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A	1	ŧ	ł	7,930.51	19.31	23.79	102.10	13%	· .			1	
		MPONENT	LOCAL		445.50	869.00	3;005.00	1,611.00		5,930.50	17,991.21	12.971	53.97	233.88	28%				 	
AD DISASTER		0	FOREIGN		•	1	I	1	3,000.00	3,000.00	37,323,92	373.24	111.98	485.22	29%				 	
PHILIPPINE ROAD Spraying s = 15 cm			DAILY RATE		89.10	86.90	60.10	53.70	1,500.00	 - -	4			:	·			· · · · · ·	 	
STUDY OF Concrete Thickness		U N I T			days	days	days	days	days			 Х	22	°E						
CT : THE FEASIBILITY		QUANTITY /	NO. OF DAYS		ĽŊ	10	50	30	5				- · ·			-				
NAME OF PROJECT . T ITEM NO. 302.2 NAME		DESCRIPTION		3. Labor	Foreman	Assistant Foreman	Skilled Labor	Unskilled Labor	Technical Expert	Sub-Total	Total (1 + 2 + 3)	Unit Cost	4. Overhead & Profit : 30%	Total Unit Cost	24		· · · · · · · · · · · · · · · · · · ·			

ITEM NO. 401	NAME OF ITEM:	Anchor Wire Net	eNet		la de la composición	PREVENTION PROJECT	640 m ²
						UNIT PRICE	PRICE: P475.89/m ²
DESCRIPTION		L N II	UNIT RATE/	U U U	O MPONENT	TS	FINANCIAL
	NO. OF DAYS		DAILY RATE	FOREIGN	LOCAL	TAX	COST
2. Equipments							
Truck Crane 20 - 22 ton	16.20	hours	1,430.23	15,523.72	4,402.25	3.243.76	23.169.73
Winch 1.0 ton 10 ps	10.40	days	432.00	1,797.12	2,156.54	539.14	4,492.80
Sub-Total				17,320.84	6,558.79	3,782.90	27,662.53
3. Labor		:					
Foreman	10	days	89.10		891.00	. : ·	00.168
Asst. Foreman	30	days	86.90		2,607.00	1 1 1	2.607.00
Skilled Labor	200	day s	60.10	1	12,020.00	1	12,020.00
Unskilled Labor	100	days	53.70	I	5,370.00	. 1	5,370.00
Technical Expert	ω	days	1,500.00	12,000.00	1	ł	12,000.00
Sub-Total				12,000.00	20,888.00		32.888.00
Total (1+2+3)				156,146.66	44,820.19	33,317.68	234,284.53
Direct Unit Cost		P/m ²		243.98	70.03	52.06	366.07
4. Overhead & Profit 30%	-	P/m ²		73.19	21.01	15.62	109.82
Total Unit Cost		p/m ²		317.17	. 91.04	67.68	475.89
~				1013	201		

. . . .

TEM NO. 501 NAME	OF ITEM! St	OF ITEM : Stone Masonry for	r Embankment Slope	e e		QUANTITY: -	56 m ²
	· · · · · · · · · · · · · · · · · · ·					UNIT PRICE: 7 552/m2	. 7 552/m ²
DESCRIPTION	ATITNAUD	UNIT		0 0	MPONENT	t s	FINANCIAL
	NO. OF DAYS		DAILY RATE	FOREIGN	LOCAL	TAX	cost
Material							
Boulder Concrete	19.6	m E	274.44	3,496.36	1,183.39	699.27	5,379.02
Lean Concrete	14	ю (914.19	4,936.63	2,651.15	1,554.12	9,141.90
Concrete Class A	1.5	ле [°]	1,824.04	1,422.75	-930.26	383.05	2,736.06
Riverrun Aggregate	30.6	т В	117.54	2,158.03	1,007.08	431.61	3,596.72
PVC Pipe	14	E L	54.00	551.88	75.60	128.52	756.00
Sub-Total				12,565.65	5,847.48	3,196.57	21,609.70
Labor		· · ·					
Foreman	F-1	days	89.10	•	89.10	1	89.10
Assistant Foreman	8	days	86.90	1	173.80	•	173.80
Skilled Labor	12	days	60.10	ł	721.20	1	721.20
Unskilled Labor	22	days	53.70	1	1,181.40		1,181.40
Sub-Total					2,165.50		2,165.50
Total (1 + 2)				12,565.65	8,012.98	3,196.57	23,775.20
Unit Cost		≈ ₽		224.39	143.09	57.08	424.56
Overhead & Profit ; 30%		ana		67.32	42.93	17.12	127.37
Total Unit Cost	· · ·	°≞		17.192	186.02	74.20	551.93
62				53%	34%	13%	100%
		• • • •					

APPENDIX 8.2-2 CONSTRUCTION COST

APPENDIX 8.2-2(1) CONSTRUCTION COST - November 1984 Price

1

187,762 194,863 612,231 169,472 3,540 42,149 769,789 28,730 134,889 126,923 280,892 I,167,868 4,761 285,653 840,668 11,221 229,345 2.796.567 261,812 11,221 (13.7%) × m 1,658,009 72,930Jnit Pesos 346,636 334,050 857,123 247,307 8,441 11,250 342,411 172,252 29,349 29,349 5,291,445 Component 1,793,557 702,675 691,425 1,837,933 514,663 413,268 Local (26.1%) 1 ŧ 909,922 862,963 2,612,186 713,036 15,248 175,082 3,493,662 119,340 607,415 45,750 5,113,355 20,039 45,750 1,188,388 3,788,084 167,725 560,310 886,977 12,210,318 208,427 Foreign (60.2%) i I ï 1 Construction Cost 1,391,876 4,081,540 1,129,815 27,229 324,225 5,921,460 221,000 36,050 86,320 20,292,330 8,074,780 ,444,320 2,160,705 86,320 2,196,755 6.466.685 ,037,610 906,590 ,944,200 1,529,590 (%001) 1 Quantity 7,518 5,792 11,465 13,415 13,415 7,518 7,518 170 9 854 , 905 4,121 40 ı ı * Physical contingency is not included. N.M.M.M. CCUMM Ľi M. Sq M Sq M Li.M. Li.M. Sq.M. л. Ж.Ж.Ж Unit L: N Li.M. Gravity type retaining wall ç Q Lucena-Calauag Section Concrete spraying Subsurface drain Forming of Slope River and Torrent Work ÷ Protection Work Anchor wire net t a 1 Stone Pitching ىب Surface drain Stone masonry Pipe culvert ۵. Excavation Re-filling Catch fence Re-cutting Vegetation о 1 Catch wall •1-Anchoring Structural Work Ś. Drainage Work Removal Ó Earth Work Catch Work Ś Other Work e Slope F Ó G.

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316,860 93,576 7,661 142,730 94,093 851,986 478,019 23,134 39,143 36,677 41,652 660,020 68,952 224,447 75,820 1,589,962 418,097 70,624 75,287 3,450,296 299,734 29,832 266,227 × (13.6%) 'n ١ Unit Pesos 263,502 168,615 1,354,317 641,809 55,166 779,962 188,664 18,063 Component 2,483,409 105,732 .421,583 175,032 102,374 386,689 702,347 479,210 671,926 569,750 102,176 6,567,496 203,235 40.680 Local (26.0%) 691,693 435,709 3,863,626 2,155,935 99,654 173,016 2,995,477 286,416 1,340,560 361,760 32,066 932,318 ,734,386 159,583 3,454,909 360,304 200,688 1,029,413 292,622 327,685 15,286,320 7,246,61 Foreign (60.4%) APPENDIX 8.2-2(2) CONSTRUCTION COST - November 1984 Price -Construction Cost 1,097,925 698,417 6,069,929 3,275,763 177,954 2,437,382 644,000 57,790 320,400 5,077,080 530,400 11,319,988 301,100 305,640 3,139,172 5,927,880 1,726,515 2,264,282 606,740 271,200 537,767 25,304,112 1,774,850 (100%)Quantity 4,995 29,566 11,197 1,928 4,566 680 15 112 36 7,120 7,300 408 L,130 1,421 Physical contingency is not included 822223 Sq. M. Li. M. Unit Li.M. SCI.W. жж. Кижж Stone masonry Gravity type retaining wall Anchoring c 0 Allen-Calbayog Section Concrete spraying Forming of Slope Removal Subsurface drain Pipe culvert River and Torrent Work •••• Protection Work Anchor wire net Stone Pitching ذب Surface drain ъ ۵, Re-cutting Excavation Catch, fence ч Re-filling Vegetation Catch wall ••••• Structural Work 0 Drainage Work υ Wall I Work Other Work i a ¥ Earth Slope \square Catch 6

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APPENDIX 8.2-2(3) CONSTRUCTION COST - November 1984 Price -

		-					
						Component	
	Description	Unit	Quantity	Construction Cost	Foreign	Local	T a. X
	. Earth Work		· .	3,751,228	2,387,778	825,146	538,304
•	Forming of Slope	Sq. M.					
•	Removal	Cu.M.		97,854	61,648	23,485	12.721
	Ke-cutting	м X D Q	9,353	3,149,128	2,024,362	667,617	457,149
	- ενταναιτυπ Κοτέν]Ιίνο	. N. S.	•	144,123	90,798	31,707	21,618
		cu.n.	•	300,123	210,970	102,337	46,816
	. Drainage Work			734,623	404,456	234,593	95,574
: `.	Surface drain	× ×	1,310	678,539	373,198	217,132	88,209
1.	Pipe culvert		17	56.084	31.258	- 17 261	- 365
	. Slope Protection Work	· · ·		2,240,056	1,308,188	640.661	291.207
23	Vegetation	Sq.M.	3,260	146,700	79,218	48,411	19.071
1	. Concrete spraying . Stone Pitching	C1.M.	2,398 94	1,971,156 122,200	1,162,982 65,988	551,924 40.326	256,250 15,886
· ·	. Catch Work	- 		4,451,723	2,969,958	861,015	620,750
	. Catch wall	Li.M.	70	85,050	45,927	28,067	11,056
	. Catton tence Anchor wire not	z z VĽ	040 100	164,000	H C	34,440	21,320
	, İ		•		TR/*CT2*7	/ 48,508	588,374
	. Structural work			2,378,246	1,460,378	623,409	294,459
	. Stone masonry Gravity type retaining well	×. Σ.Ξ.	314	907,134	480,781	308,427	117,926
	Anchoring water	z L	302	774,932	596, 698	85.243	83,542
	. River and Torrent Work						
	. Other Work		1	262.235	141 605	77 125	43 500
					• • •		e 1
- 1	Total			13,818,111	8,672,364	3,261,949	1,883.798
	* Physical contingency is not included	tincluded.		(100%)	(62.8%)	(23.6%)	(13.6%)
	- -						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

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APPENDIX 8.5-1 PROJECT COST

	You		<u>80</u>	-	3.30	0.81	1-30	1-18	0.39	0.03	/ 0.53) 8.14) (13.7)		1 8,95) (13.7)	0.23		5 9-41) (12.6)	
	P x M51110n		Component		75 5.09	34 1.93	56 4.12	13 2.04	84 : 0.85	20 0-04	05 0.97	12 15.10 9) {(25.4)	62 1.51	80 16-61 9) <u>((25-4)</u>	2.97 1.37	2:97 1.37	45.74 19.35 (61.4) (26.0)	
	Unit :	TOTA			14.75	3.34	8,56	5,43	1.84	0.20	2,05	36.18 (60.9)		39.80			A	
			Financial Cost		23-14	6.03	14.64	61 9 9	3.08	0.27	3.56	59.42	5.94	65.36	4-57	4.57	74.50	
			:	-	0.54	0.10	0.29	0.62	6.30 	1 1 2	0.04	1(13.6)	0.19	2.06	0.05	0.05	4.22 2.18 (24.4) ((12.6)	
		ROAD	뉟		0.82	0.24	50 1	93	3	•	0.03	(23.26) (23.6)	0.32	1 3.56 1 (23.6)	0.32	0.32	2 4.22 0) (24.4)	
		NAGUILIAN			2.39	0.40	1.31	2.97	1, 16	• 	0.14	8.67 (62.8)	0.87	9.54 (62.2)	0.69	0.69	10.92 (63.0)	
		N	Financial Cost		3.75	0.74	2.24	र प्र ।	00 10 10 10 10 10 10 10 10 10 10 10 10 1	1	0.26	13.82	r.38	15.20	1.05	1.06	17.32	
SS		• ••)))		53.1	0.42	0 77	0.30	0.08	0 03	0.26	3.45 (13.6)	0.34	7 22 1 3:74 1 (26.0)((13.6))	0.10	0.10	3.39 (12.6)	
ROJECT CI Price -		SECTION	Component (%)		2.48	0.99	1 70	0.67	0.20	0.04	0.48	6.56 ((26.0)) (26-0)	0.58	0 58	8.38 (26.4)	
8.5-1 P	-	CALBAYOG	U S U	-	7.25	£2.1	3.45	. 1.29	0.33	0.20	1-03	15.29 (60.4)	1.53	16.52 (60.4	1.27	1.27	19.36 (61.0)	
APPENDIX 8.5-1 PROJECT COST - Movember 1984 Price -		ALLEN -	Financial Cost		11.32	3.14	5.53	2,25	0.61	0.22	1.17	25.30	2.53	27.83	1.95	1.95	31.73	
		N	(*)		1.17	0.29	0.84	0.26	0.01	•	0.23	2.80 (13.7)	0.28	3.08 (13.8)	0.08	0.08	3.24 (12.7)	
		CALAUAG SECTION	Component (%)	, , ,	0 	0.70	I.34	0.51	0.03	,	0.41	5.28 (26.1)		5,81 (26 0)	0.47	0.47	(26.6)	
		- CALAUP		•	5.11	1.21	3.79	1.17	0.05	*,	0.89	12.22 (65.2)	1.22	13.44	10.1	1.01	15.46 (60.7)	
an a		LUCENA	Financial Cost		8.07	2.20	6 47	1,94	0.09	1	1.53	20.30	2.03	22.33	1.56	1.56	25.45	
				/						: .			(201)		(2%)	on (7%)		
. · · · · · · · · · · · · · · · · · · ·	·	SECTION			•		rion Work	· ·	¥	rent Nork			c î ngency	Total Construction Cost	ineer ing	Construction Supervision (7%)	St	
			LEN .		Earth work	200 Drainage Work	Slope Protection Work	Catch Work	Structure Work	River or Torrent Nork	Other Work	Total	Physical Contingency	i Constru	Detailed Engineering	truction	Total Cost	
			WORK ITEM		100 Eart	200 Dra	300 5100	400 Cato		600 Rive	700 Othe		sAyd	Tota	Deta	Cons		
		/					· · · · ·			23		1	L	L	L		L	

APPENDIX 8.5-2 CASH FLOW

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8.5-2 CASH FLOW (1)

APPENDIX

As of November 1984 P 20.00 = US\$ 1.00 = ¥ 246.43 P x Million 9.56 27.98 3.78 7.23 4.68 11.91 4.10 2.41 6.51 17.11 10.87 5.78 1991 (40%) (%09) 41.95 9.75 25.66 5.66 10.85 6.14 16.29 14.33 17.87 1990 7.02 3.61 8.67 0.76 1.17 1.78 2.74 0.63 0.96 1989 0.33 0.94 0.22 0.41 0.41 (%09) 0.61 Price Level Exchange Rate : Unit (40%) 0.78 0.43 1988 0.28 0.15 1.19 1.83 0.40 0.22 0.62 0.51 0.27 0.64 1987 Construction Supervision and Construction TOTAL TOTAL TOTAL Local/Tax **ب** Local/Tax Local/Tax Local/Tax Year TOTA Foreign Foreign Foreign Foreign Detailed Engineering LUCENA - CALAUAG SECTION ALLEN - CALBAYOG SECTION NAGUILIAN ROAD**l** TOTA Description

APPENDIX 8.5-2 CASH FLOW (2) (PRICES ESCALATED) : : : Unit : P X Million

					· · · ·					1		·····	• •			
1991		(40%)	8.90	8.20	17.10	11.13	10.15	21.28	6.31	5.23	11.54	26.34	23.58	49.92	6.0%	7.0%
1990		(%09)	12.59	11.48	24.07	15.76	14.23	29.99	8.92	7.32	16.24	37.27	33.03	70.30	6.0%	7.0%
1989	(%09)		0.84	0.63	1.47	1.04	0.78	1.82	0.56	0.42	0.98	2.44	1.83	4.27	6.0%	7.0%
1988	(40%)		0.52	0.39	0.91	0.66	0.48	1.14	0.36	0.27	0.63	1.54	1.14	2.68	6.0%	10.0%
1987															6.0%	12.0%
1986															7.0%	15.0%
1985															7.5%	25.0%
Year		and Construction	Foreign	Local/Tax	Total	Foreign	Local/Tax	Total	Foreign	Loca1/Tax	Total.	Foreign	Local/Tax	Total	Foreign	Local
Description	. Detailed Engineering	. Construction Supervision and Constructi		LUCENA - CALAUAG Sertion			ALLEN – CALBAYOG Section			NAGUILIAN ROAD			TOTAL		Feralation Rate *	

Note * : Data Source NEDA.

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APPENDICES FOR CHAPTER 9

																																	11	
																																	59	
																																	37	
2.2.6	1.15.5	2.2	4.55	. C. I	- 196	< < 1	2 W 2	ers.	· ·	 X2 	er 2.	- C.	÷ .		e . 1		9. e	T	1.2.3		- 12	 	1.1	- C.	 		 1.1	 	 		 			
· · ·	1000	(S. 177		512112	 - 12	1.127	1.71	11	89 H N	200 a		÷.	12	- 1955	20,25	201	2.2	19.02		 		 ÷		- 2.2		2.77		 · · ·		 ÷ 5.		1. N		

APPENDIX 9.2-1 BASIC VEHICLE OPERATING COSTS

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APPENDIX 9.2-1 BASIC VEHICLE OPERATING COSTS

1) General

The Basic Vehicle Operating Costs (BVOC) are expressed in November 1984 price levels. The manual on Basic Traffic Cost procedures, $\frac{1}{}$ prepared by MPWH was main reference for the study with some minor modifications to be consistent with the findings of the Study Team.

2) Vehicle Characteristics

The characteristics of representative vehicles selected in the Study are shown in Appendix 9.2-1 (1).

3) Basic Running Costs

Running costs are defined as part of vehicle operating costs which vary in proportion to the operating distance run by vehicles and comprise the following component:

a) Fuel Cost

Fuel cost was estimated by multiplying fuel consumption (liter/km) for each representative vehicle by fuel price (pesos/liter). Price of fuel and lubricant are shown in Appendix 9.2-1 (2).

 $\frac{1}{}$ Basic Road Traffic Cost, Highway Planning Manual, Vol. 4 (August 1982)

	CHARACTERISTICS	
	VEHICLE	
	Ξ	
	9.2.1	
	×	

APPENDI)

I. Tax E. Tax (Kears) (Km) (Hours) Type Consumption Type Consumption Type Io Io 158,275 93,414 10 15,000 2,000 PG 0.10 1/km 10 190,386 112,366 10 17,000 2,000 PG 0.12 10 79,482 69,555 15 20,000 2,000 PG 0.12 10 79,482 69,555 15 20,000 2,000 PG 0.12 10 79,482 69,555 15 20,000 2,400 D 0.12 10 79,482 59,555 15 20,000 3,000 D 0.09 10 127,370 111,461 5 60,000 3,000 D 0.16 10 292,195 252,253 6 70,000 3,000 D 0.14 90 298,955 229,256 12 30,000 D 0.28			Average Vehic	Average Vehicle Cost (P)	Service Life	Yearly P	Yearly Performance		Ц С С	Lub	Lubricant
Light Car 158,275 93,414 10 15,000 2,000 PG 0.10 1/km 10 Medium Car 190,386 112,366 10 17,000 2,000 PG 0.12 10 I Heavy Car 160,000 94,432 15 20,000 2,000 PG 0.12 10 Jeep 79,482 69,555 15 20,000 2,000 RG 0.12 10 Van 116,873 102,276 10 25,000 2,400 D 0.05 10 Van 115,873 111,461 5 60,000 3,000 D 0.09 10 Van Large 557,000 479,157 8 80,000 3,000 D 0.14 90 Medium 209,695 160,605 12 45,000 2,400 D 0.14 90 Medium 209,695 160,605 12 45,000 2,400 D 0.14 90			I. Tax	E. Tax	(Years)	(km)	(Hours)	Type	Consumption	Type	Consumption
Medium Car 190,386 112,366 10 17,000 2,000 PG 0.12 10 1 Jeep Jeep 79,482 69,555 15 20,000 2,000 7,000 70 10 1 Jeep 79,482 69,555 15 20,000 2,000 7,000 70 10 1 Van 116,873 102,276 10 25,000 2,400 0 0.02 10 1		Light Car	158,275	93,414	10	15,000	2,000	ЪG	0.10 1/km	10	0.70 1/Mm
<pre>r Heavy Car 160,000 94,432 15 20,000 D 0.12 10 1 Jeep Jeep (Ford Fiera) 19,482 69,555 15 20,000 2,000 RG 0.12 10</pre>		Medium Car	190,386	112,366	10	17,000	2,000	ЪС	0.12	10	1.00
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	C a Z	Heavy Car	160,000	94,432	15	20,000	2,000		0.12	10	1 10
Van 116,873 102,276 10 25,000 2,400 D 0.08 10 teepney (Ford Fiera) 127,370 111,461 5 60,000 3,000 D 0.09 10 u \$mail 292,195 252,253 6 70,000 3,000 D 0.16 90 u Large 557,000 479,157 8 80,000 3,000 D 0.16 90 Medium 299,695 160,605 12 30,000 2,400 D 0.14 90 *** Medium 298,955 229,256 12 45,000 2,400 D 0.26 90 *** Heavy (2-axles) 463,245 352,115 12 45,000 2,000 D 0.28 90 ** Heavy (2-axles) 285,000 210 3,000 D 0.26 90 ** Semi-Trailer 1.133,000 90.600 3,000 D 0.22 90 </td <td>· · ·</td> <td>Jeep</td> <td>79,482</td> <td>69,555</td> <td>15</td> <td>20,000</td> <td>2,000</td> <td>RG</td> <td>0.12</td> <td>10</td> <td>1.00</td>	· · ·	Jeep	79,482	69,555	15	20,000	2,000	RG	0.12	10	1.00
leepney (Ford Fiera) 127,370 111,461 5 60,000 3,000 D 0.09 10 ^{u S} Small 292,195 252,253 6 70,000 3,000 D 0.16 90 ^{Large} 557,000 479,157 8 80,000 3,000 D 0.24 90 Small 209,695 160,605 12 30,000 2,400 D 0.14 90 Medium 298,955 229,256 12 45,000 2,700 D 0.26 90 Heavy (2-axles) 285,000 210,387 12 50,000 3,000 D 0.28 90 Heavy (3-axles) 285,000 210,387 12 50,000 3,000 D 0.42 90 Semi-Trailer 1,133,000 905,667 10 60,000 3,500 D 0.42 90		Van	116,873	102,276	10	25,000	2,400	D	0-08	0T	0.80
u s Small 292,195 252,253 6 70,000 3,000 D 0.16 90 Large 557,000 479,157 8 80,000 3,000 D 0.24 90 Small 209,695 160,605 12 30,000 2,400 D 0.14 90 Medium 298,955 229,256 12 45,000 2,700 D 0.26 90 Heavy (2-axles) 463,245 352,115 12 50,000 3,000 D 0.28 90 Heavy (3-axles) 285,000 210,387 12 50,000 3,000 D 0.32 90 Semi-Trailer 1,133,000 905,667 10 60,000 3,500 D 0.42	Jeepney	(Ford Fiera)	127,370	111,461	ъ	60,000	3,000	ß	0.09	10	0.90
Large 557,000 479,157 8 80,000 3,000 D 0.24 90 Small 209,695 160,605 12 30,000 2,400 D 0.14 90 Medium 298,955 229,256 12 45,000 2,700 D 0.26 90 Heavy (2-axles) 463,245 352,115 12 50,000 3,000 D 0.28 90 Heavy (3-axles) 285,000 210,387 12 50,000 3,000 D 0.32 90 Semf-Trailer 1,133,000 905,667 10 60,000 3,500 D 0.42		Smal1	292,195	252,253	9	70,000	3,000	0 0	0.16	06	2.50
Small 209,695 160,605 12 30,000 2,400 D 0.14 90 Medium 298,955 229,256 12 45,000 2,700 D 0.26 90 Heavy (2-axles) 463,245 352,115 12 50,000 3,000 D 0.28 90 Heavy (3-axles) 285,000 210,387 12 50,000 3,000 D 0.32 90 Semi-Trailer 1.1133,000 905,667 10 60,000 3,500 D 0.42 90		Large	557,000	479,157	ω	80,000	3,000		0.24	90	3.00
Medium 298,955 229,256 12 45,000 2,700 D 0.26 90 Heavy (2-axles) 463,245 352,115 12 50,000 3,000 D 0.28 90 Heavy (3-axles) 285,000 210,387 12 50,000 3,000 D 0.32 90 Semi-Trailer 1,133,000 905,667 10 60,000 3,500 D 0.42 90		Small	209,695	160,605	12	30,000	2,400	Ω	0.14	06	2.00
Heavy (2-axles) 463,245 352,115 12 50,000 3,000 D 0.28 90 Heavy (3-axles) 285,000 210,387 12 50,000 3,000 D 0.32 90 Semi-Trailer 1,133,000 905,667 10 60,000 3,500 D 0.42 90		Medium	298,955	229,256	12	45,000	2,700	D	0.26	06	3.00
285,000 210,387 12 50,000 3,000 D 0.32 90 1,133,000 905,667 10 60,000 3,500 D 0.42 90	Truck	Heavy (2-axles)	463,245	352,115	12	50,000	3,000		0.28	6	3.50
1,133,000 905,667 10 60,000 3,500 D 0.42 90		Heavy (3-axles)	285,000	210,387	12	50,000	3,000	D	0.32	06	4 00
		Semí-Trailer	1,133,000	905,667	10	60,000	3,500	D	0.42	<u> 0</u> 6	4.00
		Note:									

Note;

Lubricant Type

Fuel Type

10 : Petron Motor 0il 10
90 : Mobil HD 90 Super PG : Premium Gasoline RG : Regular Gasoline D : Diesel

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APPENDIX 9.2-1 (2) PRICE OF FUEL AND LUBRICANT

	Including Taxes	Custom Duty	Specific Tax	Energy Tax	Special Fund	Excluding Taxes
Fuel						
Premium Gasoline	9.24	1.20	1.74	0.63	•	5.67
Regular Gasoline	8.81	1.20	1.62	0.68	-	5.31
Diesel Fuel	7.26	1.20	0.66	-		5.40
Lubricant						n an
Petron Motor Oil 10	31.00	1.20	1.50	0.65	0.12	27.53
Mobil HD90 Super	32.50	1.20	1.50	0.65	0.12	29.03

Unit : Pesos/Liter

b) Tire Cost

Tire cost was estimated by dividing the price of a set of tires by tire life expressed in kilometers. The following assumptions were made:

- The tire life will be extended by 50% of the original life at 85% use,
- . The cost of recapping will be 30% of the brand new price,
- . Recapping will be done once per original tire on average for commercial vehicles,
- . Only 30% of light, medium and heavy cars are considered to be in commercial use, and
- . Jeeps, vans, jeepneys, buses and trucks are considered as commercial vehicles.

Tire costs are shown in Appendix 9.2-1 (3).

APPENDIX 9.2-1 (3) TIRE COSTS

		ľ			C	6	2	8	e	10	~		m
<u>st (P/km)</u> E. Tax	0.06	0.05	0.07	0.07	0.10	0.06	0.12	0.33	0.19	0.15	0.33	0.55	0.88
Traffic Cost (P/km) I. Tax E. Tax	0.06	0.06	0.08	0.07	0.12	0.07	0.13	0.36	0.21	0.17	0.36	0.60	0.97
Percent Recapped	30	30	30	100	100	100	100	100	001	100	100	100	100
Life (1000 km)	35	40	20	45	35	30	50	60	40	50	60	60	-09
E. Tax	2,117	2,286	4,008	3,196	3,946	2,058	6,571	21,288	8,247	8,247	21,288	35,480	57,048
Ave. Tire Set Price (P) I. Tax E. Tax	2,329	2,515	4,409	3,515	4,340	2,264	7,228	23,417	9,072	9,072	23,417	39,028	62,753
مرد در مرد در در هرو در در	. 6.00	SR	7.00	6.00	7.00	6.50	2.00	10.00	7.50	7.50	10.00	10.00	11.00
Type/Size	T1 4PR 5.60	1 175	6PR	6PR	BPR	4PR	8PR	14PR	8PR	8PR	14PR	14PR	18PR
	T1 4PI	Radial	Tube	Tube	Tube	Tube	Tube	Tube	Tube	Tube	Tube	Tube	Tube
No. of Tires	4	4	4	4	4	4	5 0 1	6	Q	6	6	10	14
	-ight Car	Medium Car	Heavy Car	Jeep	Van	rd Fiera)	Sma 1 1	Large	Small	Medium	Heavy (2 axles)	Heavy (3 axles)	Semi-Trailer
			د م ک	- - -	-	Jeepney (Ford Fiera)		7			Truck		
			· ·		· ·								

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c) Maintenance and Repair Cost

The maintenance and repair cost per kilometer are calculated as follows:

- Cost of Parts : Percent of retail price reduced by cost of tire set divided by the annual operating distance.
- . Cost of Labor : Retail labor rate times annual number of labor hours divided by the annual operating distance.

APPENDIX 9.2-1 (4) MAINTENANCE AND REPAIR COSTS

Haran Carlo di Januara ang sa	<u></u>	Spare Parts	Cost of	Darts	Labor	Cost of	labor
		(%)	I. Tax	E. Tax			E. Tax
	Light Car	2.5	0.26	0.15	60	0.10	0.10
	Medium Car	2.5	0.28	0.16	70	0.11	0.10
Car	Heavy Car	5.0	0.39	0.23	100	0.13	0.13
	Jeep	5.0	0.19	0.17	100	0,13	0.13
	Van	5.0	0.23	0.20	100	0.10	0.10
Jeepne	ey (Ford Fiera)	10.0	0.21	0.18	200	0.09	0.08
Ruc	Small	10.0	0.41	0.35	250	0.09	0.08
Bus	Large	8.0	0.53	0.46	300	0.10	0.09
	Small	6.0	0.40	0.30	125	0.11	0.11
	Medium	7.0	0.45	0.34	250	0.14	0.14
Fruck	Heavy (2-axles)	7.0	0,62	0.46	300	0.16	0.15
	Heavy (3-axles)	6.0	0.30	0.21	300	0.16	0.15
	Semi-Trailer	7.0	1.25	0.99	350	0.15	0.15

Unit : Pesos/Km

Note; Labor rate for mechanic (P/hour) = P 25.31

Minimum Wage (🌶/day) = 🖗 54.00

d) Distance-Related Depreciation Cost

The distance related depreciation costs per kilometer are calculated as the distance related share in percent of the retail vehicle price, reduced by the cost of the tire set in use, divided by the life time kilometrage. The split of the capital costs into distance and time related cost is shown in Appendix 9.2-1 (5).

APPENDIX 9.2-1 (5) SPLIT RATIO OF DEPRECIATION COSTS

5494-2003 , 5404-8405 , 5404 , 540 , 54	Distance Related	Time Related
Light Car	50	50
Medium Car	50	50
Heavy Car	65	35
Jeep, Van	65	35
Jeepney, Bus	85	15
Truck	65	35

(in Percent)

e) Basic Running Costs

Basic running costs at each sections are calculated by the basic running costs by vehicle type summarized in Appendix 9.2-1 (6) and the modal share of each vehicle type shown in Appendix 9.2-1 (7).

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		u ^{nt} in ⊅ y National (national) National (national)	e	Lubricant	cant		с С	2 2	Maintenance t s L	bn l	и 0	Depreciation	ation	+ 0 	 נה
		I.T.	н Ч	1.T.	н Н	1.7.	Π.Τ.		μ		ш	Ι.Τ.	E U	г. т. Т. Т	н- Ш
· · · · · · · · · · · · · · · · · · ·	Light Car	0.92	0.57	0.02	0.02	0.06	0.06	0.26	0.15	0.10	0.10	0.52	0.30	1.89	1.20
	Medium Car	1.11	0.68	0.03	0-03	0.06	0.05	0.28	0.16	0.11	0.10	0.55	0.32	2.13	1.35
น ช เว	Heavy Car	0.87	0.65	0.03	0 03	0.08	0.07	0.39	0.23	0.13	0.13	0.34	0.20	1.84	1 30
	Jeep	1.06	0.64	0.03	0.03	0.07	0.07	0.19	0.17	0.13	0.13	0.16	0.14	1.65	1.17
	Van	0.58	0.43	0.02	0.02	0.12	0.10	0.23	0.20	01.0	0.10	0.29	0.26	1.34	1.11
Jeepney (F	(Ford Fiera)	0.65	0.49	0-03	0.02	0-07	0-06	0.21	0.18	0.09	0.08	0.35	0.31	1.40	1-15
v = a	Small	1.16	0.86	0.08	0.07	0.13	0.12	0.41	0.35	0.09	0.09	0.58	0.50	2.45	1.99
	Large	1.74	1.30	0.09	0.08	0.36	0.33	0.53	0.46	0.10	0.09	0.71	0.61	3.54	2.87
	Sma 11	1.02	0.76	0.06	0.06	0.21	0.19	0.40	0.30	0.11	0.11	0.36	0.28	۵.16 ۲	1-69
	Medium	1.89	1.40	0.03	0.08	0.17	0.15	0.45	0.34	0.14	0.14	0.35	0.27	8. 	2.39
ж о л	Heavy (2-axles)	2.03	1.51	0.11	01.0	0.36	0.33	0.62	0.46	0.16	0.15	0.48	0.36	3.75	2-91
	Heavy (3-axles)	2.32	1.73	0.12	11.0	0.60	0.55	0.30	0.21	0.16	0.15	0.27	0.19	3.77	2.94
	Semi-Trạiler	3.05	2.27	0.12		0.97	0.88	1.25	0.99	0.15	0.15	1.16	0.92	6.71	5.32

APPENDIX 9.2-1 (7) MODAL SHARE BY SECTION

the the second second				and the second
		Lucena-Calauag Section	Allen-Calbayog Section	Naguiliar Road
	Light Car	19	9	27
	Medium Car	19	9	27
Car	Heavy Car	5	3	10
	Jeep	12	53	3
	Van	45	26	33
	Total	100	100	100
Jeepney (F	ord Fiera)	100	100	100
	Small	72	10	0
Bus	Large	28	90	100
	Total	100	100	100
	Small	20	30	12
	Medium	25	30	24
Truck	Heavy (2-axles)	25	40	24
IIUCK	Heavy (3-axles)	23	0	40
	Semi-Trailer	7	0	. 0
	Total	100	100	100

(in Percent)

APPENDIX 9.2-1 (8) BASIC RUNNING COSTS EXCLUDING TAXES BY SECTION (PESOS/VEHICLE - KILOMETER)

		1			
÷.			Lucena-Calauag Section	Allen-Calbayog Section	Naguilian Road
	Car	<u></u>	1.19	1.18	1.22
÷	Jeepney		1.15	1.15	1.15
	B u s	to an Antonio de la composición	2.24	2.78	2.87
	Trück		2.71	2.39	2.65

Basic Fixed Cost

4)

Defined as the part of vehicle operating costs which vary directly with operating time (running and waiting time), this cost component is composed of the following cost items:

a) Time-Related Depreciation Costs

The time dependent depreciation costs are calculated as the time dependent share in percent of the vehicle retail price, reduced by the tire set costs, and divided by the product of vehicle life in years and annual operating hours. The calculations method was based on the straight line depreciation and no salvage value was assumed. Refer to Appendix 9.2-1 (5).

b) Opportunity Cost of Capital

The average capital employed over a vehicle's lifetime is assumed to be half the initial purchasing costs in the absence of any salvage value. Using 15%, which is the estimated annual opportunity cost of capital for the country, this cost component is calculated by the following equation:

Opportunity Cost _ <u>Vehicle Price Including Tire x 0.50 x 0.15</u> of Capital Annual Operating Hours

c) Crew Cost

The estimated costs per hour including salary, allowance, social benefits and commission and the crew sizes are as follows:

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	Driver	Conductor	Helper
Car, Jeep	ng n	92 - 24 - 24 - 24 - 24 - 24 - 24 - 24 -	El La Mary Parl Carlo de Maria Carlo de La Carlo de Altrador
Van	1 at 🗗 9.25	. : : : : : : : : : : : : : : : : : :	
Jeepney	1 at 🗗 9.25		
ev B ü^{lti}s all the terminal of the	1 at 🛛 9.25	1 at 🛛 6.08	
Small truck	1 at 🖡 9.25		1 at 🖡 6.08
Medium, Heavy truck	1 at 🛛 9.25		2 at 🖗 6.08 = 🖗12.16
Semi-trailer			

(Unit : Pesos/hour)

d) Overheads, Licenses, Motor Vehicle Fees

The assumed overhead cost figures as of November 1984 are as follows:

0.00	(P/Veh-year)
10,526.32	· · ·
22,368.42	
23,684.21	
25,000.00	
	10,526.32 22,368.42 23,684.21

The registration fees are as follows:

300 P Veh-year
600 P/Veh-year
1,200 🎙/Veh-year
15.00 P/Veh-year
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 Heavy truck - 2 axles (15,500 kg)
 15.00 ₽/Veh-year

 Heavy truck - 3 axles (21,000 kg)
 do,

 Semi-trailer (31,000 kg)
 10.00 ₽ 100 kg-year

e) Insurance Cost

The insurance cost per vehicle per hour could be calculated as the annual premiums over the annual operating hours.

f) Basic Fixed Cost Reduction Factors

Based on the MPWH Highway Planning Manual, only 30% of light and medium cars are considered to be in commercial use.

The fleet reduction factors are supposed to express the degree at which time saving due to road improvement can lead to productivity gain in the form of fleet reduction. Fleet reduction factors will vary with the type of vehicle, type of operation and area.

The utilization of saved time will probably be highest for vehicle characterized by traditionally short and frequent trips such as jeepney and commercial cars, while large vehicles would not be utilized effectively because they were subject to extensive repair and rescheduling trips over longer distances.

Basic fixed cost reduction factors comprising commercial use and fleet reduction factors were assumed as follows:

Vohiolo Tuon	Reduction Fac	tor
Vehicle Tyep	ommercial Use	Fleet
Light, Medium Car	0.30	1.00
Heavy Car	0.60	1.00
Jeep http://www.second.com	0.40	1.00
Van, Small truck	1.00	0.40
Jeepney	1.00	0.90
Small bus	1.00	0.80
Large bus	1.00	0.70
Medium truck	1.00	0.60
Heavy truck, Semi-trailer	1.00	0.75

APPENDIX 9.2-1 (10) REDUCTION FACTOR

g) Basic Fixed Costs

Basic fixed costs at each sections are calculated by the basic fixed costs by vehicle type summarized in Appendix $^{9.2-1}$ (11) and the modal share of each vehicle type shown in Appendix $^{9.2-1}$ (7.)

APPENDIX 9.2-1 (12) BASIC FIXED COSTS EXCLUDING TAXES BY SECTION (PESOS/VEHICLE-HOUR)

	Lucena - Calauag Section	Allen - Calbayog Section	Naguilian Road
Car	4.78	3.50	4.26
Jeepney	20.21	20.21	20.21
Bus	27.36	28.56	28.75
Truck	26.97	24.50	27.58

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APPENDIX 9.2-1 (11) BASIC FIXED COST/VEHICLE-HOUR IN PESOS

		• .		•									
-ixed ts	E.T	2.09	2.52	4.08	1.79	7.74	20.21	26.82 28.75	10 96	24.54	34.63	30.15	43.56
Basic Fixed Costs	 	3.37	4.09	6.42	2.24	8.06	20.85	28.11 30.99	11 03	26.51	36.05	31.49	49.58
l Costs	н Н	6.98	8.41	6.80	4.48	19.34	22.46	33.53 41.07	27 AN	40.90	46.17	40.20	58.08
Fixed	I.T.	11.23	13.63	10.70	5.60	20.15	23.17	1.96 35.14 2.58 44.27	20.83		48.06	41.99	66.10
Insurance	Е.Т.	1.20	1.45	2.21	1.10	1.07	1.87		0 80		1.64	1.64	1.64
	I I	1.24	1.49	2.28	1.13	I.10	1.93	2.02 2.66	0 84		1.69	1.69	Б 9 -Т
Ovenhead, Taxes and Licenses	Ш	0	0 0	0	0	4.39	7.46	7.89 8.33	02 V		8.33	8.33	7.14
Ovenhe and	LI	0.15	0.30	0.60	0.0	4.51	7.56	8.13 9.03	4 7	9.84	6.11	9.38	8
Crew +	2020	0	0	0	0	9.25	9.25	15.32 15.32	15 23	21.40	21.40	21.40	21.40
untiy Capital	н. Т	3.50	4.21	3.54	2.61	3.20	2.79	6.31 11.98	ъ С	6.37	8.80	5.26	19.41
Opportuntiy Cost of Capital	1.T.	5.94	7.14	6.00	2.98	3.65	3.18	7.30 13.93	2 2 2 2 2 2 2	8.30	11.58	7.13	24.28
£ .	Е.Т.	2.28	2.75	1.05	0 77	1.43	1.09	2.05 2.86	1 85	2.39	3.22	1.70	8.49
Depreciation	Ι.Τ.	3.90	4.70	1.82	0.89	1.64	1.25	2.37 3.33	2 44	3.13.	4.28	2.39	10.70
		Light Car	Medium Car	Heavy Car	Jeep	Van	ord Fiera)	Small Large	Cmall	Medium	Heavy (2-axles)	Heavy (3-axles)	Semi-trailer
				с а С			Jeepney (Ford Fiera)	s a B			Truck	•	

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5) Time Cost

Basic time costs are defined as those costs which are incurred by drivers of cars and passengers in passenger transport vehicles, such as cars, jeepneys and buses.

Time cost was allocated a monetary value for those "at work" and "to/from work", while no time cost was assumed for travels with other purposes. The updated hourly rate value of time is shown below:

	In Work	To/From Work	Leisure
Car Driver Owner	24.47	12.23	0
Not Owner	9.28	4.64	0
Car Passenger	9.28	4.64	0
Jeepney Passenger	4.22	2.11	0
Bus Passenger	5.06	2.53	0

APPENDIX 9.2-1 (13) UNIT TIME VALUE/HOUR-PERSON IN PESOS

Based on the survey conducted by the Study Team, the average passenger occupancies were as follows:

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LANSE LANS ATTACAS AN		Lucena-Calauag Section	Allen-Calbayog Section	Naguilian Road
C - 1 - 2	No. of Passenger	1,033	102	460
(in work)	No. of Vehicle	278	31	162
	P.O.R.	3.7	3.3	2.8
	No. of Passenger	239	98	137
Car (to/from work)	No. of Vehicle	75	31	60
	P.O.R.	3.2	3.2	2.3
	No. of Passenger	483	1,598	5,354
Jeepney M	No. of Vehicle	115	85	415
	P.O.R.	4.2	18.8	12.9
	No. of Passenger	12,750	1,369	3,335
Bus	No. of Vehicle	512	50	85
· · ·	P.O.R.	24.9	27.4	39.2

APPENDIX 9.2-1 (14) PASSENGER OCCUPANCY RATES (P.O.R.)

Appendix 9.2-1 (15) and 9.2-1 (16) show the survey result on the number of cars and passengers by trip purpose distribution.

Using those survey results, the passenger time value per hour per vehicle and the assumption that driver-owners are 80% and 20% are employed drivers, the time cost by vehicle type are calculated as follows:

a) Time Cost for Cars with Business Purpose

Time Cost = $\{24.47 \times 0.80 + 9.28 \times 0.20 + 9.28 + (P.O.R.-1)\} \times C$ + $\{12.23 \times 0.80 + 4.64 \times 0.20 + 4.64 \times (P.O.R.-1)\} \times C'$

Where,	P.O.R.		Passenger occupancy rate
	C	•	Rate of the car in work
· ·	C'	:	Rate of the car to/from work

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	Lucena	No. of Lucena-Calauag	No. of Car Traffi lauag Allen-Call	affic (Veh./Day) -Calbayog Nag	'Day) Naguilian Road	an Road	Lucena-	No. of Lucena-Calauag	Car Pas Allen-(No. of Car Passenger (Pass./Day) lauag Allen-Calbayog Nagui	s./Day) Naguilian Road	Dad
In Work	278	(2%)	31	(20%)	162	(73%)	1,033	(81%)	102	(51%)	460 ((17%)
To/From Work	75	(21%)	31	(20%)	60	(27%)	239	(%61)	86	(49%)	137	(23%)
Sub-Total	353	(100%)	62	(100%)	222	(100%)	1,272	(%001)	200	(100%)	597 (1	(%001)
Leisure	145		58		243		518		156		785	
Total	498		120		465		1,790		356		1,382	

(15%) (88%) (100%)Naguilian Road (17%)2,269 485 3,335 581 Bus Passenger (Pass./Day) Allen-Calbayog Naguil (%001) (19%)(72%) (%6:) 1,369 253 119 997 <u>No. of</u> Lucena-Calauag (%001)(23%) (%6) (88%) 2,899 1,192 8,659 12,750 No. of Jeepney Passenger (Pass./Day) Lucena-Calauag Allen-Calbayog Naguilian Road (100%)(19%) (16%) (65%) 1,005 844 3,505 5,354 (%001) (%L) (24%) (%61) 1,171 1,598 313 114 (21%) (%001) (12%) (67%) 319 60 104 483 To/From Work r--ൽ In Work Leisure ч 0 |--

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b) Time Cost for Jeepney and Bus Passenger

Time Cost = $T \times P.0.R. \times P + T' \times P.0.R. \times P'$

Where, T : Unit time value of passenger in work T' : Unit time value of passenger to/from work P : Rate of the passenger in work

p' : Rate of the passenger to/from work

APPENDIX 9.2-1 (17) PASSENGER TIME COST/VEHICLE-HOUR IN PESOS

		e a de alares de 1177		
		Lucena-Càlauag	Allen-Calbayog	Naguilian
		Section	Section	Road
Car with Business I	Purpose	41.12	31.85	32.35
Jeepney		4.78	17.85	14.70
Bus		34.65	32.58	46.61