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	207R			•	
	evoankaut Treathent	gutter ropain	guttor and shoulder . ropair overlay	gutter repeir	revetment
STABILITY CHECK TABLE	PRESENT LAND FORM		ERONON DECONTORE	Normal State	and an and the
ELEANWHENT SLOPE ST.	CONDITION OF PAVENENT FEATURE	normal.	gully	oracks and sottlements	cracks and settlements
Nava	CONDECTION OF ENEL NKLIENT WILLENT	Temrot	road shoulder 'is croded by running water	Learon	Foot of Embankment ia weosws by Sta. Fertver
	Land Form Feature	cutting and embanicment	cutting and emb o nkmont	cutting and embankment	- cutting and embeniment
	ж У	215-300	215-600	215-900	216.800
:	io Z		Ŷ	\$	8.

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	61 1- 22				
	en ormanynt Thaanment	failure zone repair by masoury	reverment vertical drain	Doxcultert	
SLOPE STABILITY CHECK TABLE	PRESENT LAND FORM	A C C C C C C C C C C C C C C C C C C C	Internet Pres	Ravic S Rance Man	
BURANCHENT SLOPE S	CONDITION OF PANELIZHT FENUNE	cracks on the pavements	l omron	Tomron	
DARA	CONDITION OF ENCLANT W. TURE	slope failure is occyra at the toe of hill	Foot of Embankment is eroded by Sta- Fe river running water from pipe	erosico by stream	•
	LAND FORM FEATURE	cutting and embankment	the cat	म्रम्	1
	жу У	223.700	85 58 	225-400	•
l		\$.8	3	

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	REWARKS	"failure curface erocion of stream rock fall occur by exfolistics "land slide type (2)	*tailures occur the to surface orosion of water atrona -rock fall -land alide type (B)	-failure in small scale "rock fall often occured -land slide type (B)	"failurd" recur along Joint (exfo- linte) and largo scole lond alide type (3)	"failure in carll scale "lond slide type (3)
	CUTTING SLOPE TREATMENT	"soil, coft rock zono romeve l = 1 "hard rock rock net protection "need drain.go on "sop of the alope.	drainage cateblich unstable zone remove and rock not protoc- tion (soft rock and hard rock)	dreinege eatabliah unctable zone remove and rock net protection	drainnge ostablish unntable zone remove and rock net protection	draining establish usstable zene remove und rock net protection
STARTITY CHOCK TARES	PRESENT LAND FORM	21 mar 1 mar	CUTANT CARL INTA	the contract	20 Store dest- and	1 100 CAN 100 100 100 100 100 100 100 100 100 10
se adore extrant	CAUSE OF FAILURE (in cotting alope)	-worthered xone surface frijure "hwrd rock, rock "all	"doft rock kong purface oxfoliate along opon joint failuros occur duo to curface utroam eronion.	rock fall exfoltate along the crock- there are many crock in the diorite bed-	foilure occur due to ourface atroam oraion and exfoliation from joint	"failure occur on the flepd consist of soil and slope of a nuderite that "rfeliate along joints "all soft rock
	geological feature	 210rite 210rite 210rite 210rite 210rit 210rite 2000 autise 2000 autise 2000 autise 2000 autise 	-Diorito -Dooure hard rook -oracke present -Covered soil zbout 2-3m -Cuily pregent along the slope	-Diorite 	-Andomite - strongly worthorod - presence of meny breceimted guiliem -reeka -reeka Covered moil -very thick	-Chulo -Joint bedding abundant -Vhich exfoliated aoft rock -Anderite -atrongly weathered -chin -chin
	XX		167.500	10-20		
	òż	н	A:	n		5

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	X	GEOLOGICAL FEATURE	CAUSE OF FAILURE (in cutting slope)	PRESENT LAND FORM	CUTTING SLOPE TREATMENT	REMARKS
S A	167.900	*Andecite -Brocciates -Brocciates -exfolation, also strongly weatherrd (mearly soil) *Covered soil -Very thick about 5 10m	-bod rock rtroncly ventured becenes mury guillier raint- fatiure occura-	Motor and the second	"droinnge estrblish "unstrble zone remove "rock not protection	failure occured mainly due to water surface stream sctin land slide type (%)
4	169-200	* Artenito - Artendy weathered (nearly coil) - acclomerate ocours * Cuvered sofl - very thick	-wenthered zone exfeliation and swamp stream action	2017	drainngo catabliah swamp troatment	-dainly needs swamp troctment froctalido typo (3)
H	170-700	 Land atone chale Land atone chale exterteasy to exfoltate ecovored soil thickness about 5m 	- + foliation occur from schifty Joint accur from Filiare occurs due to sur- face water notion and to fri tenre weathering.	20 2 The manual for the manual of the second	unstable zone remove hard rock zone Rock not protection	-failure on the middle peale land slide type (A)
13	000 - 1/1	-Schlat -crecka vary abundant (seddarg Joint) -unper half is andars to -cover Cohist fovered soil about 5-8m thick	-there are mony guilles on the aloge purface. Fedlune here will it of the the upper perion of the weathered zone.	15 \$ 1 11 11 11 11 11 11 11 11 11 11 11 11	unstrule zone rezeve drainage establizh rock not protection	failure occured in small scale due to surface water action lond clide type (1)
18	171 00	-Jenist - Harry V - Harrad (neurly ofil) - Goverod Boil Vory thick (S - 15a)	-futture ocquer due to murfron weter eventor and madrforning water vettor (roston) "failure exfoliates on the uchiely rocks	m + /////	Acrianico octablian "worthored coil remove and hard rock net pro- tection	anny gully exists failure often occuro liend clide tyre (n)

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REMARKS	"there are undergroun water on the Elope "land alide type (A)	"there are undergroun water on the close "lond clide type (A)	*there are undergroum water on the alone *land alide type (i)	•there are undergroun water on the slope •land slide type (i)	"lend alide type (2)
CUTTING SLOPE TREATMENT	"drafaage establich "werthored sail (unstable zone) removed	"drainego catablich "unstablo zono remove	-drhinnge establish *umstable zone remove	drainefe establich "unstable kore rozeve	tailio actanta vanor orea all'anura
PRESENT LAND FORM	The for the second seco	Lever war	The manual menance	Sanation Lawrence	
CAUSE OF FAILURE (10 conting	orland "tailure secura by rurface oxfolter sprink and the boun- "water sprink and the boun- dery totrace derects con- dery totrace of failure.	"failure occurs with guily on wirface alone failure ia due to under- ground water action.	failure cocurs vith chiliten on surthan alope.	ברבר הרמלסה. אמלבר הרמלסה. אבורבה הבינצורי	water aroaton.
GEOLOGICAL FEATURE	*Torrace deposits (uppor) and andesite (lower) *Covered soil vory thin (without terrace deposit	Torrace deposits -Torrace deposits -debrin present ulorg the niope	Terraco deposita thore are many unatablo Broccia	Talus deposits and (granitic)	nttroco constant ins
NO-	173.500	273-900	774-000	001-281	2035
	ੜ 	N H	3 B - 34		H H

63	are underground on the slope lide type	the alone (3)	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	exfolta- tat for for (C)	exfolio to u nto. (unil de type (C)
remarks	there are undergro water on the slope "Irad alide type	there rec nave gullies on the land stice tyr	*thoro 4ro many Unitited on fing - Lond on tho - Lond on tho	-failure is exfolia- ted from joint beccuse large failur does not occur -land slide (C)	 follure extoliated fron follure denle follo <li< th=""></li<>
cutting slope Treatment	-dreinage establiah rock net protection	arringe establian rock not protoction	-dråinneo eccablian -unstrbie zono romovo	-Loase block should be cut off drainege establich	unstrble zone remove tock not protection
PRESENT LAND FORM	15 wet towerce	the second secon	Anno con the second	1 remark homer con	10 VILLATERATION
CAUSE OF FALLURE (In cotting	אר אר הדמיל מהודע אל שוואלבריט אר דיריל מהמודע אל שוואלבריט	<pre>failure occured by exfoltate foint on the weathered block thore are many gullies on the slope (atrongly weathere)</pre>	<pre>*foilure eccurs on the top of elte (vestressed soil) faiture is ine to indergroun water action, soil runface witter wetton.</pre>	tsalluro occura lu oxfolia- tson.	- failure ccourt by aliging along flowing loint and ex- foliation along Joint.
GEOLOGICAL FEATURE	*Dierite And terraco derocita	findwotte alfantly vesthered *Tep soll few metern thick	Anderite Lierite prodomin manty alertic prodomin to a depth of about 5m (nearly soil) Top wail about 5.0m	 Diorito Diorito Luppar aloga vary Luppar aloga vary Luppar aloga vary Land lover yarte al (chil) Lover soil Lover 5 all 	-plorito full promets on the lower slope, procure diorite is "hoursel. fow motoric thick
ž	265.60	285-900	186.100	126.200	26.400
Š	10 11	3	8 - 35	<u>а</u> н	\$0 57

PRESENT LAND FORM TREATMENT REMARKS	There were and the sone remove - there is ater - there is ater - there is ater - there is an any guilter slope (there are many guilter slope on the slope) - land slide type (B)	is hard and the same remove "there are many contained a stable some remove "there are many contained a stable some some stable alone is hard and state type (3) and s	20 Jarr New Summer - unistable zong remove "there is fault draines on the slope) "ince is fault (there are many of large acult filure- guilies on the slope) "land slide type (3)	To the formation of the second	H Warner
CAUSE OF FAILURE "100")	failure occurs on weathered rone due to surface and underground water retiens. "thore are many guilles on the slope.	failure occurs on aurface (vrathored soll) thore are many gullies on the slope due to water purface Action.	failure occurs due to murface whter croston. (gullies pro- sent along the slope).	failure occurs on the wonthored zone. failure is due to water action on the rurface of alope.	failure occurs on surface frilure is due to water action on the surface of slope.
GEOLOGICAL FEATURE	-Diorite vonthorod zone is 3-5# (upper alope)	-Diorite -weathered newrly to soil. Jeon thick	-Andcontro and achelatein are voethored coll. faulta present on the clore browner brannent rock is cheared.	-Diabese, diorito almoat weathered to soil -thore to fratt on the -Covored soil J-Sm thick	-Diorite, anderite -gonorally hard -crucks are abundant -Govered soil
XX	166_800	187.100	187.200	187.500	
NQ	ភ ,	22	8	÷.	2

GAUSE OF FAILURE	
	upper hole of cutting failure (exfolint diope to intensely weathered
1 2 6 4 1	d zone d zone metera thick metera thick n
200	-failure ecura by on tenthered and- wing Joint)
4 R - 60 	re-diorite is very hard "rock fullu exfoli at top of alogo is "rouing joint- Jut top of alogo is "failure occure by utrongly weathered." fop nofl.
res don urc oc water fillen	tto atrongly worthored list follor occure d half follor occure d alogo strongly westered foce when setter (nently roil)

ộ X	XX	GEOLOGICAL FEATURE	CAUSE OF FAILURE (In cutting stope)	PRESENT LAND FORM	cutting slope treatment	REWARKS
11 -	001-681	*Migro Diorlito alightly Voathered *Covered soll Jeym thick	rock fall rock fall obgerved along oven drock failure obterved on weathere zone	The man one we we were a set	"unstable zone vomove (fatlure obceved on wenthered zone) drainage establich	"there are mony guilide on the slope "land slide type (3)
1	130-000	Micro diorite numerroup oriecta (Aren ornex) are present debria few metor depth	ethere occur on the for the suffice of and the occurs of and the occurs of august of occurs of a suffice occurs occurs of a suffice occurs occurs occu	15 the Address	the toto zone remove rock not protection	"there are gullics on the slope "land clide type (3)
	190-200	-Micro diorite Little hard rock (Boderwiely Keatherod)	-failure occurs on wenthered Zode (cauge by water action) -rock fallo all exfoliated.	MET WAS AND COME	unstrale zone removo Frock zet procection	-there are sony gullies -land elide tyre (A)
	190.300	-Diorite hard rock (medergtely weathered)	-failure occurs on upper shepe due to water action. -rock fall occurs exfeliate on lower part of shope.	miune seure seure seure seure de la seure naro seure s seure s s seure s s s s s seu s s s s s s s s s	unstable zone remove rock zot protoction	-large scale frilure occured. "cony fullies on clop "lend alife type (2)
	191-190	-Xiero Diorite Little hard rock -Covered soil from 3 5m thick	"Initure exfoldated from area flowing joint due to water retion (undarground surface)	20 5. 1 1 2 - 3-5 m	failure occured at top of cut slove treatment of water (dreinegy) rock met protoction	-there are many guilies on the slope function (1)

		° (C)	type (3)	1 the 1 (2)	رتی برتی (3)	0 0 0 0 0 0 0 0 0 0 0 0 0 0
-	REMARKS	rock fall slide type	503 (40) (40)	are orore olore slide type	"Ipresent aloye to "failure occured amall scale "land alide type	серан (сала (сала сол суу
	145. 	201 201	* breecia (exfolic *Land sli	8 4 4 5 5 5 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	"prese failur amil lad c	1000 1000 1000 1000 1000 1000 1000 100
	SLOPE	protoction zinge remove	25,054 25,0556 25,0556 25,05666 25,05666 25,05666 25,056666 25,0566666 25,0566666666666666666666666666666666666	zono anould vatablich protection	zone should protection	Lone should establish
	CUTTING SL TREATMENT	rock not protection unotable zane remove	"unatro", zocu zhoul be regove "rock get protection		unstablo zone bo romove rock not prot	unstale zone be zomove Artunge estal
		" rock		The subsection of the section of the	unstablo bo romove rock not	aronore be romore stanters stanters stanters
STANDS	L'AND FORM		Dionite .	NOT GRI 40	+++++ 2014	at manuat
NDGNO XEE	LN		10 10 10 10 10 10 10 10 10 10 10 10 10 1	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	197 VIII	100
KLITIGFIC I		t:	* • 1 • 0 • 0	* ¹⁹ ^{- 1} - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	ya Yan Yan	· · · · · · · · · · · · · · · · · · ·
THOT DID	FAILURE (In cutting stope)	1 1 1	scurt on toproce exfoldate broccla	0001124 10 (0x2011000 (0110)	wentherod zono foilure (by wator action).thero are ma gullion on the alopo.	n terrico
CUTTRNO		faint exfolicte	ŏ H	200 200 200 200 200 200 200 200 200 200	l zono iion).the n the	occura on to I ryfrliata
	CAUSE OF	700X 501	failure deposit fock fai	feilure occura westhered soil due to cchiet/	wentherod water net gullten e	* 2011 * 2011 • 100 • 1015 • 1005 • 1005 • 1005 • 1005 • 1005 • 1005 • 1005 • 1005 • 1005 • 1
	- W	(por	ъ,	1 tho 20fent	() 2	
	FEATURE	t hart werthered) (alightly weathered)	т т т	t,achaletein there is fault on the slope because breent rock is cheared.	-Diorito, Jehalstoin hard rock (slightly wentherod) -Covered soil about one meter	-Diorite Etrongly wortherod (soft rock) -Covered woil on terrico depo- cita about 3-5m
	RCAL	t bart Trok (011&bt7y (011&bt7y	"Diorito, andosito hard rock (al woathared) Covared soil (3-5m)	cichist, ach alteroin thoro is fault slopo bocauco b rock is cheorod	-Diorite, Jehalatoin hord rock (slightly wenth -Covered soil about one meter	tto strongly wentho rock) rod soil on tor sits about 2-5m
	GEOLOGICAL	, ćchi c , č , č	"Diorito, and hard rec weathere Covered roil (3-5m)	មម្មិន ភ្នំ ទ ក ភ្ល ប ប ប រ ៖	- 24.04 44.44. 20.04.04.44.44. - Coveras	- Diotice acron rock) - Covered a aite
	XX	192.000	192.200	192.900	000 - 26t	193-150
	ģ	36	57 25	28	51. 52.	6 H 0 4

GEOLOGICAL FEATURE GEOLOGICAL FEATURE Diorite andesite hard rock (slightly weathored alightly weathored alightly weathored bard rock (minimal) Covered soil y-5 moter alightly weathored alightly weathored	CUTTING SLOPS STARILTY SURGE CARES	CAUSE OF FAILURE (In catring PRESENT LAND FORM CUTTING SLOPE REMARKS	exfoliction failure. rock falls do ant accur on the alopo. bo uncd. bo uncd. clans alide type (C)	"failure occurs on top revuew canary "unstable zone should "thore is tension of slope (solil failure) "rock fall exfoliate from the matural "rock not protection "failure occurs" "failure occurs" "of how result "tock not protection "failure occurs" "failure occurs"	Their occurs on top of "Instaure occurs on top of "Instance worthered soil) many Guilios present. "Ind slide type (3) "Tock net protection / "Iand slide type (3)	<pre>ite "failuro occurs due to under- ground water action and under groundwater stroam, thrruch upper diorite.</pre>	"failure occurs due to cur- free water action (weathered "instructor "rock met protection "lend slide type (3) th soil) and slide type (3)
		FEATURE CAUSE OF	thorod)	weathered "failure o weathered of slope k wort Fook) 'fook fall foint.	ck Slopo Cyon Tullio Tullio	deposit and diorite composed) . zearly weathered	diorite fock "failure occ little hrid rock free water (slightly westhered) aoil) and s westhering zeas denth J-5m (neerly, goil)

"there is water sprin on the slope "land slide type (0) spring on the lower slope. -land slide type (0) "Innd slide type (A) -sheared zone "Land slide type (C) "no problem "land alide type (C) REMARKS there is worky unstable zone chould unstable zone should unitable zone on top unstable zone on top of slope should be SLOPE rock net protection rock net rectorion "rock net protection remove reek net protection "rock not protection of blucks abould be TREATMENT be romove. **OUTTING** be remove 270001 GAGILY IN THIL MOP P Pach is contener 30 PRESENT LAND FORM strack the consist acute HAN YOK ş MICHODIONITO 2222 JOBY SLOVE UPABLICY CURCH TABLE 201 3 [3 1.72 WOR AVIA ¥@ +202 1----1.30 Ŋ ġ 1 2 "דסמא לאון פאלינואמרי לדימה לנסשות, טַמּזּינו FAILURE(In cutting stope) *exfoliates along open crack -Isilure -axfolinte on top of alope due to water action "Inilure occured on top of "exfolintion_along-joint rexfoltres along Joint ş ONTITO CAUSEROF LLAS HOOK - BLODE -rock fold TOCK FALL exfoliate TOCK INT ſ , but rook place very hard there is, a small fault there are many cracks FEATURE . slightly venthered strongly wealhered • on the slope "Mácro diorito" froch (hird) (nevrly soil) depth 3-59 (Norniels) hard rock derth U-96 "Miero diorite" Micro diorito 2m thick "Covered soil Covered soil -Covered soil "Covered "soil 211120 GEOLOGICAL * 24.6r3.to "Distants ŧ 197-000 197-700 196-450 196-500 196-750 Ž ş ş 5 e) 1 \$ 8 8 - 41

-	ulltes deposit type (C)	цчо (3) (3) (3)	type (C)	riluro e (3)	ده (۲۰)
REWARKS	"thore are gullied At terrace deposi "land slide type ((* there is no pro *land slide type	-lond blide typ	"all soft rock " lrrge scale frilvro . occurs. "lond slide type (3)	ancrod zone."
CUTTING SLOPE TREATMENT	rock not protection	^t unatable zone should be remeve. 10	unstable zone chould be remove "drrinage establish /	rock net protoction unstable rone should be remove	unstable zone remove.
PRESENT LAND FORM	- SPROMENT MARCH RELY- ENL WITH LITUR MARCH RELY- ENL TERENCE DER	10 th Hicker washeded	Consumer of the second	Non Line obj	20 20 Car Ser
CAUSE OF FAILURE (In cotting PRESENT LA	failure occured on the weathbrod zone (exfoliate)	-failure occurs of wenthered soil along the surface clope (by surface water action)	thilure occurs due to surface stroam action on the slope (there are many gulites.)	failure oggure along jointn (rock fall)	"weathored zone failure burface observed to exfoliante
GEOLOGICAL FEATURE	-Diorito Strangly wentherod -Covered soil 2-5m thiok Terrace deposit	 Diorite Stority weathered (aoil, little hord rock) Covered soil Sucretured coth (weathered soil) 	*Diorite birongly weathered (little hard rock) "Covered soil depth l.5m	Diorito.Quartz 1.0r. hyrite Rydrothermally altored Zone (bed rock broccia) eoft rock b "Cnvored soil"	-Ilydrothermally altored zone -Jaorito -Jaorito -Covered zoli
XX	201-300	201-600	202-200	202-950	203-200
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		ec (3)	51676 (B)	6 (I)	10000 0000 0000 0000 0000	аа ала ала ала ала ала ала ала ала ала
	REMARKS	hydrothermally altered zone there are gullied land slide type (e adur da the a tryre a tryre a	there are may fullies on the slope find many fault lond slide type (3)	there are many gu- 11400 on the 12070 and water arting Land alide type (5)	
	REN	hydrothermally altored zone there are gull land slide tyr	there there of our or of of the the the the	there are fullies or fullies or fund stade fund stade	14 14 14 14 14 14 14 14 14 14 14 14 14 1	910 910 910 910 910 910 910 910 910 910
			A CONTRACT OF			<u></u>
	slope 4T	t to	ock ahould be used as pro- cotabliched	unstable cone rotection / stoblich	draineCe establich (there ore many water spring points) 10000 and unstable 2010 remove	"druinage extablish (there are wrter aprin on the slepe) "loose and unstable ron remove
	a a	unstable zone remove rock net protection	-loose block should b remove rrek net used as pro tection reninge established	unatable rretection catablian	drainage establiah (there are many wa spring points) loose and unstable zone remove	druinance extablicat (there are writer np on the ulope) Ploose and unstable recove "rock net protection
1	CUTTING TREAT	-unstable Fock net	-loose blo renck ret rection rection	200 200 200 200 200 200 200 200 200 200	draineCe ec (there ere eprinc pein 1000c and u 20ne romovo 20ne romovo	droinnac (there er on the en loose en recove rock net
ļ		8.	The second s			9
H	FORM	REMAIN REMAINE	DIOAINE "	A CHION PT	-Youndry, ALEP	and the service
STORY AND ATTIEVED ANOID	L'AND		100 miles	a° K	All carrier and the carrier of the c	tor to the second
ND JII	PRESENT LAND FORM		- <u>†</u> - <u></u>			
THAT	and the second secon		2 9 9 9 9 9 7 1 7 1 7 1 7 1 7 1 7 7	Ч. – –	9	2 2 2 2 2
5.40M	(in cult ie slope)	30	Ф Пі 03 Це	by aurface folinted co pro-	0 २ १ १ १ १ १	slove observed to huv due to exfolistion undure.
ONTITIO	ILURE	occur due to sur ction (gullies) clistion stong	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	cauar by acc oxfol d zone aurface	نې 5	0 0 0 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
3	OF FA		1000 1000 1000	11 11 11 11 11 10 11 10 11 11 11 11 11 1	- - - -	440 640 640 640 640 640 70 70 70
	CAUSE OF FAILURE(In cattles	failure occur due to n water action (gullies, and exfoltation along joints.	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	exfoliate cauae by auria water clope curface exfoliated clope curface oxfoliated cli chemred zone cut-off of curface pre tection	0 13 14 5 5	607 05 5:212 6107 6107 6107 6107 6107 6107 6107 6107
	5	¥ 3 9 77		63 18 6 6 4 • • • • •		•
	385	роц	tto atroagly woathorod aboarod zono (hydrothermally altorod zone) hard rock	ਹ ਼	(to) (to)	tto strongly worthorod (hydrothormally sltorod) modermtely hard
	FEATURE	коасћо г од 2014)	ito atrongly woathorod aboarod zone (hydrothermally al zone) hard rock	tto coît rock shorrod zono (Brocela rock) ctrongly wontherod	Andouito , broccia)	to tto trongly worthorod (hydrochornally a modermealy hard
. •	• च	tto stro (stro (stro od coil thin thin	tto atroagly voo aboarod 2000 (bycrotherma zone) hard rock	ite coft rock shorrod zone (Breecia rock) strongiy woùth	ос голо Слатато, л Рокунуту, Слад волд.	074 724 720 720 720 720 720 720 720 720 720 720
	GEOLOGICAL	"Andesite strongly (sheared "Joverod coll thin	Diorite atronci aboarod w (hydrothe zone) iard rock	• 10 • 10	- 27 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Tindestto Corre Nuc Bod
	GEC	R. O.	°7C-			,
	<u>ă</u>	203- 200	20%•%20	203.500	203-200	207.000
	Ś	26	57 202	<u>8</u>	59	202 202
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CUMPTING CLOPE CRABILITY CHECK THOLE

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S S	small type (3)	c meny foult bacement rock de type (D) (L)	627 2730 (2) (3) (3)	andy the slope aype (B)	aany the slore yrain(
REMARKS	"fafluro in small scale clido type	• the trong of the	4 there of a add Gullion on the Stad alide top	there are mary Cullies on the Lond slide ery	"there are many gullies on the s mad woter opring "land slide type (
TTING SLOPE TREATMENT	2026 402000 100400 100400 100400 100400 100400 100400 100400 100400 100400 100400 100400 100400 100400 100400 100400 100400000000	vons renove toton von toton	untrable zono ronovo thoro aro anny jullio on the singer.	zono should esteblish protection	20ne reanve 0attblidah 7ratection
3	• • • • * • • * • • * • • • • • • • • • •	ти п п п п п п п т т т т т т т т т т т т	"unstable zono "there are mony or the alapse	• un atable • dro radolo • dro in aco • rock not	-unstable drainago rock not
LAND FORM	COLORE MIS ALL ALL ALL ALL ALL ALL ALL ALL ALL AL	ALTER CALL	and the second	COLORANCO CLUSE IN CLUSE IN COLORANCE COLORANCE	Wenthand wards
PRESENT LAND FOR		Annar	25		20 42/2
cattle (soe)	nould bo k nat protec unot	il failure and occurs due to surface water	do by wator tod> (intonso)		to Eulitos on Sailuro surínce.
CAUSE OF FAILURE (19	exfellation unatable zone should remove and rock net 'tion should on unon.	00 100 100 00 100 00 00 00 00 00 00 00 0	failuro caugo action (gulliog) exfolintion (int	citdo (slump) worthored zone	curface exfoliate there are many guilles on stope surface, failure occured on the surface.
CAUS	e ext e rear f e rear	- 400 4400 400 400 400 400 400 400 400 40	440 440 460 460 460 460 460 460 460 460	Leo Veo V	212 212 212 212 212 212 212 212 212 212
FEATURE	leatherod tured	boture xonf cis)	verting tot	thered	9 9 4 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
GEOLOGICAL	Andesite strongly weathered Frequently fractured loose	ito sheared fracture coll 5-10m (debrin)	አ	are strongly wontherod	Disbase/ yorphyry Froquently fractured venthered breeces
SEO.		111 111 111 111 111 111 111 111	-Diabase ness	0 k 6 0 6 0 7	2 2 7 0 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
Ž	204-000	204-101	204-300	204-500	304
NON	сi	N N N	: 3 1	3	5

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Š	ž	GEOLOGICAL FEATURE	CAUSE OF FAILURE (in cutting "tope")	PRESENT LAND FORM	CUTTING SLOPE TREATMENT	REMARKS
66	500 200 200	-fuartz porphyry (Qp) (clay) -frequently grack looge (nearly goil alternation)	"nurface is observed to exfo- liate. "failure occurs along joint " (inside) with cloy and block.	The second upon the second	eumatable zone removo «draimage establich *rock met protection	 there is water tydrotkermal alter thrison rock are all mearly soil thad slide type (S)
64	506.000	-Diabade -Diabade -Prequently (crack) -bewrly soil vonthered	-failuro occurs at slope surface duo to surfaco water action.	WE-2 Liter States	"unstable zone renovo "draimage establish "rock not protection	 there are many guilties on the slope "land slide type (3)
3	206.300	-Disbass/pophyrits nearly soil Frequently crack nearly soil	"curroco railuro io due to water wotion "the cromany guillog in the clope due to murroce water.	RAILURG CT-SM	-unstable zone remove drainele conclish rock net protoction e	"there are many gum lites on the slove "land slide type (A) (B)
69	006-300	-Diabaco/ Porchyrite -Proguestly, very looso	<pre>" aurine exfolinte by mnny gully (aurinee water atream) " Zhenred zone. failure occured at murinee of slope. (cxfo- linte)</pre>	- LARTAGE FALLING OLLONNO FALLING OLLONN HALE OLLONNA IS IS TALE BULL SUMMAR	unstable zone removo drainare establich rock net protection	•there are may gu- lites on the slope -rocks have may ereck -lend slide type(3)
2	207.180	"Dioritad'porphyrita "Dioritad'portita "Srequently, very looso "Srequently, very looso	-Failure observed on the alope) curface (exfoliate from flawing jaint)	20 ver interest	"unstable zone remove drainage establish "rock net protection	there are many culles and water syring on the slope. fell phenred zone "land ulide type (3)

ı

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REMARKS	are is water sprin the slope. (3) Id slide type (3)	there are mony weter spring quantity and guilless fond slide type (2)	he problem Land clide zone type(i)	no problem Lond alide type (1)	to problem Lond clide type (C)
CUTTING SLOPE TREATMENT	"unatable zone remove "the drainage octablish at rock net protection "lan	unatuble zono romove "thore drainago octublich sprin rock not protection [ull1.	"undtablo zone romove "no r rvnd tvpe	"unstrible zone romovo "lond" "lond	"unsteble zone removo" "no r "lond"
UCMBILTON CURCH CARLE	Church Street Church	25 SC + ALL STREPARD	autonormentare Argonican dennées Yeuen ane ago b b b b b b b b b b b b b b b b b b b	- more routine with	De formeres anna
URE (In cut)	"failure occurs due to under Ground wrter, and aurface water action. Nock is exfoliated	 surface failure to obstroad to exfoliate. failure occure on weathered soil due to water action. 	oxfoliate from joint c' durgaco (in amall acale)	observed to exfolic te from flowing joint.	"vouthered zone failure (top of ulope) exfolittes.
GEOLOGICAL FEATURE	"Andosito, dioritic perphyrit "Thewrod zone "irequently crack	*Ancosite otrongly wenthered "Froquently crock zone	*And built wonthored to soll	-Diorito -Jhoared zone -Trequently chack tiry looge	-Gabbro, diorite strongly weathered
ž	00.	207.9 00	203-6 00	300, 200	000°-000

GEOLOGICAL		FEATURE	CAUSE OF FAILURE (In culting	PRESENT LAND FORM	CUTTING SLOPE TREATMENT	REMARKS
- Andesite - Frequent - Prequent - Preci	.to Maghtly matly ock pio	Lindesite Elightly weathored Frequently rock piece is very hard	exfolioto from joint	Sur them shares	*rock net protection *unatable zone romovo	<pre>* * * * * * * * * * * * * * * * * * *</pre>
- 小山点でおわた - たい、 B C T - たい、 B C T T	site strongly soft rock.	tte strongly weathered oft rook.	weathered soil zone failure by water Action.		"unstable zone remove "there are gullies on the slope because drai nage needs treatment.	there are many hollow on the slope land slide type (3)
1404 •	Рор ћут1 ста Гговћ Г	ងដំណឹង នាំ 1 t ម	exfoliation.cooura alone jeint (rook fall)	PLANT SWITT VOROTE	rock net protection	-land slide type (C)
- Andoau atto atto	ito strongly	isto strongly weathered	• exfoliation	+	there is a plain space side of road beenuse	-Inné sliče type (C)
- Cuort	.С. с. с. с. с. с. с. с. с. с. с. с. с. с.	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	curface exfolintion from Joint and surface erosion	No we - up	there are many gullies on the slope (surface water) trowtment surface water is needed. mound up (small)	there is a little problem in drainee lrud slide type (B)

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THE AVERA ARE THEN WE MENT TO DATE

				CUMPING SLOPN: JEARLITTY CHECK TARLE	BILITY CHECK TABLS		
2	-ox	XX	GEOLOGICAL FEATURE	CAUSE OF FAILENRE (In conting	PRESENT LAND FORM	cutting slope treatment	REMARKS
		21%。800 800	:Debria (Limeatono) atrongly weathered (all soil) limestone bed rock	clay and boulder aude by ground surface water action	2016	unstable zone remove "needs troatmont of drainage	there is water spring on the slove lond clide type (2)
N 60		213.900	"Limeatone - Cunrtz diorite etrongly wenthered very loose	"slump failure is due to. Water action.	one concourt wearing and	"loose soil slump type. "bodd drainage at the "alope	coil is calicius. and have high water content "land slide type (C)
£0 B − 48		215-600	Cuarts Diorite strongly weatherod Frequently creck loose	erarion due to stream action "There wir many gullies " present on the cutting alope	IS or annara Oragine	drainego establish mound up ostablish	"curface craded out" due to water action (samil scale) "land slide type (3)
0)	72	000-012	"Lindstone, above strongly weathered little soft rock	-rock fall observed. Limetone bruldera	E St	unstable zone chould be romovo zone chould "rock not protoction mound up establish	Rock falls only land slide type (1)
\$ 8		001-912	Kucrtz Dierite ' strongly worthered (decomposed)	esurince exfoliato (erocion by surface watord thore are many gullios.	of the second of	-drainage establich (water spring) mound up establich	aurface exfolicite (small scale) "land alide type (3)

B - 49

				TRADE VORICE TABLE		
NO-	XX	CEOLOGICAL FEATURE	CAUSE OF FAILURE(In WHING	PRESENT LAND FORM	cutting slope treatment	remarks
I	229-350	-Wehalatein nearly soil uppor part of alope lower parts have little hard'rook	top soil failurels due to underground water atream netion bed rock exfeliate from Joint	20 Thursday	"unstable zone remove "drainage estrblish mound up (consrete wall) "rock not establish	curface failure cosily occur due to water action "land clide type (A)
	219-900	-Dehalstein/Andooite Strongly weathored monrly to seil	Tailuro is observed on top of weathered woll along the slope by aurface and "ground water action. "rock fall occur by ex- foliation of flouing joint.	Service and the service of the servi	"unstable zone remove "drainage establich "mound up (concrete wall) "rock not establish	 there are many Gullics on the slope land slide type (i)
[220‡000	-Cohalstoin woderstely hard rook slightly weathored	*eroaion by surface water	- ANIMOLO - OLVA	"unstable zone removo "drainago octabliah "rock not satablich -	Tittle problem Tand slide type (3)
+	220-300	-Diorito strongly wontherod (docomposed)	"ourface exfelicted terrace deposit	IO SIGNITE DEPARTE	unstable zone remove drainnge establish	Tittle problem (3) Tand slide type (3)
	220-9900	(poistiew) tros Atreat	-faiture occurs on the sur- face of stope by ground water activities	The manufactor and	unatabie tene remove dratance estabiliti mound up	"large scale feilure "land slide type (A)

CUPATING LEONE STABLETY CHOCK TANEN

		<u>ý</u>	Ý 1	0 0	
REWARKS	"bod rock do -not - withstand moinly shoarod clay -land slido clay (A)	there are many . Gullies on the slove -land slide type (i)	there are many guttles on the alore fand slide type (A)	"there are many gullies on the slope "lond alido type (3)	-detritus have mary under ground water -land alide type (A)
cutting slope Treatment	eunstable zone remove drainege estrblish mound up	"unstable zone remove "drainage establish "mound up (concrete wall)	"unsteble zone remove "drainago catablish "mound up (concreto wall)	"unstable zono remove "drain-ge ostablich	"unutable zone rezerv drainage eatablish. drainage eatablish.
PRESENT LAND FORM	10. The work of the control of the c	FILLING REPORT LING	30 PULOS PULOS	THORE THREE	5 1
CAUSE OF (In continuo PRESENT L	* aurince exfainte there are many tenaton crack on the upper fortion of the slope	failure occurs along natural vator way aurface of alope trock fail along crucks of bod rock	elaps surface is observed to per off. "hony rhin led to the exfo- listion of alops surface.	-failure occurs due to under ground water flowing out and exfoliation from surface of clope.	fallure occurs . ao a rogult of underground water floving cut and aurface water stream antion.
GEOLOGICAL "FEATURE	-Soil (schalatoin) neerly soil (sheared zono)	-üchalstein strongly weathered (nearly soil)	-Diabage etrongly westhered . orwoke are observed, very loows.	Terrace depocit gravel (boulder abble and sand)	-Dámbaco (foult omíst) mearly soil -Covered soil (grevel)
X	223 - 200	223.150	223.850	524- 000	2:4-160
NO	96	-26	86	66	8

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APPENDIX C

QUANTITATIVE ANALYSIS OF SELECTED ALTERNATIVE ROUTES

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 (Alternative Route)

/. Summery of length .

× ₹ 10.850.0 6.430.0 3.570.0 1.647.0 833.0 4,420-0 7,090.0 2,860.0 0000 1,870-0 H 6,462.5 1,552.0 10,882.5 678.0 3.352.5 1,122.5 4,420.0 1,840.0 3.110.0 1.220.0 Þ 8.140.0 4.965.0 10.060.0 1.912.0 1,303-0 1,750.0 H 3,175.0 795.0 2.380.0 8,210-0 5.340.0 10,130.0 0-648-1 2.870.0. 760-0 2,090,0 1.371.0 2,110.0 ÷ H 8,240-0 10,160.0 1,820.5 1,920.0 760.0 5,610-0 1,992.0 1.797.5 2,630.0 1,870-0 H BAIT CUT 8' BALT FILL (m) III cat (m) ROUTE THEN CONSTRUCTION Structure Sečtion Bridge (m) Tonnor (#) Earth Vork SHOPTON-TO-BEELINGBOVEMENT Total longht (m) Details A н EI μą × Ø

XM 202 218 + 000

1,920-0

1,920.0

C - 1

1-1 List of Items

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____Route_II____

	670.1			NEW CONST	RUCTION		
	STA.	Cut	Fill	C&F	Bridge	Tunnel	INPROVENENT
: : : : :	202 + 00 + 950 203 + 170 + 300 + 600 + 647.5 + 747.5 + 800.0 204 + 000 + 135.0 + 225.0 + 450.0 205 + 000	300 135.0 225.0	450.0 130.0 47.5 52.5	200.0 550.0	220.0 II-1 100.0 II-2 90.0 II-3		500.00
	Sub total	660.0	680.0	750.0	410.0		
IS	205 + 000 205 + 37.5 + 152.5 + 200 + 350 + 600 + 830 207 + 700	150.0	47.5	37.5 250.0 230.0	115:0 11-4	1,870.0	
	Sub total	150.0	. 47.5	517.5	115.0	1,870.0	
13	207 + 700 + 850 + 872.5 + 932.5 208 + 000 + 350.0 + 450.0 + 600.0 209 + 532.0 + 567.0	100.0	22.5 67.5 150.0	350.0	60.0 11-5 35.0 11-6		
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Route II

STA.			NEN CONST	RIGTION		₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩
	Ċut	Fill	C&F.		Tunkel	IMPROVEMENT
202 + 00 + 500 + 950 203 + 170 + 300	P	450.0 130.0		220.0 II-1		500.00
+ 600 + 647. + 747. + 800. 204 + 000		47.5 52.5	550.0	100.0 11-2	•	•
+ 135.(+ 225.(+ 450.(205 + 000			550.0	90.0 11-3		
Sub total.	660.0	680.0	750.0	410.0		500.00
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	1 1 1 1 1	•	•			•
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א '						
STA.		· · ·		: 		IMPROVEMO
	cur	FILL	CIF	Bridge	TUNNEL	
205 +000						
+085	35.0					
4110				75 B-I		
1450		340.0				
1518			68.0			1 - A - 2 - 1
1958 1360	2.0			40 I'-2		
207+670	-					
	:				2110.0	
SUB TOTAL	37.0	3400	68.0	fis.o	2110-0	
TOTAL		2090 0		760.0	2110-0	
				- -		
л "						
205 1000						
+035	35-0					
+185	35.0			150.0 X-1	н. 	
1220	33.0					
2071600					2380.0	
BUB TOTAL	70.0			1500	23800	
TOTAL		1750-0		7950	2380.0	
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route x

	[]			8. 444.83 .48.71.424.834.832.474-3 <u></u> -		and the second secon	
	STA.	·	Ņ	EW CON	STRUCTION		IMPROVEMENT
		cur	FILL	CIF	BRIDGE	TUNNEL	
X	205+000						
	~205+110	110.0					
	~ 205+680	: ·			570-0		
	~ 205+110			30.0			
	~ 205+170				600		
	~ 205+865			45 .0			
	~ 2051940				75.0		
	~ 206+030 ~ 206+080	40- 0					
	~ 2061155	15.0			500		
	~ 2061335				180-0		. *
	~ 2061430	95.0			1000		
	~ 206 1482 5		52.5				
	~ 206 15825				100.0	· · · · · · · · · · · · · · · · · · ·	
		370.0	52.5	125.0	1035-0		
		-		0 20-0 H	TUNNEL		
		· · ·		L.	1840 H		
Ĩ+¥							
	2051000	110-0					
	~205110						
	~ 2081680 ~ 2051710				570-0		
	~ 2031770			30.0	600		
	~ 2051870	100.0					
Ì	~ 2051995				125.0		
	~ 2051100	105.0			- ·		
	~ 206+120		20.0				
	~ 2061250	'		1500			
	~ 206+300	50.0				ļ	
	~ 1061400 ~ 2061300	100.0		100.0			1
		465.0	200	2800	755.0		
				·····			
				-			
l					L	<u> </u>	

2 Earth Works,

2-1 Route 11 Total of Cut, Total F: 11, 1) 540.095.00² 245,035^{0m} Common 540,095. x 30% x 0.9=145,825° Soft Rock 540,095.°x 30% x 1.1=178,331° Hard Rock 540,095.°x 40% x 1.3=280,849° 604,905⁰⁸³ Tunnel 2) 1870ⁿ x 77.5^{n²/n}=144,925.° Common 144,925. x 20% x 1.0=28,985° Soft Rock 144,925. x 30% x 1.3=56,520° Hard Rock 144,925. x 40% x 1.5=86,955 172,460.⁰⁰? D + 2 = 777,365. Excavation of Surplus Haterial 3) 777,365°-245,035°=532,330°3 Formation of Embankment From Roadway Excavation 4) 245,035.9

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			cut			J		
SiA.		AREA	AVE. AREA	VOLUME	AREA	AVE.AREA	VOLUME	
202 + 500					0			
056 +	054				0°5†	22-5	10.125-0	
061.7 200								
203 + 300	130					176.0	22,880.0	
600	300		10020-2	30,000.0				
+ 647-5	47.5				•	20-0	95-0	
	11-2 Br.							
+ 800-0	52.5					20-0	1,050.0	
204 + 000	200-0		100-0	20,000-0		20-0	4,000-0	
+ 135.0	135.0		0-441	0-044.01				
	11-3 Br.							
+ 450-0	. 225.0		784	41.400				
205 + 000,	550-0	-	20-0	11,000		200*0	000,011	
	Sub-Total	T		121,840			149,005	
		•						

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110			CUT			111		
410	1 10 2 2 2 2	AREA	AVE. AKEA	VOLUME	AREA	AVE.AREA	NOLUME	U E MINISTRO
205 + 000							•	
205 + 325	37.5		170.0	6.375-0		10*0	375.0	
+ 152.5	5 21-4 Br.	-						
+ 200	47.5					18-0	855.0	
+ 350	150.0		136.0	20.400.0		•		
+ 600	250.0		20-0	5,000		10.0	2,500.0	
+ 830	230-0		80-0	004.31		10.0	2,300.0	
207 + 700	TCNNEL		1870 ^m x77.5 ^m 2/a	=/= 144.925.0	25.0			
						:		
		-		50.175			6.030.	
				144.925.0				
•		Sub-Total	otal	0-001,261			-	
		-						
-							•	

11-2

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					-	1	-	
STA	HLSNELH		cur			FILL		
		AREA	AVE. AREA	NOLUME	AREA	AVE.AREA	NOLUME	ACMARKS
207 + 700				-				
+ 850	150-0		500-0	75,000				
+ 872.5						20-0	450	
+ 932.5	11-5.Br.					•		
208 + 000	67.5					20-0	1,350	
+ 350	350.0	ŧ	120-0	42,000		20-0	7.000	
+ 450	100-0		186.0	18,600				
+ 600.0	150-0	_				0-04	6,000	
209 + 532.0	932.0			200,000				
+ 567.0	11-6 Br.		-					
+ 770	203-0		160	32,480				
• 790	11-7 Br.					:		
210 + 090	300.0	-		•		180.0	54.000	
+ 180	11-8 Br.							
-								· · · · · · · · · · · · · · · · · · ·

C - 9

21-3

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	 V1	•									angle of an of a second			
	RENARKS													
		VOLUME		9,200		12,000		90,000		245,035-0			•	
•	-	AVE.AREA	•	07		07								
		AREA					•							
		VOLUME						368,080		540,09510	144.925-0			
Ę	201	AVE. AREA						-		-	Tunnel			
		AREA							-	-				
	LENGTH			230	11-9	300						•		
	, L		210 + 180	014 +	077 +	072 +								

27-3

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2-2 Route 11⁴
1) Total of Gut Fill

$$499,270.0 \text{ m}^3$$
 275.725.0^{m3}
Common 499,270.0 x 30% x 0.9 = 134,803.0
Soft Rock 499,270.0 x 30% x 1.1 = 164,759.0
Hard Rock 499,270.0 x 40% x 1.3 = 259,620.0
599.182.0 m³
2) Tunnel
2110^m x.77.5 m²/n = 163,525.0 m³
Common 163,525.0 x 20% x 1.0 = 32,705.0
Soft Rock 163,525.0 x 30% x 1.3 = 63,774.0
Hard Rock 163,525.0 x 40% x 1.5 = 98,115.0
194,594.0
1) + 2) = 753,776
3) Excavation of Surplus Material
753,776 - 275,725.0 = 478,051 m³
4) Formation of Embankment From Broadway Excavation
275,725.0 m³

c - 11

	VOLUME AREA AVE.AREA VOLUME		5.950		34,000	3,400 40.0 2,720			2110 ^m ×77-5 ^m 263.525.0		9.350 . 36,720	` £63 ,625		al 172,875	
															-
-	NOLUME		5,950			3.400			63.525.0		9.350			172,875	V 263 291
cur	AVE. AREA		0*02T			50-0		0	 2110 ^m ×77-5 ^m 2(-		• • • • • • • • • • • • • • • • • • •		Sub-Total 1	
	AREA	-			•				 				-		
11010			35.0	11 -1	340	680	21,-2	2.0	 TUNNET						-
ţ	đ.	205 + 000	+ 035	011 +	0+5 +	+ 528	+ 558	+ 560	207 + 670						:

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2-3 Route 11⁴
1) Tokel of Out

$$496,570.0 \text{ m}^3$$

Common
 $496,570.0 \times 30\% \times 0.9 = 134,073.0$
Soft Rock 496,570.0 $\times 30\% \times 1.1 = 165,868.0$
Hord Rock 496,570.0 $\times 40\% \times 1.3 = 258,216.0$
 $556,157.0 \text{ m}^3$.
2) Tunnel
2380 $\text{m} \times 77.5\text{m}^3\text{n} = 184,450.0 \text{ m}^3$
Common
184,450.0 $\times 20\% \times 1.0 = 36,890.0$
Soft fock 184,450.0 $\times 30\% \times 1.5 = 210,672.0$
 $219,495.0 \text{ m}^3$
1) $+ 2$) = 775,652.0 m³
3) Excavation of Surplus Raterial
775,652.0-239,005.0 = 536,647.0 m³
4) Formation of Embarkeent From Roadway Excavation
 $= 239,005.0 \text{ m}^3$

CUT AVE. AREA VOLUME 	CUT AVE. AREA VOLUME 	Pitte Print	AREA AVE.AREA VOLUME										239,005-0	· · · · · · · · · · · · · · · · · · ·
CUT ARE AVE. ARE AVE. ARE 30 a × 77.5 C.O.O	LENGTH AREA AVE. ARE 35.0 35.0 1270-0 211 2380 a 20.0 20.0 20.0 5ub-Tot				5,950	200	184.450.0	6,650	184,450		191,100		496.570.0	
	LENGTH 25.0 35.0 35.0	cut		•	170-0	 	a × 77.5		-	-				

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C – 14

- 2 4 Route V
- 1) Total of Cut

429,255.0 3

Total Fill

92,370.0 m³

Common 429,255.0 x 30% x 0.9 = 115,899.0Soft = Rock x 30% x 1.1 = 141,654.0Hard = Rock x 40% x 1.3 = 223,213.0480,766.0 m³

2) Tunnel

 $1,840m \times 77.5 m^{3}/n = 142,600.0$ Common 142,600 x 20% x 1.0 = 28,520.0 Soft - Rock x 30% x 1.3 = 55,614.0 Hard - Rock x 40% x 1.5 = 85,560.0 169,694.0 m^{3}

 $1) + 2) = 650,460.0 \text{ m}^3$

3) Excavation of Surplus Exterial

650,460.0 - 92,370.0 = 558,090.0 m³

4) Formation of Embankment from Roadway Excavation

92,370.0

i			CUT					6
417	10001	AREA	AVE. AREA	VOLUME	AREA	AVE.AREA	VOLUME	294
205 + 000								
011 +	110.		50-0	5.500.0				
+ .680								
+ 720	30-0		20 - 0	600.0		7.5	225.0	
+ 770-	占							
+ 865	95.0		35-0	3,325.0		6.0	570.0	
016 +	故							
206 + 030	0.0		200-0	18,000.0				
• 080	Å							
+ 155	.2520		20.0	5.250				
+ 335	k							
+ 430	95.0		300-0	28,500				
+ 482.5	52.5			•		30-0	1,575.0	
+ 582.5	Br		Sub Total	61,175.0			2.370.0	
				429,255.0				
			۲ ۲ ۲			:		

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2 - 5 Route II & V (1) Total of Cut Total Fill 430,080.0 m³ 140,000 m³ Compon 430,080.0 x 30% x 0.9 = 116,122.0 x 30% x 1.1 = 141,926.0 S - Rock $x 40\% \times 1.3 = 223,642.0$ $481,690.0 a^3$ H - Rock (2) Tunnel 144,925 Cosson = 28,985.0 Soft - Rock = 56,520.0 Rard - Rock = 86,955.0 172,460.0 1) + 2) = 653,150.0 (3) Excavation of Surplus Material 653,150.0 - 140,000 = 513,150 g³ (4) Formation of Embankment from Roadway Excavation. 140,000 m³

c - 17

ן רך צור ר	AREA ' AVE.AREA		250										
	VOLUME	40,000	4,000	18,000		62,000	768,080	430,080.0	144,925.0				-
cut	AVE. AREA	400.0	20-0	0-06	•		zr •5		Tunel				
	AREA			-									
	LEX617	100.0	200	500 5									
ŧ	4	206 + 000 206 + 100	206 + 300	206 + 500							2		

	Route II		· · · · · · · · · · · · · · · · · · ·)
	•		le	(t	Ři e	zot
	STA	Length	6	m M	Ω ·	<u>n</u> 2
11 1	202 + 500 + 950 203 + 170	450	5.0	2250.0	5.0	2250.0
	+ 300 203 + 600	130	5.0	650.0	· 12.0 ·	1560.0
	+ 647.5 + 747.5	47.5	5,0	237.5	⁻ 5 . 0	237.9
	+ 800	52.5	- 5.0	262.5	5.0	262.5
	204 + 000 204 + 450	200.0	-		5.0	1000.0
	205 + 000	550.0	.		24.0	13000.0
				3,400.0		18,510.0
	Sub ^T otal			Left + Right =	21,910.0 m ²	
11 ₂	205 + 000 + 37.5 + 152.5		- -		-	
	+ 200 + 350	47.5	•-	-	8.0	380.0
	+ 600 + 600	250.0	.		3.0	750.0
	+ 830	230.0			3.0	690.9
			•		•	1,820.0
	Sub Total		-	L+R =	18,200 B ²	
1,3	207 + 850 + 872.9	22.5	5.0	112.5	5.0	112.5
	+ 932.9 208 + 000	67.5	5.0 .	337.5	5.0	337.5
	+ 350 + 450	350.0	<u> </u>	· ·	-	
	+ 600 209 + 790	150.0	12.0	1,800.0	<u>-</u>	
	210 + 090 + 180	300.0	24.0	7,200.0	3.0	900.0
	+ 410	230.0			24.0	5,520.0
	Sub Total			9,450.0		6,870.0
			-	L+R=16,320.0X ²	-	· · · · · · · · · · · · · · · · · · ·

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s	lope protect	ion	For Ecban	kment (Placing	Topsoil)	
	Route II •					
	STA	Longth		eft m ²		ght
11'	202 + 110		P		ei	
**	+ 450	340.0				
	+ 518	68.0	-		-24.0	8,160.0
			•		18.0	1,224.0
					· · · · · · · · · · · · · · · · · · ·	
				-		9,384.0
Υ.						-
	:		. *	L + R =9,38	4.0 m ⁻	
¥	206 + 430				-	-
	206 + 482.	5 52.5	5.0	262.5	5.0	262.5
		1	-	L + R = 525.0		
				L + K = 525.0		
(T ž.V	206 + 100					
LU, F						
	+ 300	200.0			20.0	4,000.0
			. •			
		ļ				
			:			
			•			
			-			
						-

	Slope protection No. Length	I For Cut So of Gut x 20		ing Work)	
	STA	Lén left	<u>gth</u> Right	Unit	Length of Planting Work
II,	203 + 300 203 + 600	300 . 0	300.0	2 0/10	1,200 в
	204 + 450 205 + 000	500.0	-	209/03	1,000 m
					2,200 m
112	205 + 000 205 + 37.5	37.5	-	201/15	75 m
	205 + 350 205 + 600	250.0	-	` 2ø/a	500 a
	205 + 600 205 + 830	230.0	-	2a/a	. 460 m
11,	207 + 700 + 850	150.0	150.0	23/13	600 a
2	208 + 350 + 450	100.0	100.0	20/0	400 m
	208 + 600 209 + 532.0	932.0	•	7ø/a	6,524 a
					7,524 a
II	205 + 000 + 035	35.0		- 4	140 m
	+ 450 + 518	` 68 . 0		2	136 m
		-			276 a
11"	205 000 + 035	35.0		4	140 m
	205 + 000 205 + 110 205 + 710		110 30.0	2 2	220 60
V	205 + 770 205 + 865 205 + 940 206 + 030 205 + 080 206 + 155		95.0 90.0 75.0	2 5 2	190 1450 150

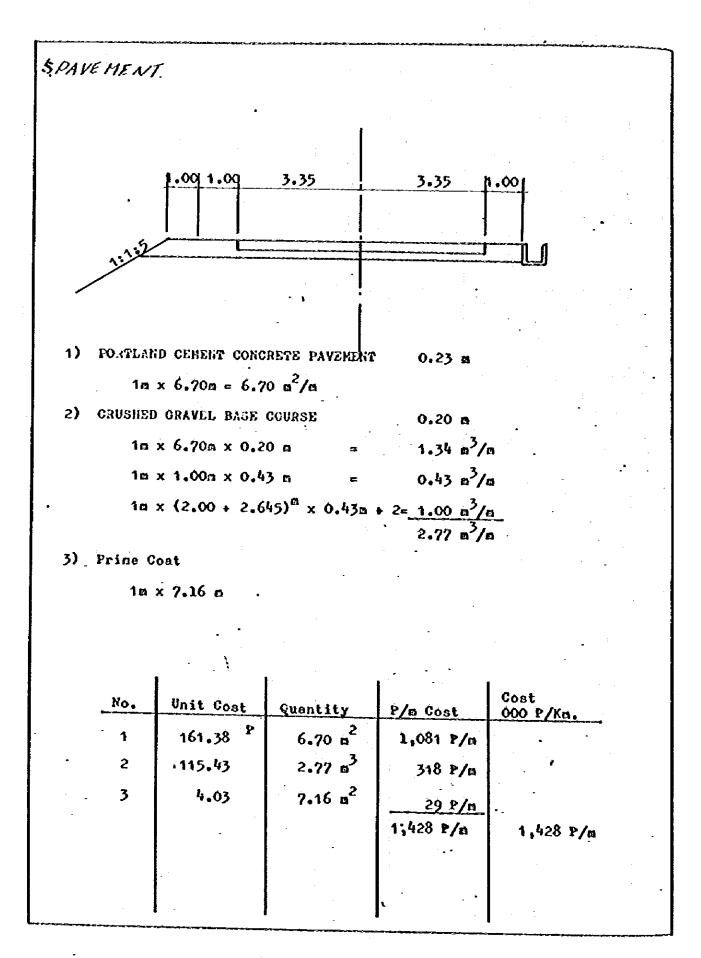
· 1070 n

Route II	<u> </u>	1	left	Ricl	
STA	Length	ő	6	<u>(3</u>	¢
203 + 8	óć 🛛				
II ₁ 204 + 0	00 200.0	10.0	2000.0	-	
+ 1	35.0 135.0	7.0	985.0	19.0	25(5
+ 2					
	50.0 225.0	20.0	4500.0	-	
205 + 0	0 50.0	20.0	10(0.0		
			8,445.0		2,5(5)
sub to	tel	L + R =	11,010.00 ²		· · · ·
112 205 + 20	00				
- + 3	1	15.0	2,250.0		
Sub c			2		
	JUS		2,250.0n ²		
208 + 00	oo .				
113 + 35	5C 350 .0	-		15.0	5,250
209 + 50	203.0				
jub To		L		15,0	3,01
v 206 + 33	95	£7			8,29
206 + 43	0 95.0	*		20.0	1,90:
	ection No. . 207 + 600	-	recast Concrete Om x 20Cm = 2	Frage)	
		:			
	e - 1		: .:		
			1		·
			· · · ·		
		1		: · · · ·	· .

4	HINOR STRUCTURES Rete	≥inin <u>r</u> Val	ll For 3m	benkaent			
Sec	J. P.A.	STONE	KAGONRY		RETAINING	i aall	
tion	0 A A .	H= 3m	H=58	H=5n	H= 7m	H=8n	H=10m
1	203 + 170 + 300 204 + 150 204 + 500 204 + 500 205 + 000		130.0 <u>0</u>				50.0
	jub ^f ot\$1	500.0r	130.0¤				50.0
ы Г	205 + 152,5 205 + 2	ж С		47.5 47.5			
	sut otal			95.0a			
113	208 + 000 208 + 10 208 + 700 203 + 80 209 + 180 209 + 20 209 + 450 209 + 53 209 + 567.0 209 + 210 + 310 210 + 410 210 + 440 210 + 60	50		-	100.0 100.0	82.0	20.0 83.0 100.0
	jub Total	:	·		360 . 0a	82.0n	203.0
A	205 + 630 205 + 710			30.0			

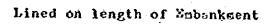
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		• .		
)	Traffic Road Sign			
	STA. 202 + 500	intersection	2 set	
	203 + 150	Steep Grade	2	
		Tunne1	2	
-		Steep Grede	2	
	210 + 740	intersection	5.	Santa Fe
	· •		10	

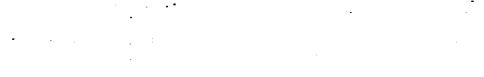
2) Guard Rail



• 3



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7. Drainage Cross Drains per Kat 1) Pipe Culvert Rain faced Concrete Fipe Culvert = 1.22 m $(P,C_{*}) = 2$ L = 13m 2) Reinforced Concrete Box Culvert. (B.J.) 2.40 x 2.40 = 3 L=15m 3) Inlet and Cutlet Headwall and Wingwell. 8 + 3 = 11 set No. Unit Cost quantity P/m Cost Cost OOO P/Km. 1 1,312,44 8 10.5 000 2/Km. 2 5,397.64 3 16.2 3 27,074.0 11 297.8 4) Side Ditch Used on length of Cut Section 5) Sub Drainage Used on length of Cut Section

C - 26

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ENNUT S				і.		(= 000 -)
ROUTE	II (Le 7870 m)	(L=2110 m)	11" (2380 m)	V (1840 m)	LL-+ V (La1870'm)	ATVARKS
Length of Tunnel	1.870 m	2,110 8	2,380	048.1	1,870	
Total Cost	233,000	266,000	291,000	230,000	233,000	
1. Main Work	134.000	152,000	171,000	133,000	134,000	
1) Exceverion Lining	133,000	151,000	170,000	132,000	133,000	
2) Portal	1,000	1,000	1,000	1,000	3,000	
2. Traffic Safety and Control Freilition	38.000	103.000	000-001	86.000	88,000	
L) LAPPELER FORMULE	3, 500	3.700	4,000	3,300	3.500	
1	00% v	5_ 900	6.000	5. 500	5.200	
3) Stand-by Generator Paritity	00 5 1	1.100	1,100	2,000	2.200	
4) Communication Facilit	2 2 2		2.200	5,100	5,100	
5) Fire-Freventing Pacifities	3,900	4.300	4,900	3.800	3,900	
6) Measuring Control Facility	5,200	5,400	5,700	5,100	5,200	
7) Ventilation Facilition	V	77,500	82,200	62,200	63,500	
Vertical Shaft	12,000	18,000	20,100	12,000	12,000	
Korizontal Shaft	11,300	19,800	21,500	10,000	11.300	
Ventilating Station	14.500	15,000	14,900	24,500	34,500	
Fan		25,700	25,700	25,700	25,700	
3- stab Tennion Line	000-11	11-000	11.000	000-11		

Sec-					• • • • • • • • • • •
tion		3Tł.,	NAES	CONSTRUCTION COST	LENGTH
II 1	202 +	950 203 + 170	II - 1	1000 P 7,283.0	L = 220m
		647.5 203 + 747	- 11 - 2	2,474.0	100a
	501 +	135 204 + 225	11 - 3	2,434.0	90n
	·		· · ·	12,191.0	
11 ₂	205 +	37+5 205 + 152	. 11 - 4	2,737.0	115n
113	207 -	872.5 207 + 932	.5 11 - 5	1,698.0	6Cm
	209 +	532.0 209 + 567		1,182.0	(3) 35a
	209 +	770 209 + 790	11 - 7	843.0	(3) 20m
	210 +	90 210 + 180	11 - 8	2,597.0	90 <u>a</u>
	210 +	410 210 + 440	11 - 9	706.0	(S) 30m
				2.026.0	· · · · · · · · · · · · · · · · · · ·
			Tote1	21,954.0	
					. :

Br	idges			
3ec- tion	STA	NAME	CONSTRUCTION COST	LENGTH
11,	205 + 035 205 + 110	II' - 1	1,629.0	75a
	205 + 518 205 + 558	II ⁺ - 2	1,251.0	40 <u>0</u>
			2,880.0	
		Total	22,097.0	
114	205 + 035 205 + 185	II" - 1	3,808.0	15Cø
		Total	23,025.0	
118/	205 + 870 205 + 995	II + V - 1	3,814.0	125 a
A.	205 + 110 205 + 680	V - 1	29,984.0	570n
	205 + 710 205 + 770 205 + 865	V - 2 .	2,205.0	60 n
	205 + 940 206 + 030	V - 3	2,704.0	7 5n
	206 + 080 206 + 155 206 + 335	V - 4 V - 5	1,769.0 6,498.0	50n 180n
	206 + 482.5 206 + 382.5 206 + 382.5	-	2,824.0	10Cm
			45,984.0	a yan dara milan ang ang ang ang ang ang ang ang ang a
		Totel	53,010.0	

🔊 Sabo

Approximate Cost Estimation of Erosion/Sediment Control Works

1) On the southern side of Dalton Pass

Four Sabo dams shall be delineated at the proper sites in the extreme upper reaches of Digdig River for the following reasons:

- a) To support the foundation of the newly planned road, especially for the parcel of land where the land slide is feared to occur (KH 204 205)
- b) To support the foundation of existing road, especially at the site where a fierce land slide and gully erosion is prevailing (KH 206 207)
- c) To treat the muck of Tunnel Construction properly at the site adjacent to the Tunnel Entrance.
- d) To maintain the natural environment of the rivers and mountain slopes or its vegetation that might be deteriorated totally by the construction works of the Project.

The main purpose for each dan is as follows: CAPINTALAN No. 1: To control the sediment,

No. 2: To control the sediment and the erosion

No. 3: To check the further erosion

41 To check the further erosion.

No. 4

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Assume the same with No. 3

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 $= 43 \times 10^{6}$ = (1.4 x 10⁶)

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2) On the northern side of Dalton Pass

One Sabo dam, three consolidation works, and three ground sills shall be delineated in the rivercourse adjacent to the Santa Fe Bridge. The length of channel works which is related to the above mentioned works is to extend one thousand meters. The purpose of these works consists in the following matters.

- d) To support and stabilize the parcel of land where the newly planned road is passing by.
- b) To protect the existing Santa Fe Bridge from the sedicent flow.
- c) To lend support to the treatment of muck of Tunnel Construction.
- d) To maintain the natural environment of the center of Municipality Santa Fe.

Sabo dam $H = 8^m$ (From foundation to Spijlway crest) $L = 75^m$ (Total crest length) $Vo = 2,200^{m3}$ (Concrete volume) $Ve = 1,500^{m3}$ (Excavation volume)

 $2,200 \times 20,000 + 1,500 \times 7,000 = 44 \times 10^{6} + 10.5 \times 10^{6}$ = 54.5 × 10⁶ = (1.8 × 10⁶)

Consolidations $Vc = 330^{63} = 1,000^{63}$) Ground Sills $Vc = 100 \times 3 = 300^{63}$)

 $(1,300 \times 20,000) \times 1.5 = 39 \times 10^{6}$ Rivetment Works 2 x 1000 x 66,000 = 132 x 10⁶ = 171 x 10⁶ = (5.7 x 10⁶)

Total Construction Cost for Sabo

$$7 \times 10^{6}$$

 1.8×10^{6}
 1.4×10^{6}
 1.4×10^{6}
 1.8×10^{6}
 5.7×10^{6}
 $\overline{5.7 \times 10^{6}}$
 $\overline{-19.1 \times 10^{6}} = 20 \times 10^{6}$

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// IMPROVEMENT

1) For Route II, II' & II'

Section (a) + Section (o)

507.0 + 869.0 = 1,376.0 1000 P

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2) For Route V

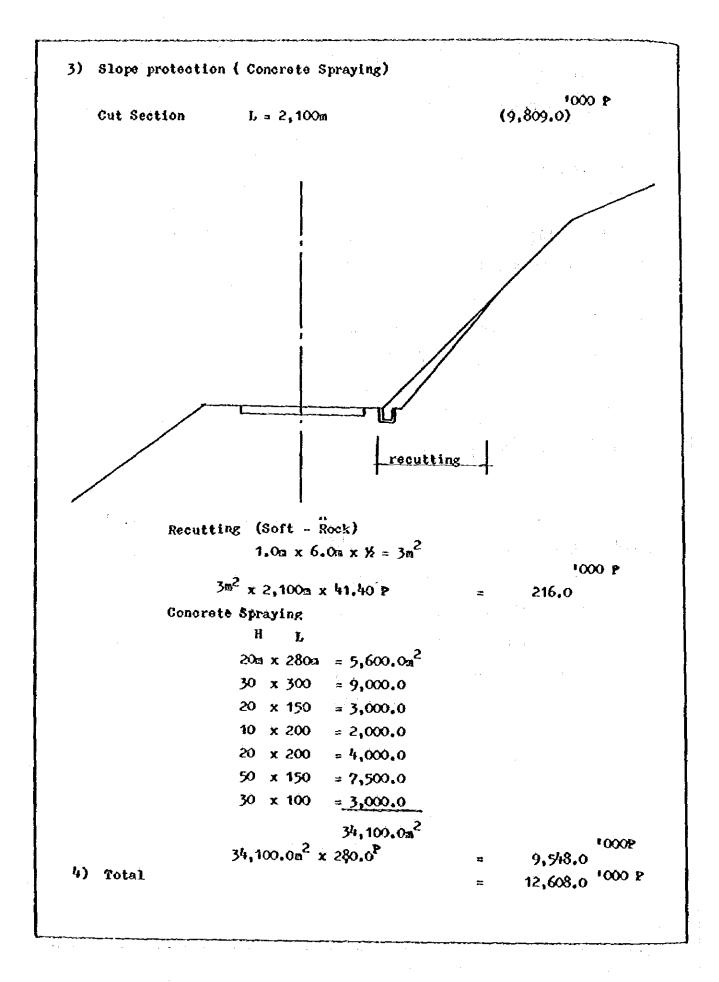
Section (a) + (b) + (c)

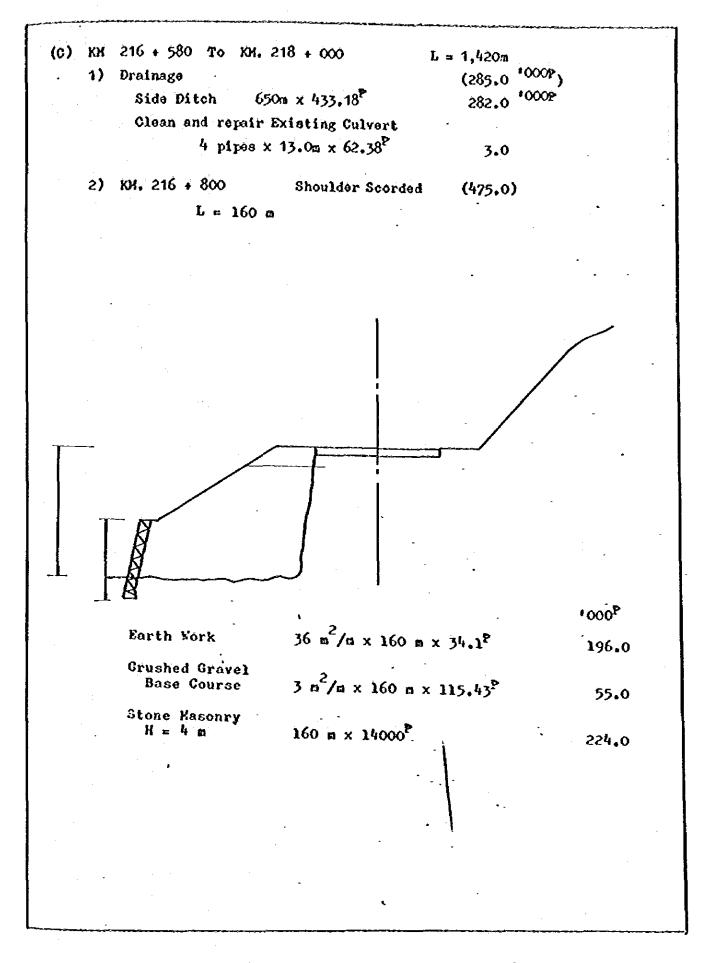
507.0 + 12,608.0 + 869.0 = 13,984.0 1000 P

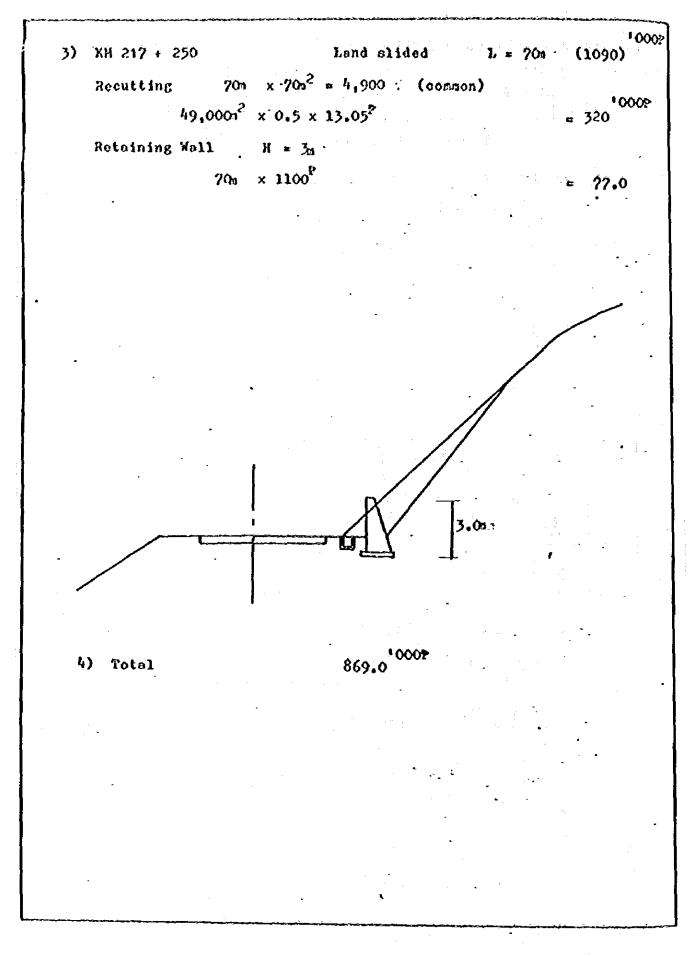
¢

TEPROVERSHT (a) KN. 202 + 000 To KH. 202 + 500 L = 500 m(1) OVER LAY & P 750.0 1000 P 500m X 750.0 (375.0) (2) Drainage (132.0) Concrete side Ditch $\mathbf{L} = 300\,\mathrm{m}$ 300m x 433.18 P 130.0 Clean and repair Existing Culvert 3 Boxes x 13.0m x 62.38 2 2.0 507 (3) Total 1000 2 507.0 (b) KH 202 + 500 To KH, 205 + 000 L = 2,500m (1) OVER LAY 9000P 2,500m x 750.0 P (1,875.0) (2) Drainage 924.0) (Side ditch: 2,100m x 433.18 P 910.0 Clean Gut Existing Side Ditch 1,100a x 4.21 P 5.0 Clean and repair Existing "ulvert 11 pipes x 13.0n x 62.38P 9.0

C ~ 35







/2 R	ight-of-Hay				W=40.0		tonuony h	081 8
jec-	Xiló-Post	Length		· · · · · · · · · · · · · · · · · · ·	nd Forest	Crons	Building Nipa	3
tion			2,5 P/m2	6 P/m ²	2.5 P/m2	13P/h111	44 P/m2	Totel
II	203 + 000 203 + 000			96,000.0			1(44.08)	
	203 + 100 203 + 700			144,000			1(44.02)	•
	203 + 750 + 800	50.0		12,000	-			
	204 + 000	200.0		48,000	-	•	1(44.0)	-
	204 + 500			:	10,000			
	205 + 000	500.0	•	10,000				
			4,000.0	300,000.	0 10,000		. 132.0	314. 0002
112	205 + 000 205 + 800	800.0		240,000		-		
					`			240 ^{°000₽}
113	207 + 600 210 + 100	? 1500 .0	200,000	-				200 0002
11'	205 + 000 205 + 560	560.0	:		168,000			168 ^{'0000} P
11.1	205 + 205 205 + 205	550.0			66,000			66
۷٠	205 + 100 V ¹² 205+800	700.0			210,000	[
	206 + 400 206 + 400				180,000			
	206 + 500 206 + 500 206 + 600	100.0 100.C		24,000				
	<u>_ CUU + Dix</u>	100.0	8,000	24,000	390,000	<u> </u>		427.0
11+								

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ROAD RIGHT -OF- WAY 1978 Price Level

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			•	
RURAL		TYPE	UNIT	COST
	_	•		
Land	a)	Uncultivated	P/hectare	£20,000.00 ·
-	ъ)	Cultivated	P/hectare	£50,000.00
	c)	Forest	P/hectare	260,000.00
-	d)	Crops and im- provement	P/heotare	P30/tree - coconut
		•		P10/h111 - banana
		•		260/grove - banboo
				P30/tree - mango
		-		P10/tree - star apple
Buildings	a)	Residential	P/a ²	935/sq. m/ - Nipa/mix cat
				21,000-21,500 - conc.
•		- ·		₽500-700 - semi-conc.

APPENDIX D

QUANTITIES AND COST ESTIMATES OF THE MOST LIKELY ROUTE

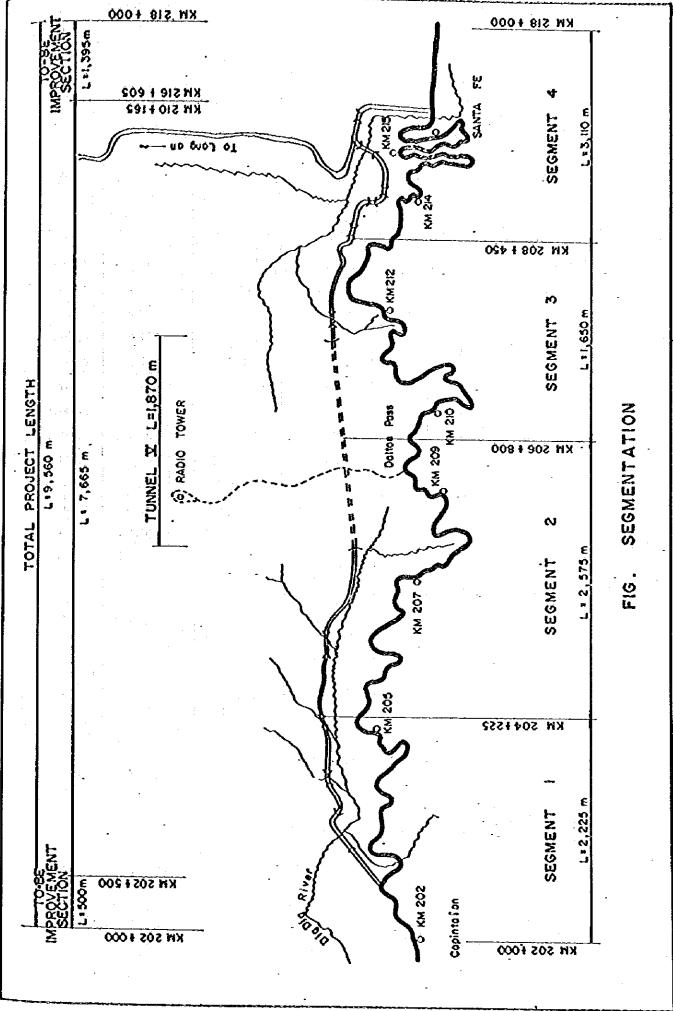
	TABLE OF CONTENT	
X	Suggary of Length	D-2
ТТ ПL	Construction Cost Estimate Quantities	D~6
	1. Earth Yorks	D-18
		D-18
	1) Clearing and Grabbing, stripping	D-19
	2) Cut and Embankment Volume	D-22
	 Compaction of Cut Section Slope Protection 	D-36
		D-37
· .	1) For Embankment (Placing Topsoil)	D-38
	2) For Cut (Planting Work and Vegetation)	D-44
	3) For Cut (Concrete Spraying and Netting)	D-48
	4) For Cut (Precast Concrete Fream)	D-51
	3. MINOR STRUCTURES	D-52
	1) Retaining Mall	D-52
	2) Stone Kasonry	D-53
	4. PAVENENT	D-54
	Side Valk	Ð-56
	5. DRAINAGE	D- 57
	1) Concrete Side Ditch	D-57
	2) Sub - Drainage	D-57
	3) Reinforced Concrete Pipe Culvert.	D-58
	4) Reinforced Concrete Box Culvert.	D-58
	6. TUNEL	D-59
•	7. BRIDGE	D-59 D-60
;	8. SABO	
	9. Ihprovehent	D-61
	Santa Fe Intersection	D-71
: 1		D-75
		Ð-76

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D - 1

I. SUPAR OF LEGTE

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	SBAN	1	2	3	44	(0)
		XX 202 + 000]			:
		-	-	-	- 1	
172.		KH 204 + 225	KH 206 + 800	Kh 208 + 450	Xr 218 + 000	<u>tútal</u>
TOTAL LEX	778	2,225.0	2,575.0	1,650.0	3,110,0	9,560.0
NEW CONSTR	NOTION SECTION	1,725.0	2,575.0	1,650.0	1,715.0	7,665.0
EARTH FORM	(1,325.0	1,4=0,0	705.0	1,367.0	4.887.0
Cut	Left Side	650.0	1,412.5	250.0	425.0	2,747.5
	Right Side	605.0	332.5	567.5	667.0	2,172.0
	Average	632.5	872.5	408.75	\$\$6.0	2,459.75
Fill	Left Side	665.0	77.5	455.0	42.0	2,139.50
	Right Side	720.0	1,157.5	137.5	200.0	2,715.0
	Äverage	6.2.5	617.5	235.25	0.158	2,427.25
STRUCTURE		400.0	1,085.0	945.0	378.0	o. <i>6</i> 08,5
Tunnel		0	170.0	`0 0. 0	0	1,870.0
Bridge	L< = 50	0	0	45.0 (1)	108.0 (3)	153.0 (
	L> = 50	400 .0 (3)	115.0 (1)	0	270.0 (3)	735.0 (
To - de - Secti	1-provecent oa	509.0	0	0	1,3°5.0	1,8:5.0
						· .

* including Sabta Fe Bridge (L = 30m)

D - 2

	Station	Le	ft	Rig	ta		
X	lloPóst	Cut	Fill	Cat	Fill	Bridge er	fenael
KH. 20	1100						
20	02+500	_ 70 Be	Improveme	nt Section	(L: 500°)	
20	12+950		450.0		450.°		
20	3+170					B 1/01	720 0
20	3+300		130.0		130.0		
x	1330	30.0			30.0		
	1 600	2.70.°		.270.0			
x	+625	25.0			75 °		
	1657.5		JZ.5		32.5		
<u> </u>	-1747.5					Br NOZ	90. °
	+800		\$ 2.5		52.5		
20	54 1135	ુઝુડ.°		335.*			
	1225					Br No.3	90.0
	1 Total 14 +370	660.0	665.0	605.0	72.0.0		400 °
,	+450	80.°			80°	[i	
	+ 460.		10.0		10.0	9 9 9 9	
	+ 880	420.0			420.°		- ·
	+ 900		20.0		20.*	· · · · · · · · · · · · · · · · · · ·	
(2	051000	100 0			100.0		
	+ 037.5	17.5		37.5			
	+ 152.5					Br NO 4	115
	+ 200.		47.5		47.5		
				•		1	

. ;	Station	Lef	1	Riç	ht	at data as the
	KiloPost	Cut	Fill	Cut	Fill	Uridge or Tur-
: -	205 + 200.0	· · · · · ·				
<i>*</i> •	+ 350.	150.0		150 0		
SFG2	2051830 2061800	480.0			480.°	
	5267800 52170121	1412.5	77.5	332.5	1.1525	TUNNEL 970 Br 1150 T
	207+700					TUNNEL 900
5863	+830	130 0		130.0		
	+877.5		47.5		47.5	
	+922.5					Br. 1105 45
×	208+050		127.5	127.5		
. í	+170	120.0		120.	÷	
×	+ 200		30.0	30°		
-X	+ 260		60 0	60.0		
	+300		40.0	·	40.0	
NFO 3 ×	+ 400		100.0	100.0		
	+450		50.0		50.0	
	sub 701n/ +498	250.0	455.0	567.5	137.5	Br 450 Im Br 1106 48
8164 x	+630		132.0	132.		
	+680	50.0		50.0		
×	+ 845		165.0	165.0		
	+900					Bi NOT 55
*	209+070		170 0	170 0		
	+ 130	60.0		60.0		
· ·					-	:

	S:otion	Lo	it	Rig	b)	and a second
	KiloPost	Cut	Fiil	Cut	Fill	Bridys of Yunnaf
	209+ 130					
	+ 190			§	:	Br 110 8 60.0
	+ 240	· · · · · · · · · · · · · · · · · · ·	50.0		50.0	·
a subsection of the	+300	60.0		60.0		
	+300		30.0	30.		
	209+481		151.0		151.0	
	+636					Br 110.9 155.0
	1815		179.0		179.0	
	+845					8+ NO10 300
	+ 950	1050			105.0	
	210 + 100	150.0			150.0	
	+ 165	:	65.0		65.0	
	216+605.					
	118 1 000	- 70-	Be - Impr	overent	(1:1395	}
	Jub Total	425 °	942.0	. 667.0	700	Br 348 5
	•					
						a
			-			
	1					

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I CONSTRUCTION COST ESTIMATE

	OST	SEG		AS JANUARY : 1	181 600 P
DESCRIPTION	NO.I	UNIT, COST	QUANTITY	COST	REMARKS
	~~~~		quantiti	~~~~	UPWAUVO
I. EARTHWORKS				1,237.0	
Clearing 8 Grubbing	SqM	0.85	10,770.0	9.2	
Stripping	CuM	20.83	1,077.0	22 4	
Excovation of Common Surplus Moteriol	CuM	)	- · ·		
Excavellon of Common Soft-Rock Moterial	CuM				
Excavalion of Common Hard-Rock Material	CuM	) 236	4, 444 8	1049	
Formation of Embank- ment From Roadway Excavation in Common Material Formation of Embank-	CuM	341	32,272.5	1.100.5	
ment From Roodway Excavation in Soft Material Formation of Embonik-	CuM				
ment From Roodway Excavation in Hord Moterial	CuM				
Formation of Embank- ment From Borrow Excavation in Common Material	ÇuM	23.39			
Compaction of Existing Ground	SqM	2.83			
Compaction of Cut Section	SqM	2.25	U		-
1-1 Stope Protection				2,058.6	
Gobions	eoch	455.85			
Motted Gabtons	eòch	533.51			
Clearing of Boulder Stone	SqM	2.60			
Piocing Top Soll	SqM	6.18	4,316.5	26.7	· · · · · · · · · · · · · · · · · · ·
Seeding	SqM	0.97	. 4.316.5	<u>4</u> z	
Planting Work	L.M.		1.083.0	1953	
Fercing For Droped Stone	L.M				<b> </b>

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CONSTRUCTION C	OST NO.2	5	EG I	≪ΩφςΣ <u>αυστοπο</u> ια	a had and a factor of the state
DESCRIPTION	UNIT	UNIT COST	QUANTITY	COST	REMARKS
Netting for Slope Protection	SqM	20.0	6,108 0	122.2	
Concrete Splaying	SqM	280.0	6.108.0	1,410.2	
Precost Concrete Frome	SqM	220.0	0	D	
I MINOR STRUCTURE				D	
Relaining Woil H=4m	M	4230.*	0		
Retaining Wall H=7m -	м	9000.0	0.	-	
Retaining Woll H= 8 m	M	10000.0	0		
Stone Masonary H=2m	M	800.0	0		-
• H= 3m /	M	1100.0	0		
<u> </u>	_M	1250.0	0		
Store Mosonry H. 5m	· M	1750.0	. 0 .		
· H· 7m ·	M	2500.0	0		-
E PAVEMENT	м М	<u> </u>	0	1,892.1	
Subbose Course	CuM				
Crushed Gravel Bose Course	CuM				
Prime Cool	SqM	_			
Tack Coat	SqM				
Portland Cement Concrete Povement 0.23 m Side Vlalk	SqM L.N		0-		•
U-1 Solety Focilitles		· · ·		·	
Povement Morking					
While W=0.15m	M				
Yellow W=0.15m	м		-	•	
Troffic Rood Sign	eoch				
Kilometer Post	eòch				:
Povement Stud	eoch				
Delineoler	eoch			• •	

DESCRIPTION	UNIT	UNIT COST	QUANTITY	COST	ŘEM/
Metal Bear, Type Guard Rail	M			<u></u>	- <b></b>
Guard Rail End Place	eoch		ante La seconda de la seconda de		
Concrete Post for Guard Roll	eoch				·
IV OVERLAY	М	750.0	an a Chairmean Christian an a		
¥ DRAINAGE			an a fair ann an ann an ann an ann an ann an ann a	91.7.1	
Grouted Side Olich	L.M.	171.76			
Concrete Side Ditch w=0.5m.	L.M.	433.18	1,265.0	548.0	
Sub - Droinoge	L.M.	170.85	1,265 0	216.1	
Reinforced Concrete Pipe Culvert Ø 1.2Cm.	L.M.	1330.0	54.0	71.8	
Reinforced Concrete Box Cutvert 150 X 1.50	L.M.		н Настания ————————————————————————————————————		
2.03 X 203	L.M.	55000.0			
2-3.00 X 3.00 Cleon and Repoir Existing Culvert	<u>LM</u>				
Clean Out Existing Ditches	L.M.	·			
inter and Outlet Headwall and Wingwall	set	27,074.0		81. ^z	
VE TUNNEL	м				·
VIL BRIDGÉ					
VI-1 Sobou		-			<u></u>
VE DIRECT COST					Totol
IX HISCELLANEOUS MINOR WORKS					ym x
X SUB-TOTAL ECONOMIC COST					var ·

CONSTRUCTION C	OST NO.1	. Si	r	AS JANUARY : IS	
DESCRIPTION	UNIT	UNIT COST	QUANTITY	COST	RÈMARKS
I. EARTHWORKS				4,661.3	
Clearing 8 Grubbing	SqM	0.85	25,893.8	22.0	<u>، من محمد بالمحمد بالم</u>
Stripping	CuM	20.83	2,589.4	53.9	
Excavation of Common Surplus Material	ĊuM	)			
Excovation of Common Soft-Rock Material	CuM				
Excavation of Common Hord-Rock Material	CuM	) 236	110,943	2,618.3	
Formation of Embank- ment From Roadway Excavation in Common Material	CuM		-	-	· .
Formation of Embank- ment From Roadway Excavation in Soft Material	CuM	341	5-6.625.0	1,930.7	
Formation of Embank- ment From Roadway Excovation in Hard Material	CuM	<b>)</b>	-		
Formation of Embonk- ment From Borrow Excovation in Common Material	Cu M	23.39			
Compaction of Existing Ground	SqM	2.83			
Compaction of Cut - Section	SqM	2.25	16/035	36.2	······
-1 Slope Protection		-		2,975.4	
Gabions	eoch	455.85	· · ·		
Motted Gobtons	eoch	533.51		-	
Clearing of Boulder Stone	SqM	2.60			
Piocing Top Soll.	SqM	6.18	9,6033	593.	
Seeding	SqM	0.97	9.603.3	9.3	
Plonting Work	L.M.	180.30	5,047.0	909.1	· · · · · · · · · · · · · · · · · · ·
Fercing For Droped Stone	L.M				

fundante com una contra constructiva de constructiva de construcción de construcción de construcción de constru		e naardaarda waxaa ahaada waxaa da baada	and a star of the second star of th	و مورد معام و محمد میرد است.	and the desident second and a second
CONSTRUCTION C	OST NO.2	ح	FG 2		
DESCRIPTION	UNIT	UNIT COST	QUANTITY	COST	REMARKS
Netting for Slope Protection	SqM	20.0	4,965 .	99.3	
Concrete Spraying	<u>Sq M</u>	280.0	4.965.0	1390.2	
Precast Concrete Frame	SqM	220.0	2,310 0	508.2	- · · · · ·
II MINOR STRUCTURE			•	1,100.4	
Relaining Woll H=4m	M	4230.*	4.5.0	190.4	
Retaining Wall H = 7 m -	M	9000.0	<i>. .</i>	<i>o</i> . •	
Retaining Woll H= 8 m	M	10000.0	60.0	600.0	
Store Masonay H=2m	M	0.003		Ø	
• H=3m ·	M	1100.0	100.0	110.0	
• H= 4m	M	1250.0	160.0	2000	n la construction and an anna an an anna an an an an an an an
Stone Mosonry H. 5m	m	1750.0	. 0	. 0 .	
H. 770 .	М	2500.0	0	0	
H. 7x24	<u>. n</u>	5000.0	0	0	· · · · · · · · · · · · · · · · · · ·
II PAVEMENT	М	1,428.0	2,460.°	3,5129	-
Subbase Course	Сим		+ #		
Crushed Gravel Bose Course	CuM		•		
Prime Cool	Som	_	-		•
• Tock Cool	SQM				
Portiond Cement Concrete Povement 0.23m	SqM				-
11-1 Sofely Facilities	•				
Povement Morking	•				
White W=.0.15m	M		1	- 1	
Yellow R=0.15m	. M			• • • • • • • • • • • • • • • • • • •	
Troffic Rood Sign	eoch	•			
Kilometer Post	eoch		•		
Povement Stud	econ				
Delineater	exch				
		l			

CONSTRUCTION CO	DST NO.3	**************************************	SEG Z		
DESCRIPTION	UNIT	UNIT COST	QUANTITY	COST	REMARKS
Metal Bear, Type Guard . Rail	^т м ч				
Guord Roll End Ploce	each			-	
Concrete Post for Guard Roll	eoch				· ·
IV OVERLAY	м	7500	-		
Ø DRAINAGE	· ·		-	13450	
Grouted Side Ditch	L. <u>M</u> .	171.76			
Concrete Side Diich w=0.5m.	L.M.	433.18	1.7450	. 7559	
Sub - Droinoge	L.M.	170.85	1.745 0	298.1	
Reinforced Concrete Pipe Culvert Ø 1.2 Cm.	L.M.	1330.0	117.0	155.6	
Reinforced Concrete Box Culvert 1,50 X 1,50	L.M.				-
2.03 X 203 2-3.00 X 3.00	LM.	55000.0			
Cleon and Repoir Existing Cuivert	LM				
Cleon Out Existing Ditches	L.M.				
iniet and Outlet Headwall and Wingwall	sel	27,074.0	5	135.4	
VI TUNNEL	М'	•	-		-
VI BRIDGE					•
20+1 Sodou					-
VAL DIRECT COST		-	•••		Totol 1 to VII
IX MISCELLANEOUS MINOR WORKS		•			УШ X 0.15
K SUB-TOTAL ECONOMIC COST					Xei + IX

CONSTRUCTION C	OST NO.1	51	G3	as January : K	981
DESCRIPTION	UNIT	UNIT COST	QUANTITY	COST	REMARKS
I. EARTHWORKS				6,055.4	
Clearing 8 Grubbing	SqM	0.85	24,662.5	21.0	
Stripping	CuM	20.83	2,466.3.	514	•
Excavation of Common Surplus Material	ĊuM	)			· • • • • • • • • • • • • • • • • • • •
Excavation of Common Soft-Rock Moterial	CuM	÷			
Excavation of Common Hard-Rack Moterial	CuM	) 236	196,065 4	4,627.4	
Formation of Embank- ment From Roadway Excavation In Common Material Formation of Embank- ment From Roadway	CuM	341	3 9,087.5	1,332.9	
Excovation in Soft Material Formation of Embank- ment From Roadway Excovation in Hard Material	Ċu M Cu M	) · · · ·			
Formation of Embank- ment From Borrow Excavation in Common Material	CuM	23.39			
Compaction of Existing Ground	SqM	2.83			
Compaction of Cut - Section	SqM	2.25	10,221.2	230	
I-1 Stope Protection				2,454.5	
Gobions	eoch	455.85		······································	
Motted Gobions	eoch	533.51		-	
Clearing of Boulder Stone	SqM	2.60			
Piocing Top Soll .	SqM	6.18	5;900 8	36.5	•
Seeding	SqM	0.97	5,900 8	5.7	
Planting Work	L.M.	180.30	1,743.0	224.1	
Fencing For Droped Stone	L.M.				•

CONSTRUCTION CO	DST NO.2		SEG3		
DESCRIPTION	UNIT	UNIT COST	QUANTITY	COST	REMARKS
Nelling for Slope Protection	SqM	20.0	6216 9	1240	-
Concrete Spraying	<u>Sq M</u>	280.0	6,2160	1.740 5	
Precost Concrète Frome	SqM	220.0	1,4700	323 8	• · · · · · · · · · · · · · · · · · · ·
I MINOR STRUCTURE				1080 3	
Retaining Wall H=4m	M	4230.*	0.		
Retaining Wall H=7m -	М	9000.0	0	0.	
Relating Wall H= 8 m	M	10000.0	0	0	
Stone Moscray H=2m	M	800.0	3500	2800	
• H= 3m -	M	1100.0	· 0	0	
→ H=4m	M	1250.0	80.0	100.0	
Stone Mosonry H. 5th	· m_	1750.0	0	0	
<u> </u>	M	2500.0 5000.0	280 0	700.0	-
I PAVEMENT	M	1,428.0		2,2919	
Subbose Course Crushed Grovel Bose Course	CuM CuM				
Prime Coot	SqM	ан 		•	
Tack Cool	SqM				
Portland Cement Concrete Povement 0,23 m	SqM		-		
II-1 Sofely Focilities					
Povement Morking					
While W=0.15m	м		•		
Yellow W=0.15m	M		1		
Troffic Rood Sign	eoch				•
Kilomeler Post	eoch	.•	. ·	-	<b>]</b> .
Pavement Stud	eóch				
Delineóter	eoch				•

CONSTRUCTION C	DST NO.3		5843		
DESCRIPTION	UMT	UNIT COST	QUANTITY	COST	REMARKS
Metol Beor, Type Guord . Roil	M				
Guard Rail End Place Concrete Post for Quard Rail	eoch eoch				
IV OVERLAY	M	750.0			an a
Ý DRAINAGE				704.0	
Grouted Side Ditch	L.M.	171.76			
Concreté Sidé Ditch w=0.5m.	L.M.		817.5	. 35 %. '	
Sub - Drainage Reinforced Concrete	LM	170.85	817.5	139.7	
Pipe Culvert Ø 1,20m, Reinforced Concrete Box	LM.	1330.0	97.0	129.0	• • •
Culvert 1.50 X 1.50	L.M.				
2.00 X 200 2-3.00 X 3.00	L.M. L.M.	55000.0	 		
Clean and Repair Existing Culvert	LM				
Clean Out Existing Ditches	LM.				
iniet and Outlet Headwoll and Wingwol	sel	27,074.0	ż	81.2	
VI TUNNEL	Ж				
vil 8ridge	· · ·	-			•
VII-1 Sodou			-		•
VEL DIRECT COST			-		Totol 1 to VII
IX MISCELLANEOUS MINOR WORKS					XIII X 0.15
X SUB-TOTAL ECONOMIC COST					an + Ix

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- · · · · · ·	OST NO.1	51	G 4	AS JANUARY: 19	81
DESCRIPTION	UNAT	UNIT COST	QUANTITY	COST	REMARKS
I. EARTHWORKS			•	4,385.6	, <b></b>
Clearing & Grubbing	SqM	0.85	32,405.5	27.5	
Stripping	CuM	20.83	3,240.6	67.5	· · · · · · · · · · · · · · · · · · ·
Excovation of Common Surplus Moterial	CuM	)			
Excavation of Common Soll-Rock Material	CúM	(	· ·		
Excavation of Common Hard-Rock Material	ĊuM	) 236	110,930.4	2,618.0	
Formation of Embank- ment from Roddway Excavation in Common Material	CuM				·
Formation of Embank- ment from Roadway Excavation in Soft	1.15	341	49.050.2	1,672.6	•
Noteriol Formation of Embank-	CuM	)			-
ment From Roodway Excavation in Hard Material	CuM	-			•
Formation of Embank- ment From Borrow Excavation in Common Material	Сл	2.3.39	· · · · ·		
Compaction of Existing Ground	SqM	2.83	÷		
Composition of Cut Section	SqM	2.25	0	0.	· · · · · · · · · · ·
I-1 Stope Protection				1,418.8	
Gobions	eóch	455.85	·		
Noted Gablans	eoch	533.51			
Clearing of Boulder Stone	SqM	2.60			
Piocing Top Soll .	SqM	6.18	9,077.5	56.1	· · · · · · · · · · · · · · · · · · ·
Seeding	SqM	0.97	9.677.5	8.8	·
Plonling Work	L.M		7,130.0	1,285.5	
Fencing For Droped Stone	L.M				

Land Marca Burry Diff. P. & Total States States Transford Strates				1922 - Marine School And and School	1000-100-000-000-000-000-000-000-000-00
CONSTRUCTION C	OST NO.2		SEG 4		<u>-</u>
DESCRIPTION	UNIT	UNIT COST	QUANTITY	COST	REMARKS
Netting for Slope Protection	SqM	20.0	2280	46	
Concrete Sproying	Sq M	280.0	2280	63.8	
Precast Concrete Frame		2.20.0	0	0	
II MINOR STRUCTURE			•	4,345.1	
Retaining Wall H=4m	M	4230.°	Q.	0	
Retaining Wall H = 7 m	М	9000.0	2450	2,205.0	
Retaining Woll H= 8 m	М	10000.0	70.0	700.0	
Stone Missonry H=2m	М	800.0	0	0	
• H=3m -	М	1100.0	300.0	330.0	
<u>→</u> H=4m	M	1250.0	265.0	337.3	
Stone Masonry H- 5m	м	1750.0	45.0	18.8	-
<u></u>	м	2500.0	0	0	
· H·7x2m	Ч	500.0	140.0	710.0 2,016.7	
E PAVEMENT	М	1,428.0	1,367.0	. 1,952.1	- -
Subbose Course	CuM				· · · · · · · · · · · · · · · · · · ·
Crushed Gravel Bose Course	CuM				
Prime Cool	SqM			• •	
Tock Cool	SqM		-		·
Portland Cement Concrete Povement 0.23 m	SqM				-
Side Walk	LH	169.9	'380.°	64.6	
1 Sofety Facilities					
Povement Morking		_			
White W=0.15m	м		-		•
Yellow W=0.15m	. M			•	•
Troffic Rood Sign	eoch				
Kilometer Post	eoch				
Povement Stud	eoch			-	
Delineoler	eoch	•			
	- and the second				•

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CONSTRUCTION CO	DST NO.3		SEG 4	⋽⋶⋳⋽⋶⋳⋑⋬⋬⋶⋺⋺⋺⋹⋳⋳⋳⋨⋏⋑⋺⋠⋹⋲∊⋳∊∊⋺∊⋳∊	
DESCRIPTION	UNT	UNIT COST	QUANTITY	COST	REMARKS
Metol Beor, Type Guord Roll Guord Roll End Place Concrete Post for Guard Roll	M each each				449449844 (1874) (1974) (1974) (1974) (1974) (1974) (1974) (1974) (1974) (1974) (1974) (1974) (1974) (1974) (19
V OVERLAY	м	750.0			
V DRAINAGE		-		3,031.8	
Grouted Side Ditch	L.M.	171.76			
Concrete Side Ditch w=0.5m.	L.M.	433.18	1,092.0	473.0	
Sub - Droinage	L.M.	170.85	1.092.0	186.6	
Reinforced Concrete Pipe Culvert Ø 1.2 Cm.	LM.	1330.0	69.0	91.8	
Reinforced Concrete Box Culvert 1.50 X 1.50	L.M.				
2.00 X 200 2-3.00 X 3.00	L.M. L.M.	55000.0	39,0	2,1450	
Clean and Repair Existing Culvert	L.M.				-
Clean Out Existing Dilates	L.M.				
livet and Outlet Headwoll and Wingwall	set	27,074.0	.5	135.*	
VI TUNNEL	м		· · · · · · · · · · · · · · · · · · ·		
VI BRIDGE			-		
Zil Sobou				errenden förstaden er	
VAL DIRECT COST					Totol 1 to VII
X MISCELLANEOUS MINOR WORKS				-	УШ X 0.15
X SUBSTOTAL ECONOMIC COST		-			VIII + DX

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## HE QUANTITIES

## 1. EARTHWORKS

D - 18

1) Clearing to	<u>Grabbian, Stripping</u>	(0.1 <u>n</u> )		
STA	1.20373!	#105	AV3. 5103	AREA
203 + 510		¢		
+ 400	92.0	26.0		1,123,0
+ 540	140.0	0		1 820.0
+ 580	40.0	48.0		969.0
+ 610	30.0	0		720.0
203 + 790		0		
+ 800	10.0	13.0		65.0
¥ 900	100.0	0		650.0
+ 950	50.0	27.0		6?5.0
204 + 000	59.0	16.0		1,075.0
+ 160	100,0	42.0		5,900.0
+ 135	35.0	C		735.0
• •				10,770.0 52
			S99. 1	1,077.0 n ³
+ 225		0		
+ 307	75.0	43.0		1,612.5
+ 400	100.0	18.0		3,050.0
+ 450	50.0	0		450.0
+ 460		2		
+ 500	40,0	13.0		269.0
+ 610	100.0	0		650.0
+ 750	1.22.0	13.0		650.0
+ 757	<b>50.</b> 0	4.0		425.0
+ 359	169,0	13.0		850.0
+ 990 205 + 395	50.0	0		325.0
and the second	100,0	51.0		2,550.0
+ 37-5	37.5	· · · ·		958.3
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1) Clearing & Grabbing, Stripping (0.1 o)

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STA.	LEIGTE	RIDE	AVE. VIDE	ARFA
205 + 200				
+ 230	30.0	0		
• 300	70.0	41.0		1,435.0
+ 350	50.0	0	;	1,025.0
+ 400	50.0	20.0		500.0
+ 500	100.0	11.0		1,550.0
• 600	100.0	25.0		2,000.0
• 700	100.0	30.0		2,550.0
+ 800	100.0	34.0		3,200.0
+ 840	30.0	63.0		1,455.0
			Seg. 2	.,,+)).v
		ļ	Total	25,893.8e
			x 0.1	2,580.40
				2,205.40
- 1				
207 + 6 0		55.0		:
+ 750	60.0	110.0		4, 180.0
+ 800	50.0	110.0		5,500.0
+ 830	30.0	50.0		2,400.0
+ 877.5	47.5	0		1,187.5
+ *22.5		0		
+ 150	27.5	36.0		495.0
208 + 000	50.0	36.0		1,800.0
+ 100	100.0	\$5.0		4,550.0
+ 200	100.0	0		2,750.0
+ 300	100.0	0		
+ 350	50.0	20.0		500.0
+ 400	50.0	0		500.0
			Seg. 3	24,662,50
				2,466.30
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STA.	Lawih /	SOLA	AVE. VIDE	AREA
203 + 4* 2		0	1	
• 550	52.0	40.0		1,040,0
+ 600	50.0	0.03		3,000.0
+ 650	50.0	··5.0		8,750.0
+ 750	100.0	30.0	1	6,250.0
+ 845	5.0	0		1,425.0
+ 82		0		
950	51.0	75.0		1 CAD F
209 + 000	50.0	23.0		1,912.5
	100.0			2,450.0
+ 100		35.0		0.000,5
+ 130	30.0	0		525.0
+ 240	70.0	0		
• 273	30.0	65.0		\$75.0
+ 310	40.0	0		1,300.0
207: + 636		0		
+ 200	64.0	4.0		123.0
+ 750	50.0	0		100.0
+ f00		0		
600 + 0f5	100.0	20.0		1,000.0
+ 165	65.0	o		650.0
			Seg. 4	32,405.53 ²
			Total	3,240.603
			Total	93,731.8s ²
				9,373.203
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2) Cut : SBHBH	and Enbankrent CUI	Yolute FNL	TUNNEL	SURPLUS HAT- ERIAL OF EXCAVATION	en e
1 2 3 4 7otal	+ 35,717.3 + 73,10°.8 152,150.4 152,080.4 425,157.1	- 32,272.5 - 56,625.0 - 3%.087.5 - 49,050.0 -177,035.0	0 +8%,458.3 83,002.5 0 172,460.8	4,444.8 110,:43.1 196,065.4 110,930,4 422,383.7	32,272.5 56,625.0 32,087.5 49,050.0 177,035.0

	:		.ac)		No. 2 to No. 5 NAC OEAS			
		044470	(Deronit Arba)	:	277,835-0		237,725.0	
·				32,272.5	56,625.0	39.087.5	0-050-61	0.220.771
· .		· · ·	Total	D	5.924.68	\$3.002.5	9	172,460.0
			linrd-Rock X40XX1-5	1	45.105.0	0-028.14	ß	86,955-0
۰.		TUNAL	Cofte-Kock Inte-Knok		29,318-5	27,202-5	•	\$6.520.8
			Commen X20%X1.0	•	15,035.0	23.950.0	•	26,985.0
			THITOM	•	75,175.0	69+750+0	 ∎ -	0*226* 19T
			Total	\$•424.95	8.109.8	152,150,4	۰ ¹ -080.961	6-266-92-
			Kard-Rock XJOHX1+5	13,239-0	28.204.5	54.945.2	57.770.7	204,299.2
		cas	Seft-Hock XJOXX1-1	2.915.11	23,866-9	4.00.4	48,882-9	230.459.4
			Conton x40%x0.9	12,239.1	26.036.6	\$0.716.8	53.326.8	51912.541
		:	VOLCHZ	33.997-5	2.323.8	140.880.0	0.021.841	2-152.302
			CCC//CVT	· ·	N	· ~	Ŀ	7005

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		A THA	AVE. ANTA	2011-112	VEV	AVE. AREA	TWITON	
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+ 800	3000				2.0		300 0	
+ 200	100.0	1 160 ja ja ja kaiki - 1 140 ja 2 . Ja ja ja kaiki kaika kaika			081		1,000.2	
+950	50.0				20.0		9500.0	
			51 10	1 4.2200				
203+170					0 921			
052+	800				176.0		14,080.2	
+3/0	009	0			0		5:50%	
+ 400	200	0.00/		\$ 500 2				
+540	140.0	0		1000				
+580	400	140.0		2912				
+610	30.0	0		0 (1 / 7	0			
+65.75	425	-			20.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
			Br N	NO. Z L. 90.0	0			
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	SWATCA		807.5	80.0	400.0	125.0	175.0					Í			1,500 3	31375
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	AREA	30°.	0	0	0	0 K	0			90.0 -				0	300.0	
	SWATON			35.0	\$50 %	0 52 51	2,750.0	10,000.0	2.537.5	ש		6,300 0	9.950 °	325.0		3 4, 822.5
CUT -	AVE. ASEA		r			n i		-		Bar NO		×. V				
-	AREA		0	120	0	ۍۍ. O	55.0	145.0	0		0	1840	0551	0		
	K H S N H J		\$2.5	0 01	100.0	50.0	50.0	100:0	35.0	-		75.0	100 0	50.0	0.01	
	0.1%.	Km + 747.5	044+	+ 300	+ 900	+ 950	204 + 000	8/+	+135		+ 225	002+	1400	+ 200	+ %60	
			J	ŧ	J			J		.i		SEC 2	<u>×</u>			

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5 T.S			- CUT				• • • • • • • • •	
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KH 204 + 460		0			5.00 E			
205 +	<u>40.0</u>	14.0		280.5	ļ		6600	
+ 600	100.0	0		700.			3500	
+ 700	100.0	18.0		006	50.0		\$ 500.	
0.52 +	50.0	2.0		5-00. °	1380		4,700	
+850	100.0	140		800 0	200.0		16,300.	
+200	50.0	0		350.	0 **/		8,600	
205 + 000	0 001	165.0		6.250 0	0		3 200 %	
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בורר	AVE. AREA													925 ~ )		
	ARTA	2002		0	5.0	0								0. = 144 925		
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cut	AVE. AREA	c.S.								-		70 7 u c	75, 175, 2. **	× == 526	69. 75-0	
	ANEA	140.0	Ó	45.0	15.0	53.0	76.0	110.0	\$60.0	-			r 970	يد د	~ 500	
	E 9 2 11		50.0	50.0	100.0	0.001	100.0	0.001	30. D				5 42	( TUNDE .	12:	
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<b>V</b> ()		-	cut			בר שור		
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207 + 690		576.0						-
052 +	60 0	8700		\$3,380				
+ 88	50.0	690.0		39,000				
+ 830	30.0	150.0		12,600	0			
+8775	*7. 5-	0		3.502.5	20.0		C :22×	
			81	10.5	0:57 7			
5.226+		0	ſ		0			
-9500	525	20.0		2.2%	150.0		2062.5	
208+000	50.0	115.0	c. 5	\$625.0	0	-	3.750.0	
00/+	100.0	260.0		18,750.				
87 + 28	100.0	Ś		13,000.0	0			
88 1	100.0	0			3040		15: 2000	
-350	20.0	/00.0		2,500 °	100.0		10,101.0	
+ #05	50.0	0		2,500 °			2,500.0	
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CANAL AND A															
STUNTON		2000	00005			286.0	×5-0	20 0	\$0.0	4:58				25-0.0	5, 726.5
AVE. AREA															
AREA	0	ZCO. °	0	8.0	0'01	r R	00	0	00	00	0 75.7		0	10.0	
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AVE. AREA				Br 16				*			- 2				
ANEA	0				0	148.0	620.0	720.0	\$8.0	0		0	270 0	38.0	
		° 02	0.0 00 00			5.2.0	20 0	50.0	100.0	55.0			51.0	50.0	
C.7≷.	208 - 400	+ 420	0.5% +		+ 498	1 550	+ 600	4.650	+ 750	1845		668+	+ 250	209+000	T CO
	AVE. AREA VOLUME AREA AVE. AREA	5TA. LEY JTH AREA AVE. AREA VOLUME AREA AVE. AREA VOLURE	5TA. LENUTH AREA AVE. AREA VOLUME AREA AVE. AREA VOLURE 78-200 20 0 70 200 200 2000 2000 2000 2000	CTA.     LENUTH     ANEA     AVE. AREA     VCLUME     AREA     VOLUNE       78-200     0     0     0     2000     2000       1420     200     300     0     2000     2000	CTA.     LENUTH     ANE. AREA     VCLUME     AREA     WOLUTE       8-200     0     0     2000     2000       420     200     3000     0     2000       5     1     6     2000	CTA.     LENDTH     ANEL AREA     VOLUME     AREA     VOLUME       8 - 400     0     0     0     2000       1 + 420     200     0     2000     2000       1 + 420     3000     0     5000     2000       1 + 498     0     1000     1000	CTA.       LEPUTH       AREA       AVE. AREA       VOLUME       AREA       VOLUME $8 - 300$ $0$ $0$ $0$ $0$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$ $200$	CTA.       LENUTH       ANEA       AVE. AREA       VOLUME       AREA       VOLUME       AREA       VOLUME $8 - 400$ $0$ $0$ $0$ $0$ $0$ $0$ $1000^{\circ}$ $1 + 420$ $30.0^{\circ}$ $200^{\circ}$ $200^{\circ}$ $200^{\circ}$ $100^{\circ}$ $100^{\circ}$ $1 + 420$ $30.0^{\circ}$ $8^{\circ}$ $8^{\circ}$ $200^{\circ}$ $100^{\circ}$ $100^{\circ}$ $1 + 450$ $30.0^{\circ}$ $8^{\circ}$ $8^{\circ}$ $0^{\circ}$ $200^{\circ}$ $100^{\circ}$ $1 + 450$ $30.0^{\circ}$ $8^{\circ}$ $8^{\circ}$ $10^{\circ}$ $0^{\circ}$ $100^{\circ}$ $1 + 450$ $30.0^{\circ}$ $8^{\circ}$ $8^{\circ}$ $100^{\circ}$ $100^{\circ}$ $100^{\circ}$ $1 + 450^{\circ}$ $52.0^{\circ}$ $18^{\circ}$ $8^{\circ}$ $100^{\circ}$ <td>CTA.       LENDTH       ANEA       ANEA       VOLUME       ANEA       VOLUTE         $8 - \frac{2}{20}$       0       -       0       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -</td> <td>CTA.       LENUTH       AIREA       AVE. AREA       VOLUME       AREA       VOLUE         $8 - 300$       0       20       0       200       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000<td>CTA.       LENUTH       ANEL ANEA       VOLUME       ANEL ANEA       VOLUME       ANEL ANEA       VOLUME         $8 - 800$ $0$ $0$ $0$ $0$ $200^\circ$ $200^\circ$<!--</td--><td>CTA.       LETVITH       AIEA       AVE.       ANE.       ANE.</td><td>CTA.       LEYUTH       AIEA       AVE. AREA       VOLUME       AREA       VOLUE         $8 - 420$ $20^{\circ}$ $0^{\circ}$ $200^{\circ}$ $200^{\circ}$ $200^{\circ}$ $200^{\circ}$ $+ 420$ $30^{\circ}$ $0^{\circ}$ $30^{\circ}$ $50^{\circ}$ $200^{\circ}$ $200^{\circ}$ $200^{\circ}$ $+ 420$ $30^{\circ}$ $8^{\circ}$ $8^{\circ}$ $7^{\circ}$ $0^{\circ}$ $200^{\circ}$ $200^{\circ}$ $+ 450$ $52.0^{\circ}$ $78.^{\circ}$ $3845^{\circ}$ $7.^{\circ}$ $286.^{\circ}$ $286.^{\circ}$ $+ 550$ $52.0^{\circ}$ $780^{\circ}$ $88^{\circ}$ $20^{\circ}$ $26^{\circ}$ $26^{$</td><td>CTA.       Let' 0TH       Alita       Ave. Anea       Volume       Ane. Anea       Volume         $62 - 200$ $200$ $200$ $200$ $2000^\circ$ $2000^\circ$ $2000^\circ$ $+ 420$ $30.\circ$ $30.\circ$ $57.\circ$ $57.\circ$ $5200^\circ$ $2000^\circ$ $200^\circ$ $+ 420$ $30.\circ$ $7200^\circ$ $38.43^\circ$ $7.\circ$ $200^\circ$ $200^\circ$ $+ 450$ $57.\circ$ $742.\circ$ $38.43^\circ$ $7.\circ$ $200^\circ$ $286.\circ$ $+ 550$ $57.\circ$ $792.\circ$ $38.43^\circ$ $7.\circ$ $28.\circ$ $290^\circ$ $290^\circ$ $290^\circ$ $28.\circ$ $45^\circ$ $290^\circ$ $28.\circ$ $45^\circ$ $290^\circ$ <t< td=""><td>CTA.       LET. JTH       A.I.E.A       AVE. AREA       VOLUME       AREA       AREA       AREA       ANEA AREA       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       V</td></t<></td></td></td>	CTA.       LENDTH       ANEA       ANEA       VOLUME       ANEA       VOLUTE $8 - \frac{2}{20}$ 0       -       0       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -	CTA.       LENUTH       AIREA       AVE. AREA       VOLUME       AREA       VOLUE $8 - 300$ 0       20       0       200       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000       2000 <td>CTA.       LENUTH       ANEL ANEA       VOLUME       ANEL ANEA       VOLUME       ANEL ANEA       VOLUME         $8 - 800$ $0$ $0$ $0$ $0$ $200^\circ$ $200^\circ$<!--</td--><td>CTA.       LETVITH       AIEA       AVE.       ANE.       ANE.</td><td>CTA.       LEYUTH       AIEA       AVE. AREA       VOLUME       AREA       VOLUE         $8 - 420$ $20^{\circ}$ $0^{\circ}$ $200^{\circ}$ $200^{\circ}$ $200^{\circ}$ $200^{\circ}$ $+ 420$ $30^{\circ}$ $0^{\circ}$ $30^{\circ}$ $50^{\circ}$ $200^{\circ}$ $200^{\circ}$ $200^{\circ}$ $+ 420$ $30^{\circ}$ $8^{\circ}$ $8^{\circ}$ $7^{\circ}$ $0^{\circ}$ $200^{\circ}$ $200^{\circ}$ $+ 450$ $52.0^{\circ}$ $78.^{\circ}$ $3845^{\circ}$ $7.^{\circ}$ $286.^{\circ}$ $286.^{\circ}$ $+ 550$ $52.0^{\circ}$ $780^{\circ}$ $88^{\circ}$ $20^{\circ}$ $26^{\circ}$ $26^{$</td><td>CTA.       Let' 0TH       Alita       Ave. Anea       Volume       Ane. Anea       Volume         $62 - 200$ $200$ $200$ $200$ $2000^\circ$ $2000^\circ$ $2000^\circ$ $+ 420$ $30.\circ$ $30.\circ$ $57.\circ$ $57.\circ$ $5200^\circ$ $2000^\circ$ $200^\circ$ $+ 420$ $30.\circ$ $7200^\circ$ $38.43^\circ$ $7.\circ$ $200^\circ$ $200^\circ$ $+ 450$ $57.\circ$ $742.\circ$ $38.43^\circ$ $7.\circ$ $200^\circ$ $286.\circ$ $+ 550$ $57.\circ$ $792.\circ$ $38.43^\circ$ $7.\circ$ $28.\circ$ $290^\circ$ $290^\circ$ $290^\circ$ $28.\circ$ $45^\circ$ $290^\circ$ $28.\circ$ $45^\circ$ $290^\circ$ <t< td=""><td>CTA.       LET. JTH       A.I.E.A       AVE. AREA       VOLUME       AREA       AREA       AREA       ANEA AREA       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       V</td></t<></td></td>	CTA.       LENUTH       ANEL ANEA       VOLUME       ANEL ANEA       VOLUME       ANEL ANEA       VOLUME $8 - 800$ $0$ $0$ $0$ $0$ $200^\circ$ </td <td>CTA.       LETVITH       AIEA       AVE.       ANE.       ANE.</td> <td>CTA.       LEYUTH       AIEA       AVE. AREA       VOLUME       AREA       VOLUE         $8 - 420$ $20^{\circ}$ $0^{\circ}$ $200^{\circ}$ $200^{\circ}$ $200^{\circ}$ $200^{\circ}$ $+ 420$ $30^{\circ}$ $0^{\circ}$ $30^{\circ}$ $50^{\circ}$ $200^{\circ}$ $200^{\circ}$ $200^{\circ}$ $+ 420$ $30^{\circ}$ $8^{\circ}$ $8^{\circ}$ $7^{\circ}$ $0^{\circ}$ $200^{\circ}$ $200^{\circ}$ $+ 450$ $52.0^{\circ}$ $78.^{\circ}$ $3845^{\circ}$ $7.^{\circ}$ $286.^{\circ}$ $286.^{\circ}$ $+ 550$ $52.0^{\circ}$ $780^{\circ}$ $88^{\circ}$ $20^{\circ}$ $26^{\circ}$ $26^{$</td> <td>CTA.       Let' 0TH       Alita       Ave. Anea       Volume       Ane. Anea       Volume         $62 - 200$ $200$ $200$ $200$ $2000^\circ$ $2000^\circ$ $2000^\circ$ $+ 420$ $30.\circ$ $30.\circ$ $57.\circ$ $57.\circ$ $5200^\circ$ $2000^\circ$ $200^\circ$ $+ 420$ $30.\circ$ $7200^\circ$ $38.43^\circ$ $7.\circ$ $200^\circ$ $200^\circ$ $+ 450$ $57.\circ$ $742.\circ$ $38.43^\circ$ $7.\circ$ $200^\circ$ $286.\circ$ $+ 550$ $57.\circ$ $792.\circ$ $38.43^\circ$ $7.\circ$ $28.\circ$ $290^\circ$ $290^\circ$ $290^\circ$ $28.\circ$ $45^\circ$ $290^\circ$ $28.\circ$ $45^\circ$ $290^\circ$ <t< td=""><td>CTA.       LET. JTH       A.I.E.A       AVE. AREA       VOLUME       AREA       AREA       AREA       ANEA AREA       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       V</td></t<></td>	CTA.       LETVITH       AIEA       AVE.       ANE.       ANE.	CTA.       LEYUTH       AIEA       AVE. AREA       VOLUME       AREA       VOLUE $8 - 420$ $20^{\circ}$ $0^{\circ}$ $200^{\circ}$ $200^{\circ}$ $200^{\circ}$ $200^{\circ}$ $+ 420$ $30^{\circ}$ $0^{\circ}$ $30^{\circ}$ $50^{\circ}$ $200^{\circ}$ $200^{\circ}$ $200^{\circ}$ $+ 420$ $30^{\circ}$ $8^{\circ}$ $8^{\circ}$ $7^{\circ}$ $0^{\circ}$ $200^{\circ}$ $200^{\circ}$ $+ 450$ $52.0^{\circ}$ $78.^{\circ}$ $3845^{\circ}$ $7.^{\circ}$ $286.^{\circ}$ $286.^{\circ}$ $+ 550$ $52.0^{\circ}$ $780^{\circ}$ $88^{\circ}$ $20^{\circ}$ $26^{\circ}$ $26^{$	CTA.       Let' 0TH       Alita       Ave. Anea       Volume       Ane. Anea       Volume $62 - 200$ $200$ $200$ $200$ $2000^\circ$ $2000^\circ$ $2000^\circ$ $+ 420$ $30.\circ$ $30.\circ$ $57.\circ$ $57.\circ$ $5200^\circ$ $2000^\circ$ $200^\circ$ $+ 420$ $30.\circ$ $7200^\circ$ $38.43^\circ$ $7.\circ$ $200^\circ$ $200^\circ$ $+ 450$ $57.\circ$ $742.\circ$ $38.43^\circ$ $7.\circ$ $200^\circ$ $286.\circ$ $+ 550$ $57.\circ$ $792.\circ$ $38.43^\circ$ $7.\circ$ $28.\circ$ $290^\circ$ $290^\circ$ $290^\circ$ $28.\circ$ $45^\circ$ $290^\circ$ $28.\circ$ $45^\circ$ $290^\circ$ <t< td=""><td>CTA.       LET. JTH       A.I.E.A       AVE. AREA       VOLUME       AREA       AREA       AREA       ANEA AREA       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       V</td></t<>	CTA.       LET. JTH       A.I.E.A       AVE. AREA       VOLUME       AREA       AREA       AREA       ANEA AREA       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       VOLUME       V

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		CONVERSE.													-		
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		NOLUME		1/345.0	2,633,5	-7 8 ON				6,840	9.120.0				10 2 601		30, 138 5
	CUT	AVE. ANZA				B - 1									E -		
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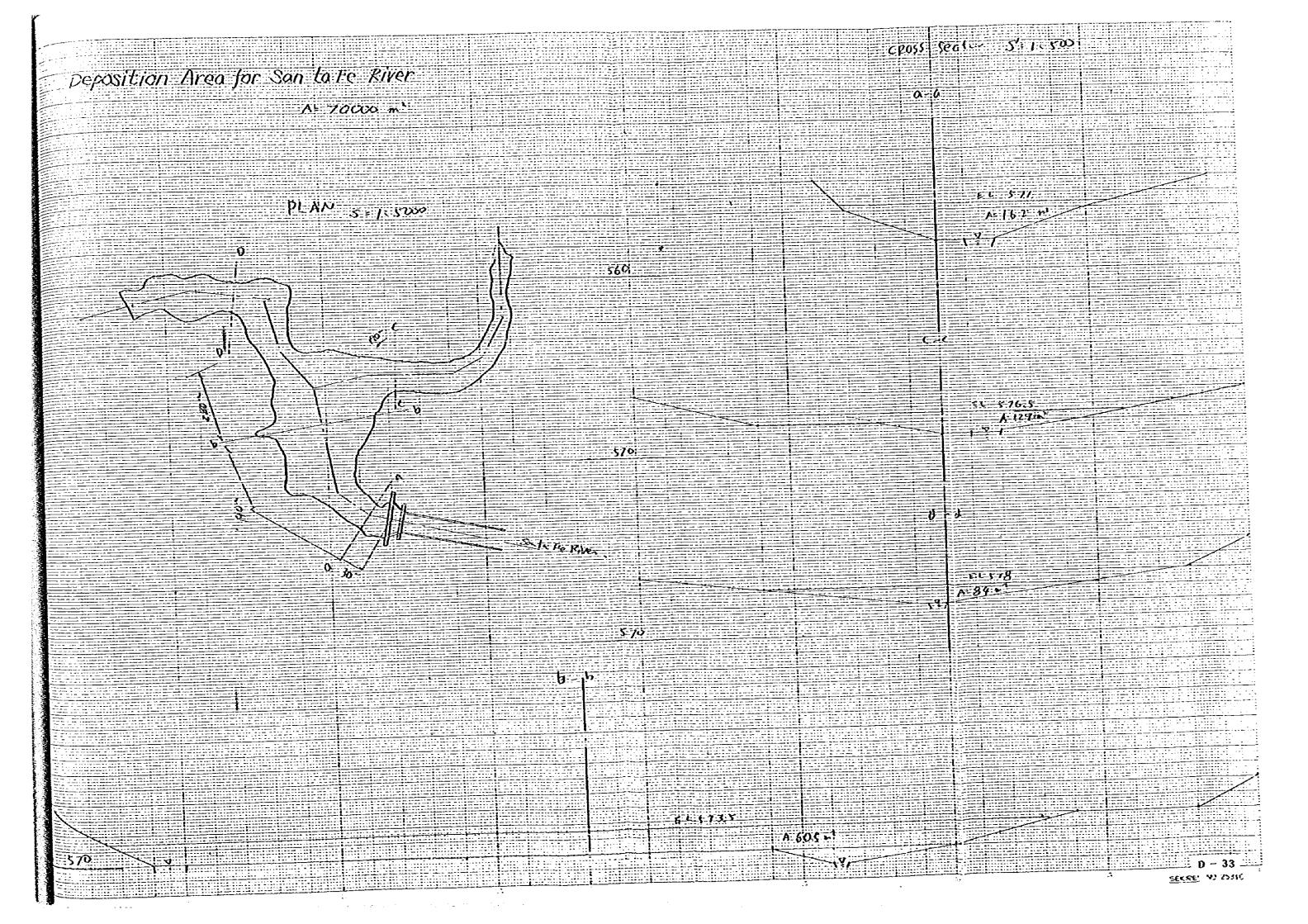
STA.     LENGTH     CUT       209+ 636     0     7     ANEA     ANE. AREA     VOLVING     ANEA       209+ 636     0     0     7     0     7     0       +700     50.0     0     1     12.5     72.0       +805     52.0     0     1     12.5     72.0       +805     55.0     0     1     20.0     80.0       +805     55.0     0     1     56.0     20.0       +900     55.0     0     1     650.0     20.0       +165     65.0     1     650.0     20.0       +165     65.0     1     1     1       55.6     0     1     650.0     20.0       +165     65.0     1     1     1       55.6     0     1     1     1       1     1     1     1     1       55.6     0     1     1     1       1     1     1     1     1	_
LENOTH AREA AVE. AREA VOLUME 64.0 0.5 5 65 76.0 50.0 0 - 1 72.5 72.0 0 2 - 72.5 72.5 0 2 - 650.0 55.0 0 1 650.0 55.6 m Fut = 7074, 287.010	FILE
64.0 0.5 5 65 16.0 50.0 0 - 12.5 16.0 15.0 0 - 12.5 16.0 15.0 0 - 12.50 15.0 0 - 10.2.50 55.0 0 - 20.0 15 10.2.50 55.0 0 - 20.0 15 10.2.50 55.0 0 - 20.0 15 10.2.50	
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15.0 15.0 55.0 100.0 25.0 20.0 100.0 20.0 100.0 20.0 100.0 20.0 100.0 20.0 100.0 20.0 100.0 20.0 100.0 20.0 100.0 20.0 100.0 20.0 100.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 2	80.0
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55.0 0 20.0 1 10000 100.0 20.0 1 10 10000 65.0 0 1 10 650.0 556 MFWT = 70746 287,010	80.0
100.0 20.0 ° 1000.0 65.0 0 1 650.0 55.6 m F.NT = 70 742 287,010	
65.0 0 2 287.010° 586 MENT = 70746 287.010°	0
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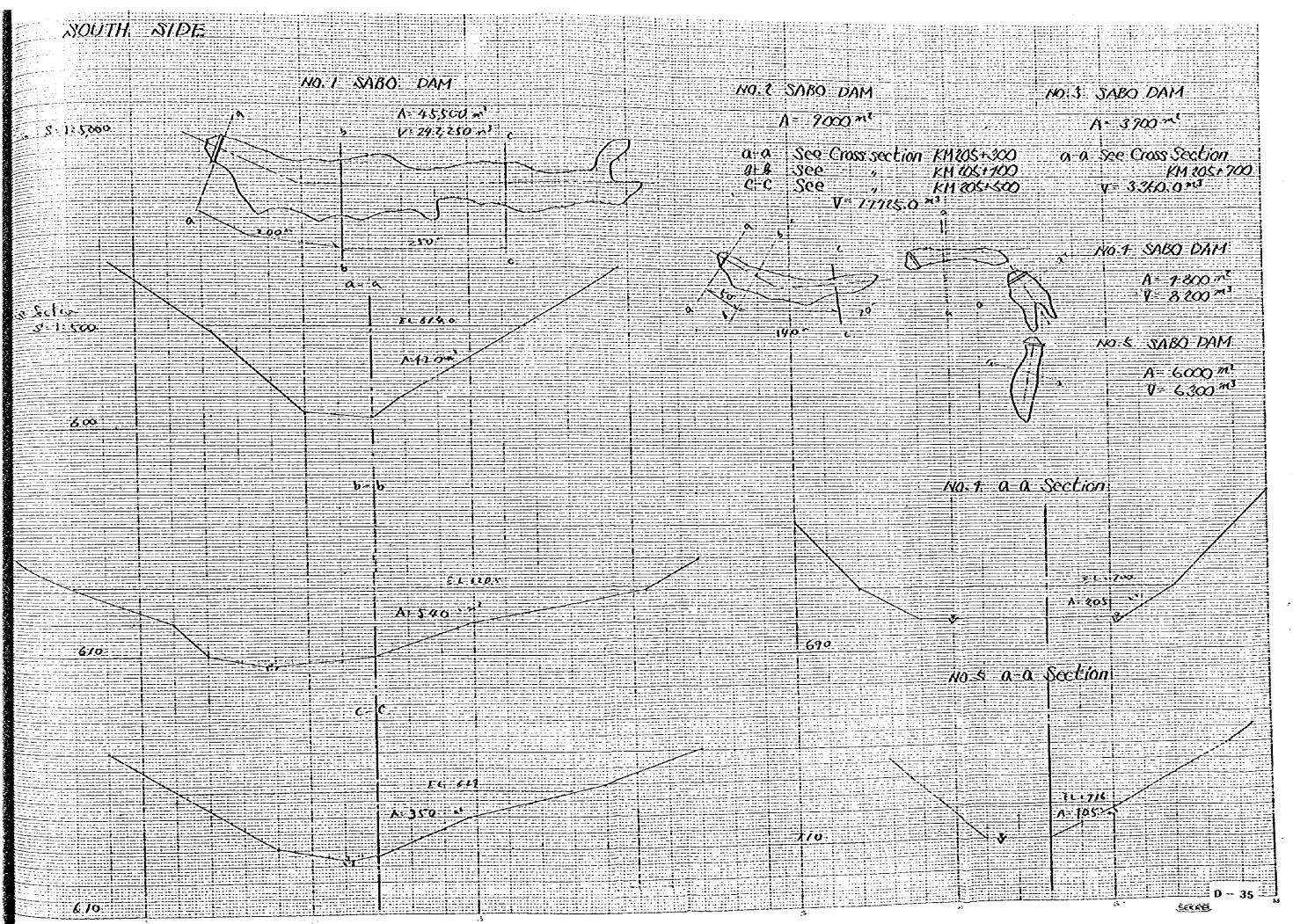
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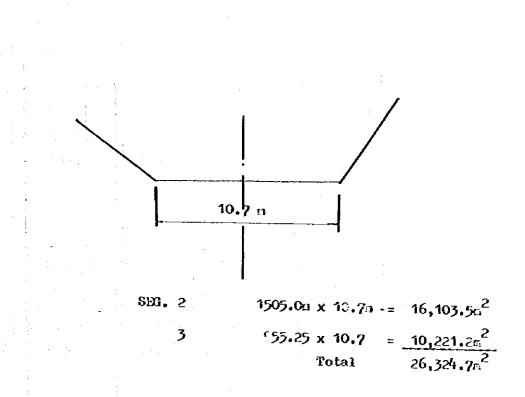
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	ZWNÍON													-			
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	AREA													(20 0 × 2 4 0) + (100 × 240)	2 × 08 1	105× 120 × 12	te - Summer and the second of the second
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 3) Compaction of Cut Section

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### 2. Slope Protection

	SP3 ITEN	THE	1	2	3	4	Total
For E	bankgent	-					
1)	Placing Top	soil (Sq.1)	4,316.5	9,603.3	5,00.8	.077.5	28,818
	Seeding	(Sq.13)	4,316.5	,603.3	5,:00.8	2,077.5	28, 8: 8.
For C	ut						
2)	Planting Vo Vegetation		3,250.0	15,125.0	7 070 0	04 9 <b>5</b> 2 5	
	¥ = 3.0a		1,083.0	5,042.0	3,730.0 1,243.0	21,38°.5 7,130.0	43,44. 14,4:8,
3)	Concrete Sp	raying		14			· .
		(Sq.5)	6,108.0	4,965.0	6,216.0	228.0	17,517.
	lietting	(Sq.E)	6,108.0	4,65.0	6,216.0	228.0	17,517.
4)	Precast Con Frean	icrete (Sq.ri)	o	2,310.0	1,470.0	0	3,780.
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1) Stope protection for tentanklikite </1/02/19 Topsoil

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			Br 16.1	0 022 7 1	. 0			
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+ 625	5.6%	3		119.0	11.5		2730	
			Br No.	0.2 6.90				
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		SE C		0		· · · · · · · · · · · · · · · · · · ·	
		SEG		0 × 0		° 52	
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		SE C		0 × 0		· · · · · · · · · · · · · · · · · · ·	
	•	SEG		0 × 0		22 0	
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		SEG 2		0			
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SFG2 ( 390)			ر ج ی	~		. 7564.3	1 9,6033
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Right	AVE. AREA		_			3 00 S	300.°	150.0	70. °	105.0	1235.41					
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	NOLUME		480.0	1,250.0	2,511.0		1	/92 0		125 0	25.0	10 10		192.5	100.0	
Lett	AVE. AREA											18				
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				Lett			Right		REMARKS
	STA.	LENGTA	AREA	AVE. AREA	NOLUME	AREA	AVE. AREA	VOLUME	
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+830		0						
+877.5					0			
202 + 300	-				0			
NEG 3	ŝ	0.01		250°	10:0		- 225	
1000	-			05ž	0		250 0	
			7-4-1	(18200)			x 19/0.	5. 'Y
202 + 498		Ó		-	0			
055+	52.0	0			0 2 2		702.0	
	° 05	0			60.0		2,1750	
NEG 4 + 650	50.0	20	-	c 561	000		3 000 2	
1750		0		° 925	С У И У		° 00/ \$	
518 +		0			o O N		\$651	

	:	·							- - - - - - - - -	- - -				
	REMARKS										) 2138959		43,45%	
	VOLUME		16575	2125.0	1.400.0	1.200 %	•	s 256	1000.		20/02		24,269.5	
Right	AVE. AREA									<ul> <li>The second second</li></ul>				
-	AREA	0	530	20.0	8.0	0	Ó	500			<b>)</b>			
	VOLUME				\$50.0	135 0		75	100		0 282 / )		19.2250	
Left	AVE. AREA										256 2		Total	
	AREA	0	Q.	0	20	0	Ó	5.0	Ø					
			\$7.9	\$0.0	100.0	30. O		ہ م <i>ک</i>	40.0					
ž	0 IA.	208 + 895	056+	207 , 200	00/+	+ 130	209 + 240	+270	+30	and the second secon				
•					<b>-</b>		D – 4	17				L	L.,	 L

4-4-1 4

	していしょう	S' Slope protection For Cut	For Cut	Concreat		Spreying and Netting	tirg)		
				Left			Right		REMARKS
-	STA.	LENGTH	AREA	AVE. AREA	NOLUME	AREA	AVE. AREA	VOLUME	
₹	203+790					0			
	+300	\$ 01.	0 ¥		20.0	0			
	005+		0		200.0				
• • •	+ 95-0	50.0	18.0		e 25.≯	0			
	000 + 200	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	0 Ø		° 002	25:0		6250	
1	1/20	001	0 0/		0001	25.0		25000	
}<	+135	0 25			0.541	0		\$380	
				70 t-1	(0.2\$5.0)			( 3563 0)	6108.0"
	204 + 225		0			0	•		
	+ 300	2 <del>.</del> 2	0 0 N		~ 050 V	2.0		0 .S.C.	
2005		100. 0	o ŵ		1,800.	0		100.0	
	1 .	2.22	0		° 00 Z	0		• *	
-						: : :			
								********	
-									

							rii				استحصح		-			
	KEMARKS	-		· · · · · · · · · · · · · · · · · · ·									n en anti-anti-anti-anti-anti-anti-anti-anti-	and a state of the second second		
•	YOLUME	+								•						
R ight	AVE. AREA	4												2		
	AREA	0		Ó				0				0	<b>O</b>	0		
	VOLUME												· · · · · ·	7250		
Left	AVE. AREA												n an			
•	AREA	0		0				0		0			C 2 Z		in the second	
	2 9 9 1		×0. 4	100	100.	\$. \$	。 20 2	5 OS				e esta a composito e consecutor e	70.0	1		
2	۷ <del>۲</del> .	204 + 460		× 600	0a/ +	<i>asL</i> +	+250	- 200	000 + 502			2022 - 502	1300	+35-0		

22. 5. 0 5. 0 5. 0 5. 0 5. 0 5. 0 5. 0 5.
22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

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	KEMARKS					2 ^{VW} Q					·····	0 × 1		
:	NOLUME		157.5		540.0	23/0				250	1470,02	3780		
Right	AVE. AREA					70to/					70 tul	70+11		
	AREA	3,0	18.0	12 0	18.0	27 X		25.0	0 S Z	25 ه	1. S.			
	SWN TON .		\$\$2.5		1170.0	SEGMENT				720 0	STOMENT			
Lett	AVE. AREA				-									
-	AREA	20.0	320	39.0	39.0			24.0	24.0	2 \$ 0			n de la companya de la	
			<ul><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li></ul>	20.0	10.0				10.0	20.0				
, L	0.4.	205+ 815	+ 830	+850	+850			207+730	+720	+700				

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# 3. HINOR STRUCTURES

- - 1) Retaining Wall

· · · · · · · · · · · · · · · · · · ·				(5)	
STA.	Height	H = 4.0n	H = 7.013	H = 8.03	
vi 204 + 450	) to Kii 204 +	510		60.0	
205 + 155	to 205 + 200	45.0			
Sub Total	Sechent 2	45.0		60.0	
Zn 203 + 510	) to KH 208 +	630	120.0		
203 + 685	to 208 + 710		25.0		
203 + 735	to 203 + 780		55.0		~
203 + 800	to 203 + 845		45.0		
208 + 60	to 20^ + * 50			70.0	
Sub Total	SBHERT 4		245.0	70.0	
Total		45 <b>,0</b> ::	245.00	130 <b>.</b> 0a	

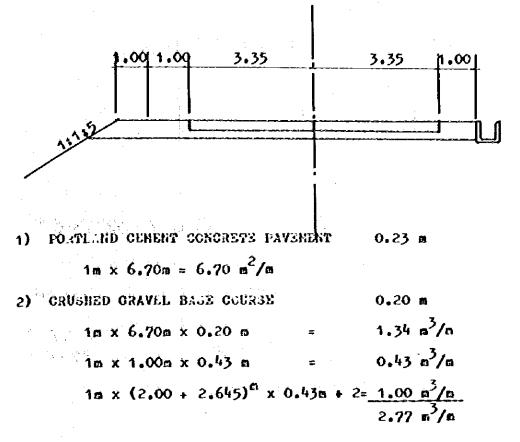
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2) STORE HASORAT

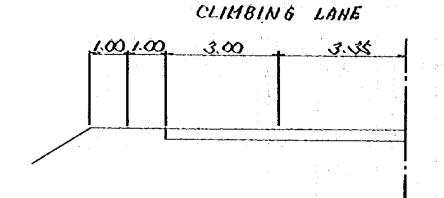
1. Sec. 1. Sec					
H=2.04	F=3.01	H=6.00	V-5 A-		10 m A
				<u>637776</u>	B=7.03 x 2
	100 0	460 0	1.1 1		
	(3000)	(640.003			
	4	0.03			
350.0		(320 47)		280.0	· .
//					
350.0					
				_	-
				(1,96057	н 3
:	300.0				
			. + t	-	140.0
			45.0		
	-	65.0			
		100.0			
		100.0		:	
		1			an a
	300.0	265.0	45.0	•	140.0
	(100-3)	(1,060-3			(1,5602)
					V 17003 /
350.0a	400,05	505.01	45.0+	280.0-	140,0-
(700-3					· · · · · · · · · · · · · · · · · · ·
				1,1,2008)	(1,9602)
1 · · · ·	1	1	1	L i i i i i i i i i i i i i i i i i i i	
	350.0 350.0 (700a ³ )	350.0 (700x ³ ) 350.0 (700x ³ ) 300.0 (700x ³ ) 300.0	100.0 (30027)         160.0 (640.023)           350.0 (7003 ³ )         240.0 (120 ***)           350.0 (7003 ³ )         240.0 (960 2t ³ )           300.0 (7003 ³ )         65.0 100.0 100.0           300.0 (7003 ³ )         265.0 (1,0603 ³ )           350.0 (7003 ³ )         265.0 (1,0603 ³ )	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$

## 4. PAVEMENT

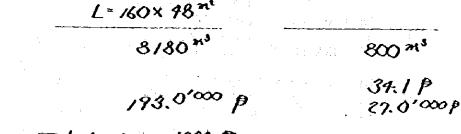


3) Prime Coat

No.	Unit Cost	Quantity	¥/@ Cost	Cost 000 2/Kn.
- 1)	161.38 ^P	6.70 n ²	1,081 P/m	
5)	115.43	2.77 m ³	318 P/a	
3)	4.03	7.16 m ²	29 2/m	
		•	1;428 P/m	1,428 °/m
t i		•		



1. Earth Work Fill: L= 100"x 5" Cut L= 100"x 8"



Total 220.0000 P

2. Pavement L= 360 m

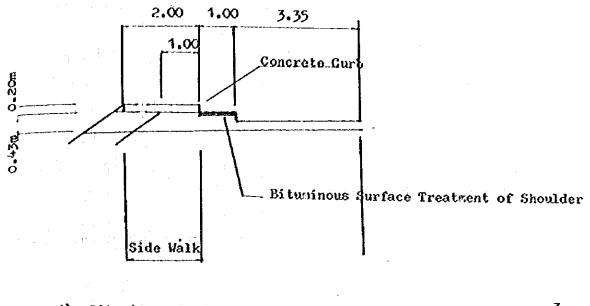
161.38 P

58.0 P

## Total 278,000 p

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Side Walk



1) Bituminous Surface Treatment of Shoulder  $1.0 \times 0.1 = 0.1n^3/m$ 2) Concrete Curb 1n/n3) CRUSHED GRAVEL BASE COURSE  $0.20 \times 2.0$  0.4

$$0.43 \times 1.0$$
  $0.43$   $0.834^{3}/_{\odot}$ 

No.	Unit Cost	Quantity	Cost	Recarks
1	218.81 P/n ³	8.1m ³ /m	21.9 P/n	
2	52.18 P/H	1r./G	52.2 P/n	
3	115.43 2/0 ³	0.83a ³ /a	<5.8 ≥/n	
: ···			16° • ° P/a	

Leigth of Side Walks in Santa Fe:

170.0 n

210.0 m

**380.0** n

5. DRATHAGE

1)	Concrete Si	de Ditch W = 0.5a	
	SEGNENT 1.	650 + 605 = 1,265.0	
	SEGRENT 2.	1,412.5 + 332.5 = 1,715.0	( Length of Cut Area)
	SEGHENT 3.	250.0 + 567.5 = 817.5	
	seckent 4.	425.0 + 667.0 = 1,022.0	
		Total = 4,919.5	( Length of Cut Area )
S)	Sub - Draina	gé	
	SEGUENT 1	1,265.0	
	SEGARAT 2	1,745.0	
	SEGNEIN 3	817.5	
	SEGAENT 4	1,072.0	

4,:19.5

Total

3)	Reinforced	Concrete	Pipe	Culvert
----	------------	----------	------	---------

Dianeter		()
STA.	\$ 1.20 n	Reparks
KH 207 + 850	12.0	
203 + 200	30.0	
203 + 100	12.0	
WB TOTAL SEDSENT 1	<del>74.0</del>	
204 + 460	25.0	
204 + 660	30.0	
20/1 + 8°0	33.0	
205 + 350	12.0	
205 + 550	17.0	
SUB TOTAL SEENING 2	117.0	
KI 207 + 150	35.0	
203 + 280	30.0	
208 + 420	32.0	
		-
SUB TOTAL SEGIENT 3	~7.0	
203 + 600	9.0	
203 + 50	10.0	
207 + 210	40.0	
210 + 120	10.0	
SUB TOTAL SHEASAT 4	16 .0	
TOTAL	332.0 E	

4) Reinforced Concrete Box Culvert

•

Size	2.0 x 2.0	Refarks
Kit. 20? + 365	32.0	
SEGRENT 4	31.0 n	
TOTAL	39.0 n	

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	FIRST	SECOND	LAST	£
·····				<b></b>
Construction Cost for Tunnel	P 173,959,000			
······································	50,860,000			
<del></del> .	3,310,000			
Fire Preventing facilities	6,010,000		:	
	(13,000,000)			
	13,140,000	1,567,000	1,960,000	
	15,400,000	10,213,000	69,867,000	1
	· · · · · · · · · · · · · · · · · · ·		1,600,000	
		-	40,531,000	
			22,936,000	
	11,240,000	9, 636, 000		
Facilities	4,160,000	577,000	4,800,000	
	224,819,000	11,780,000	71,827,000	
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TUNNEL . •

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### 7. BRIDDE

S20.	STA.	INNE	TYPE	L = 50		L = 50	
				LEXTH (c)		L = LENOTH (a)	
							VIRENI WS
1	KK						
	202 + 560	S.D.P. No. 1	PCG			220.0	5.355.5
••••••	203 + 702.5	No. 2	PCG			50,0	2,130.8
	204 + 180.0	No. 3	POG			50.0	2,140.8
		Sub T	tal			(400.0)	(9,627.1)
2	205 + 55.0	No.4	RCDG PCG			(115.0)	(2,484.5)
3	207 + 500.0	No.5	RCDG	(45.0)	(963.2)		
4	203 + 474.0	No.6	POG	48.0	1,035.3		
	208 + 872.0	Xo.7	RCDG POG			55.0	1,655.7
	20? + 160.0	No.8	POG			60.0	1,811.4
	203 + 553.5	No. 9	P03			155.0	3,570.9
	209 + 830.0	Nò.10	RCDG	30.0	596.9		
•	216 + 400.0	Santa Fe	POG	30.0	814.8		
		Sub 7	tal 💡	(108.0)	(2,447.0)	(270.0)	(7,078.0)
			TOTAL	153.0	3,410.2	735.0	19,189.0
							1
		1 N 1					1
. :				1			

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