8. SABO

Approximate Cost Estimation of Erosion/Sediment Control Works

		· · ·		-	
		- - -			
Seckent	DESCR	IPTION			1 00 CONSTRUCTION O
1		• •		1.1841. 1.1841.	
2	No. 1 SABO DAK (To C	ontrol the	e Sedicent)		
	No. 2 SABO DAM (To C	ontrol the	Sedicent a	nd	
	the erosion				
3	No.3 SABO DAN (To ch	eck the fi	urther erosi	on)	
	No. 4 SABO DAH (-do-		. .	
	No. 5 SABO DAK (- do -			
1			Total		12,685
4	SABO DAM	:			х
:	Rivetzent Works		· · ·		
			Sub Total	•	10,169.0
:	DROPPED CHEACK SHUTE	(KN 209	+ 365)	· .	120.0
			Total		10,289.0
		· .	Total		22,074.0

D - 61

S THENDES

1) On the Southern side of Dalton Pass (Dig.dig River)

- 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 night 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

No. 4: To check the further erosion

No. 5: To check the further erosion (See Draving)

ATCH. 2 On the South Side of. CONSTRUCTION COST	Dalta (STA.	Dig Dig	River)
DESCRIPTION	UNIT	UNIT PRICE		DIRECT COST
CUT	Cu.H	20.8		
EHBANKHENT	Cu.N	13.05		
STRUCTURE EXCAVATION	Cu.H	61	23,055	1,406,35
CONCRETE PAVELENT (t=230 m)	L.H	1428		
SIDE DITCH	·L.H.	433		
GUARD RAIL	L.H	540		
PLANTATION BORK	L.H	1		
VZGEFATIQI WORK	Sq.H			and the second
SODDING	Sq.H			
RETAINING WALL GRAVITY TYPE (H=) L.H			
-d6- (H=) L.H		,	
STONE HASONRY FOR (Ha) L.H			
-do- (Ka) L.H	-		
-do- (X-) L.H			
CONCRETE PIPE Ø	L.H			
-do- Ø	L.H			
CONCRETS FOR SABO	Cu.H	233	15388	11,279,40
CONCRETE FOR RIVER BED	Cu.li	645	-	11,279,90
GROUTED RIPRAF	Cu.H.			
FRICE FOR FALLING ROCK		6150	•	· * ***********************************
BRIDGE	L.H. L.S.		-	
CONCRETE BOX CULVERT			•	·
DROP INLET	L.H EACH		•	· · · · · · · · · · · · · · · · · · ·
OUTLET		1250		
	EACH	1250		
Gabion Drainage	Çu,H	178		
· · · · · · · · · · · · · · · · · · ·	I.H.	368		
REINFORCINO STEEL BAR	. Kg.	6.43		
				and the state of the
•				12,685

D - 63

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QUANTITY OF SADO DAH FOR DIGDIG RIVER

1. SABO DAN NO. 1 Н = 20 п L = 66 n1) Concrete Volume $(12 + 2.5) \times \frac{1}{2} \times 15.0 \times 57.0 = 6,200$ (2.5 + 2.0) x ½ x 3.5 x 3.0 = <u>300</u> 6,500 c³ 2) Excavation Volume = 9.750 c³ 6,500 x 1.5 2. SABO DAM NO. 2 H = 17.0 m L = 4.0 n1) Concrete Voluce $(11.6 + 2.5) \times \frac{1}{2} \times 13.0 \times 30.0 = 2,750$ (2.5 + 2.0) x ½ x 4.0 x 22.0 = 200 2,50 a³ 2) Excavation Voluce = 4,425 m³ 2,50 x 1.5 3. SABO DAH IKO. 3 Н = 13.0 п L = 46.0 m 1) Concrete Voluze $(7.0 + 2.5) \times 12 \times 13.0 \times 27.0 = 1,670$ (2.5 + 2.0) x ½ x 4.0 x 28.0 = 1,920 B⁵ 2) Excavation Volume = 2,880 n³ 1,920 x 1.5

D - 64

- 4. SABO DAN NO. 4 H = 13.0 m L = 40.0 m
 - 1) Concrete Volume
 - $(7.0 + 2.5) \times 12 \times 13.0 \times 28.0 = 1,730$ $(2.5 + 2.0) \times 12 \times 4.0 \times 31.0 = 272$ $2,00^{\circ} r.^{3}$
 - 2) Excavation Volute

2,009 x 1.5

- 5. SABO DAN NO. 5 Same with No. 4
 - 1) Concrete Volume
 - 2) Excavation Volume

= 2.00° m³ = 3,000 n³

= 3,000 n³

D ~ 65

SEGHENR 4

2)

On the northern side of Dalton Pass (Santa Fe River Channel Yorks) One Sabo dam, three consolidation works, and three ground oills 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.

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

	¢ · ·			
SEG-4 (on the North side of CONSTRUCTION COST	Palto.	n Poss SANTAFE	River CILA	NWEL WORK
DESCRIPTION	UNIT	UNIT PRICE	a the second second	DIRECT COST
CUT	Cu,H	20.8		
ENEANKAENT	Cu.H	13.09		
STRUCTURE EXCAVATION	Cu.H	61	2.296	.4 95,056
CONCRETE PAVELENT (t=230 m)	L.H	1428	- dland have	
SIDE DITCH	· L.H.	433		anna a tha ann an an an ann an an ann an ann an a
GUARD RAIL	L.H	540	-	
PLANTATION WORK	L.H	4		
VZBETATION WORK	Sq.H		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	
Sodding	Sq.H			a de la companya
RETAINING VALL ORAVITY TYPE (H=)	L.X			
-dð- (K= *)	L.H			
STONE HASOIRY FOR WAIP WAY (B. S.S.)	L'H	2/00	400	840,000
-do- (Ka 7.0)	1.H	2700	1800	4860,000.
-do- (K-)	J.H.			
CONCRETE PIPE Ø	L.H			n an training and an
-do- \$	1.4			
CONCRETE FOR SABO	Cu.H	233	\$870	3,569.710
CONCRETE FOR RIVER BED	Cu.H	645	-4	
GROUTED RIPRAT	Cu.H	384		
FRICE FOR FALLING ROCK	L.H	6150		- -
BRIDG3	L.S		-	میں ہے اور میں اور اور میں ا یک کا ^م رکز اور کا ا
CONCRETE BOX CULYERT	L.n	•		
DROP INLET	EACH	1250		
oviler	EACH	1250		Anna an an ann an an an an an an an an an
<u>CABION</u>	Ċв.Н	178	2550.	453,900
DRATHAOS	Lik	368		<u> </u>
RETRIVORCINO STREL BAR	X8	6.43		<u></u>
		and the second second	Mr 9-909 A Carlon A Carlos A C	9ica'
				10169

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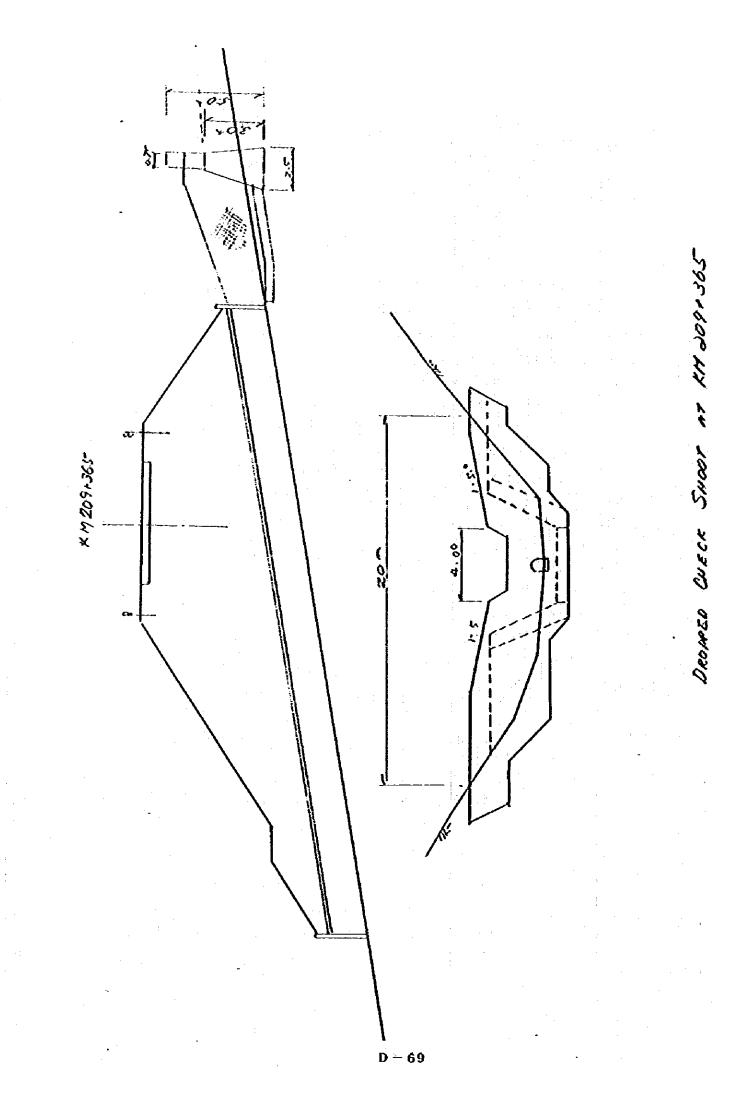
Ď – 67

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QUANTITY OF SANTA FE CHANNEL WORK

1. SABO DAM 1. Concrete Volume (II = 8m $I_s = 75m$) $(8 + 2) \times \% \times 8 \times 60 = 2,400 m^3$ $= \frac{1,120m^3}{3,520m^3}$ 2 x 8 x 70 2. Excavation Volume $3,520 \times 1.5 = 5,280 m^3$ 2. CONSOLIDATION Kos. 3 ($H = 7\pi$ L = 381) 1. Concrete Volume $(2 + 4) \times \frac{1}{2} \times 3.0 \times 3\ln = 279m^3$ $(2.0 \pm 1.5) \times \% \times 4.0 \times 8_{-56n}^{-56n}$ $325a^3 \times 3 = 1.005a^3$ 2. Excavation Volume $335 \times 1.5 = 500n^3 \times 3 = 1,500$ 3. GROUND SILL No.3 (H = 5.54 L = 34a) 1. Concrete Volume 1.5 x 1.5 x 29.0 = 65 $1.5 \times 5.5 \times 6.0 = 50$ $115a^3 \times 3 = 345a^3$ 2. Excavation Volume 115 x 1.5 = $172n^3$ x 3 = 516 4. Rivetcent Yorks L = 1,100a x 2 H = 5.5m 2 x 200 Stone Masonry $H = 7\pi - 2 \times 90^{\circ}$ 5. GABION $3 \times 31 \times 9n = 837n^2$ 3 x 24 x 126 =864.3² 1,701n² x 1.5n = 2,550n³

D - 68



	GMEN		- •	
- CONSTRUCTION COST	(STA. /	CM 2091	365)
DESCRIPTION	UHIT	UNIT PRICE	DUANTITIES	DIRECT COST
CUP	Cu.H	20.8		
EHBANKAENT	Cu.N	13.05		
STRUCTURE EXCAVATION	Cu.H	61		
CONCRETE PAVENENT (t=230 m)	L.H	1428		
SIDE DITCH	L.H.	433		
GUARD RAIL	г.н	540		
PLANTATION WORK	L,H	1		
Vagetation Nork	Sq.H	1		
SODDING	Sq.H			
RETAINING YALL GRAVITY TYPE (H=)	L.H			
-d8- (K=)	L.H			
STONE HASONERY FOR Web Way (H= 3.0)	L.R	1100.	7.0x.2	15.400
-do- (K=)	L,H			
-do- (H=)	L.H.			
CONCRETE PIPE Ø	Г.н			
-do- Ø	J.H			
CONCRETE FOR SABO (Dropped Chill Skin	JCu.H	233	130.0	95,290
CONCRETE FOR RIVER BED	Cu.h	645	9.0	5,805
GROUPED RIPRAF	Cu.H	384		
FEICE FOR FALLING ROCK	L.H.	6150		-
BRIDGE	L.S	-		
CONCRETE BOX CULVERT	L.n			
DPOP INLET	EACH	1250		
ORITES	EACH	1250		
CABION	Cu,fi	178		
DRA NUAGE	Litt	368		
ZHAORCING STEEL BAR	Kg	6.43		
	<u> </u>			116495 P

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P-b-30AP-34 9.

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SEGAENT	DESCRIPTION COST (10000
1	Location: Kn 202 + 000 To Kn 202 + 500	
	Over law (r cost	
	700-00-00 J/J.V	•
	Sub-Total 507.0	
S		•
3		
	-	
4	Location: Kn 216 + 800	
	(For shoulder scorded) 475.0	1
	Location: Kn 217 + 250	
	(For Land Slided) 869.0	
	Location: Ka 216 + 580 To Ka 218 + 000	
	(For Drainage Facility) 285.0	
	Sub-Total 1,629.0	
	Total 2,136.0	
		÷ .
:		
	and the second	

IFF. OVERENT

SFG MFMT 1. (a) KH. 202 + 000 To KH. 202 + 500

L = 500m

(1) OVER LAY m 1º 750.0

1000 Y

500m X 750.0

(2) Drainage

Concrete side Ditch L = 300m

300m x 433.18 P

Clean and repair Existing Culvert

3 Boxes x 14.0m x 62.38 2

2.0 507

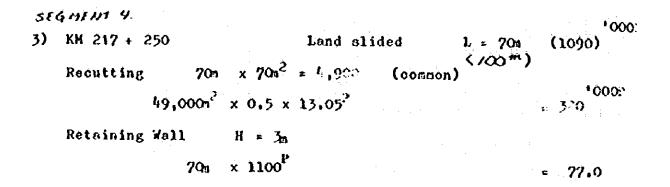
(375.0)

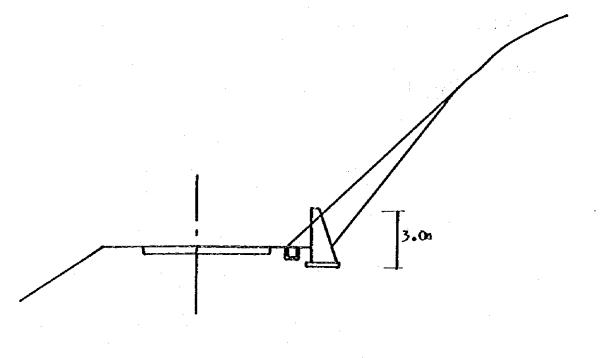
(132.0)

130.0

(3) Total

1000 ₽





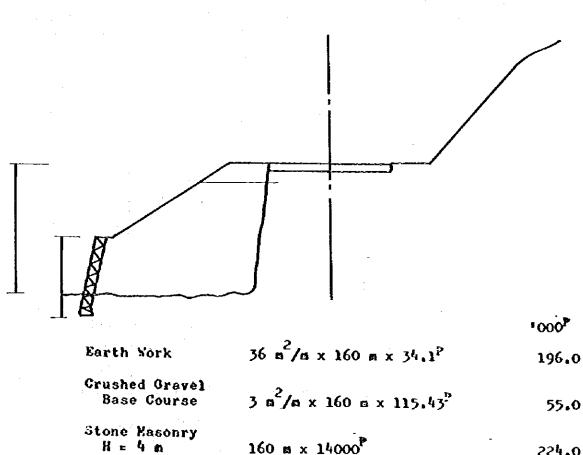
4) Total

1000P 869.0

D - 73

SEGMENT 4 (C) KH 216 + 580 To KH. 218 + 000 L = 1,420m(285.0 ¹⁰⁰⁰) 1) Drainage 282.0 10002 650a x 433,18^P Side Ditch Clean and repair Existing Culvert 4 pipes x 13.0m x 62.38^P 3.0 2) KH, 216 + 800 Shoulder Scorded (475.0)

L = 160 m



160 s x 14000^P 224.0

Santa Fe Intersecti	on	SEG.	₽ ₽	to test and the
XX. 216 + 420 - 21	6 + 515	Fill	L = 95a	Ave. height = $1.5c$
216 + 515 - 21	6 + 545	SANTA F	CRIDOB L	≃ 30m
216 + 545 - 21	6 + 605	Fill	L = 60m	Ave. height = 1.5
(21	0 + 165)			
1) Erbanksent	20 x 95. 23 x 60.	0 = 1,00	·	
		3,280	.0 m ³	
2) Topsoil and See	ding 6.0 x	3,280	.0 m ³	· . -
	ding 6.0 x	3,280 	.0 m ³ г ²	
3) Pavenent	ding 6.0 x 3.0 x	3,280 : 5= 570 : 20= <u>60</u> 630 155	о м ³ к ² м	
3) Pavenent	ding 6.0 x 3.0 x	3,280 5= 570 20= 60 630 155 n L = 1	о м ³ к ² м	
3) Pavement 3) Retaining Wall	ding 6.0 x 3.0 x H = 3.0 See : Pa	3,280 ; 5= 570 ; 20= 60 630 155 n L = 1 sgè	о м ³ к ² м	

Ko.	UNIT COST	QUANTITY	COS7	REMARX
1	34.1	3,280.0	111,848.0	· · · ·
2	7.15	630.0	4,504.5	
3	1,428.0	155.0	221,340.0	
4	1,100.0	0.08	0.000,83	
5	52.18	20.0	1,043.6	
TATOT			426,736.1	

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	10. 21047 - 01	7 - YAY		V = 40.0	a	as January	1:61
sæ.	574.	Length		IX5	0		BUILDINGS
	KILO - POST		Incultivated		Porest	Cross	Nipa
			2.5 8/02	<u>6 2/0²</u>	7.5 V/a2	13 P/h=11	44 8/02
1	202 + 500						
	- 202 + 55	450.0		108,000			
	203 + 170						1 (44.0)
		•					
1	- 203 + 657.5	487.5		117,000			1 (44,0)
-	203 + 747.5						
	- 204 + 135	337.5		°3,000			1 (44.0)
	Sub Po	Lal	(0)	(318,000)	(0)		Į
					(0)	(0)	.3 (132.0)
	204 + 225	the group of the					
	- 204 + 500	275.0	27,500			1	1 .
	- 205 + 037.5	537+5			161,250		
2	205 + 152.5						
	205 + 830	671.5		162,600			
	Sub To	പ	(27,500)	(162,600)	(161,250)	1	
		· · · · · · · · · · · · · · · · · · ·					
	207 + 700						
	- 207 + 877.5	177.5	17,750				1
_							
3	207 + 522.5						1
	- 208 + 450	527.5	52,750		1.		
	Sub To	al	(70,500)				
	203 + 498		1				
	- 203 + 845	347.0	34,700				
	E						
	205 + 8%						
4	- 201 + 130	231.0	23,100				
·	20 + 110	1		1			
	- 207 + 481	2-1.0	27,100			1	
	201 + 636					1	
	- 201 + 815	172.0	17,100				
-	20- + 845	320.0	32,000				
	- 210 + 165	Sub 533. 4					
		TOTAL	234,800	480,800	161,250		3 (132.0)
	1		1	1	1	1	

ROAD RIGHT -OF- WAY 1978 Price Level

RURAL	TYPE	UNIT	COST
Land	a) Uncultivated b) Cultivated	P/heotare P/heotare	£20,000.00 £50,000.00
	c) Forest d) Crops and im- provement	P/hectare P/hectare	P60,000.00 P30/tree - coconut
			PiO/hill - tanana PiO/hill - tanana P6O/grové - bamboo P3O/tree - mango P1O/tree - star apple
Buildings	a) Residential	₽/n ²	₽35/sq. m/ - Nipa/mix ma P1,000-P1,500 - conc.

at ₽500-700 - semi-conc.

D - 77

APPENDIX E

UNIT COSTS OF STRUCTURES

TABLE OF CONTENTS

1.	Bridge Constructio	on Cost	E – 1
	Superstructure Sub-structure		E-1
		so and Shinso Pile	E-19 E-33
11.	Retaining Wall		E-65
	Inverted T Type	9	E-66
	Gravity Type		E-71
	Stone Masonry	For Embankment	E-76
		For Cut	E-77
		For Waterway	E-78
1999 - S. 1999 -			
III.	Culvert		E-82
	Concreté Box C	ulvert	E-83
·	Concrete Pipe	Culvert	E~88

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a 1997 - Santa S 1997 - Santa Sa

BRIDGE CONSTRUCTION COST:

1. SUPERSTRUCTURE:

1.1 Bridge type and Span Length

Generally, the type of Superstructure of the bridge is determined by its proper span length.

Figure 1.1 shows the mutual relation between each bridge type and span length based on the analysis of a number of bridge data and economic studies of the construction cost.

Figure 1.1 RELATION BETWEEN TYPE OF BRIDGE AND SPAN:

	Span			*****	L	
	Type	.10	20	30	40	50
	Slad	General	*	1 .	1	1 +
	T -Section	8	1 1	- 1	+	1
D M M	Girder	<u>1</u>	•	ſ	•	1
	Box - Section	•		l.	• • • • • • • • • • • • • • • • • • •	1
	Girder	1	t	1	t	• .
	Slab	RACE STREET			1	
	I - Section	•		1	1	1
С А	Girder	1	1	1	1	B
	Box - Section		t .	<u>ا</u>		1
	Girder		•	•	•	•
ų	H - Beam	Lon and			· 1	1
10	Plate Girder	B	ban es	203416224	kanistas	I
0 42 13	Box Girder	4	1	1	have	and incars
	Truss	, ł	1	1	1	()

NOTE: RC - - - Reinforced Concrete Bridge

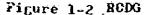
PC - - - Prestressed Concrete Bridge

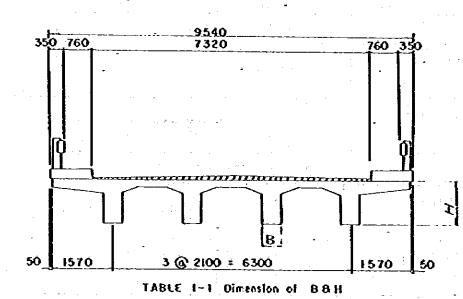
The types of bridge were determined based on span length as follows :

- (a) In case of span length L ≤ 15^m Bridge Type ----- Reinforced Concrete T-Section Girder (RCDG)
- (b) In case of open length 15 < L ≤ 35 Bridge Type ----- Prestressed Concrete I-Section Girder (PCG)
- (c) In case of span length L > 35 Continous Bridge Type ---- Prestressed Concrete Segmental Box-Girder (RCSG) or

Steel Truss (ST)

1.2 Typical Cross Section (A) HOBS $(L \leq 15^{13})$





SPAN 88 H	(8 cm)	(H cm.)
10 m.	40	90
15 m.	50	120

 $\tilde{\Sigma} - 2$

(B) PCG (15<L≤35)

Figure 1.3 PCG

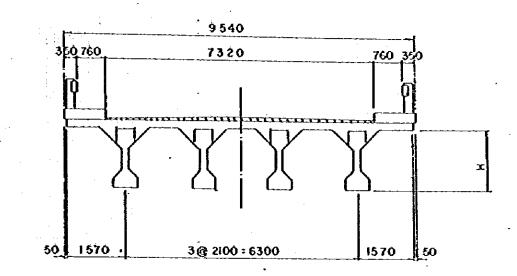
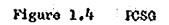


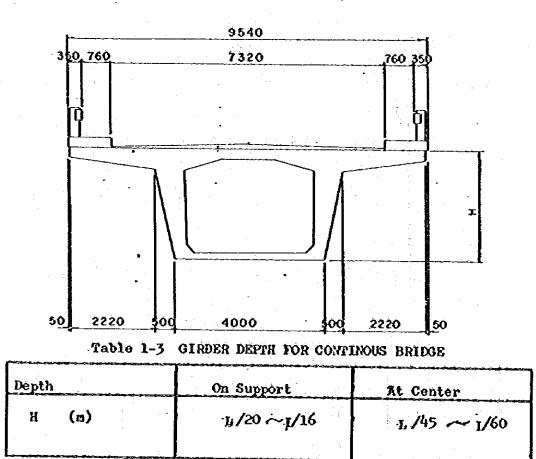
Table 1.2 Glader TYPE

 SPAN (m)	STANDARD AASHTO	Н (а)	REFARKS
20	TYPZ~IV	1.371	
25	TYPE-IV	1.371	
 30	түре-үі	1.829	
35	TYIE-VI	1.829	

THère are STANDARD AASHTO & PCI SECTIONS for prestressed concrete girder in the Philippines.

(C) PCSG

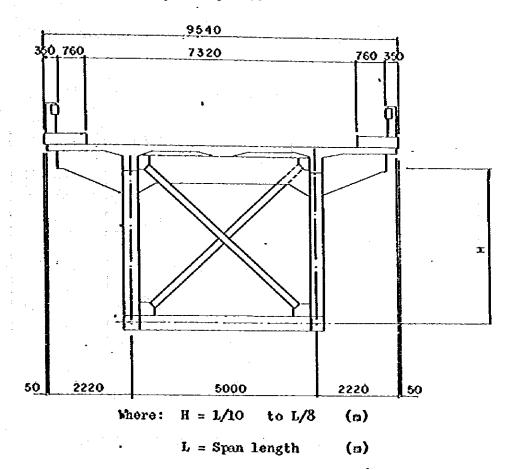




Where L; Span length

STEEL TRUSS ($L > 35^{57}$) (d)

Figure 1.5 S.T



1.3 ESTIMATE OF QUANTITIES

The estimate of quantity of RCDG and PCG is adopted from detailed design of each bridges in "LAOAG-ALLACAPAN ROAD PROJECT PHASE II".

TABLE 1.4 ESTIMATE OF QUANTITY FOR RCDC

DESCRIPTION	1153775	QUANTI	TIES
DESCATTION	UNIT	SPAN 10 ⁶⁴	SPAN 15
CONCRETE RAILING	L.H.	20.0	30
CONCRETE FOR SUPER- STRUCTURE	Cu.N	44.5	78.5
REINFORCING STEEL	Kg.	5030	1214.0
STEEL BEARING DEVICES	Kg.	348	343

(B) PCG

TABLE 1.5 ESTIMATE OF QUANTITY FOR PCG

DESCRIPTION	UNIT		QUANT	ITIES	
DUDUNITIEN	UNIT	SP	AN	S	PAN
		201	255	<u>30M</u>	35%
CONCRETE RAILING	L.M.	40	50	60	70
CONCRETE FOR SUPER- STRUCTURE	Cu,M	68	79	95	112
PAESTAESSED CONCAETE GIRDER	EAĊH	4	4	- 4	4
REINFORCING STEEL	Xg.	5680	1320	8800	10280

(C) PCSG

The estimate of quantity for RCSG is calculated by contineous beam in accordance with the following Figure 1-5 (a)-(4).

Fig. 1-5 (a) Average Span Length 40 M

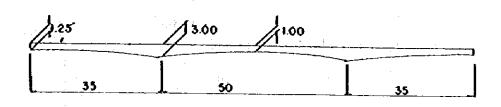


Fig. 1.6 (b) Average Span Length 50 %

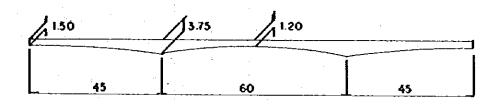


Fig. 1.b (c) Average Span Length 60 M

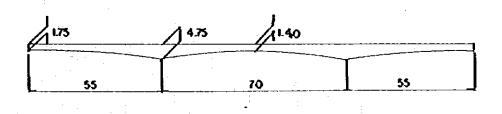


Fig. 1.b (d) Average Span Length 75 H

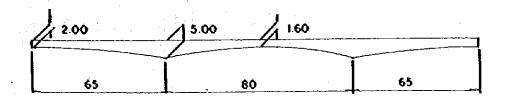


TABLE 1.0 CULTURE OF COMPANY FOR POSG

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			NYNO	QUANTITY	
DESCRDFTION	UNIT	A. 5. Surt	Å. J.	A.S. 60%	A.S. 70M
CONCRETE RAILING	г. X.	240	300	360	420
CONCRETE FOR SEGMENTAL CONSTRUCTION	Cu.M	868	1144	1490	1380
REINFORCINC STEEL	×s.	\$6800	114400	149000	188000
PRESTRESSING STEEL	Kg.	39000	57200	\$2000	112800
NETAL BEARING	ž	15440	19000	22700	26280

there A.S. - Average Span Lungui

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(d) S.T

The estimate of quantity for S.T is calculated by continuous beam in accordance with the following Figure 1.7

Figure 1.7 CONTINOUS STEEL TRUSS

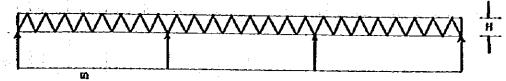


Table for Depth of Main T.uss

SPAN	DEPTH OF MAIN T.USS	REMARKS
40	4.ປ [ື]	L/H ≈ 10
50	5.5 [@]	L/H = 9.1
69	6.5 ^m	L/H = 9.2
70	7.5	L/H = 9.3

Where, L-length of Span & H-length of Girder

	111170		QUANTI	TIES	
DESCRI PTION	UNIT	SP/ 4(3)	LN 50m	517 6 `m	N 75m
CONCRETE RAILING	L.X	240	300	360	420
CONCRETE FOR SUPER- STRUCTURE	-Cu.K	366	458	550	641
REINFORCING STEEL	Kg.	80520	100760	121000	141020
STRUCTURAL STEEL	Kg.	271000	364000	465000	577000
HETAL BEARING DEVICES	Xg.	6300	7500	870 0	9900

TABLE 1.8 ESTIMATE OF QUANTITY FOR S.T.

1.4 Unit Price for each Item

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Table 1.9 is the direct cost for bridge construction using as reference the Laoag-Allacapan Road Project Phase II in the Philippines of which the detailed designs were completed on February 1981.

TABLE 1.9 SUMMARY OF UNIT PRICE DIRECT COST:

ITEM NO.	DESCRIPTION	TINU	FINANCIAL COST P	REMARKS
403	Concrete Railing	Υ.	296.62	
405 (1)	Class A-1 Concrete (Superstructure)	Cu.M	977.0	
405 (4)	Class D-1 Concrete (Segmental Concetruction)	Cu.M	2228.0	
1-(1)7-507	Prestressed Concrete Structural Members (L=20.0M)	Each	44721-97	
N •	Frestressed Concrete Structural Members (L=25.0M)	Each	62235-08	
1	Prestressed Concrete Structural Members (L=30.0M)	Bach	34208-09	
	Prestressed Concrete Structural Members (L=35.0M)	Each	106181.10	
405 A(2)	Prestressing Steel (Strand 12-\$12.400.)	Kg.	61.20	
406 406	Reinforcing Steel	.x.	6-43	•
407	Structural Steel	Kg.	36.38	
1-14S	Metal Bearing Shoe	Ke.	52.29	

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TABLE 1.10 CONSTRUCTION COST FOR RCDG

Contraction of the second s

		-	SPAN	SPAN 10 ^B	SPAN 15 th	158
DESCRIPTION	LIND	UNIT PRICE	QUANTITIES	AMOUNT * 1000 ×	QUANTITIES	A 1000 X
Concrete Railing	L.M.	296.62	20	5.93	30	s.90
Concrete for Super- atructure	CULK	977.0	44.5	43.48	78.5	76.69
keinforcing Steel	Kg.'	6.43	5030	32.34	12140	78.06
Steel Bearing Devices	Kg.	52.59	348	18-20	348	18.20
Tetal (1)			-	99.95		181.85
e Surface Area (RSA)	T		10.5 × (7.322+ .76) -84.84	32+ .76) 4 ^{m2}	15.5 × (7,322+ -76) =125.24	322+ -76) 4 ^{m2} 2
Construction Cost per	r		1180 P/M ²		1450 m/m2	» /M ²

TABLE 1.11 (a) CONSTRUCTION COST FOR PCG

	C C C	\$
4	2	Ì

· · · · · · · · · · · · · · · · · · ·			SPAN 20 th	20 ⁸⁰	SPAN 25	25 ^m
DESCRIPTION	TIND	UNIT PRICE	QUANTITLES	AMOUNT ~ 1000 *	QUANTITIES	AMOUNT * 1000 P
Concrete Railing		296.62	97	11.86	8	14.83
Concrete for Superstructure	Cu.M	977.0	68	66.44	29	77.18
Prestressed Concrete Girder	Each	44721.97		178.89	4	248-94
Reinforcing Steel	×s.	6-43	5680	36-52	7320	47.07
Total (1)	•			293.71		388-02
Bridge Surface Area (2)	1 . J.	.	20-5 × (7.32 +2.76)	32 +2.76) 64 == 2.76)	25.5 × (7.32 + .76) = 2d6.04	(7_32 + .76) - 206.04
Construction Cost per (2)			1770 - 1770	1770 */M ²	1880 P/M ²	۰./۲ ²

TABLE 1.11 (b) CONSTRUCTION SOSTS FOR PCG

.

			SPAN 30 ^m	30 ^m	SPAN 35 ^m	3S ^H
DESCRIPTION	TINU	UNIT PRICE	QUANTITIES	AMOUNT × 1000 F	QUANTITIES	AMOUNT × 1000 F
Concrete Railing	L.M.	296.62	3	17.80	70	20.76
Concrete for Superstructure	Cu.M	977.0	95	92.82	112	109-42
Prestressed Concrete Girder	Each	84208.09	4	336.83	4	424-72
Reinforcing Steel	Kg.	6.43	8800	56.58	10250	66.10
Total (1)			504,03	03	621-00	8
Bridge Surface Area (BSA) (2)		_	246	246,44 ^{m2}	286	286_84 ^{m2}
Construction Cost per			2050 1 2/m ²	₽/m ²	2160 P/m ²	*/# ²

E – 13

TABLE 1.12 (a) CONSTRUCTION COST FOR PCSC

			SPAN 40 th	40m	SPAN	SPAN SO th
DESCRIPTION	TINU	UNIT PRICE	QUANTITIES	AMOUNT X 1000 P	QUANTITIES	AMOUNT X 1000 P
Concrete Railing	L.N.	296.62	240	71.19	300	88.99
Concrete for Segmental Construction	Cu.M	2228.0	868	1933.90	1164	2548.83
Reinforcing Steel	Ks.	6.43	86800	558.12	114400	735.59
Prestressing Steel	Kg.	61.20	39000	2386.80	51200	3500.64
Metal Bearing Shoe	X.	52.29	15440	807.36	19000	993.51
Total (1)			5757.37	.37	786	7867 - 56
Bridge Surface Area (BSA) (2)	•		696	969 60 ^{m2}	121	1212-0 ^{m2}
Concetruction Cost per (2)	- - -		5938 P/m ²	₽/¤ ²	649	6490 2/m ²

(c) PCSC

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TABLE 1.12 (b) CONSTRUCTION COST FOR PCSC

			SPAN 60 ^m	60 ^m	SPAN 70 th	70 ^m
DESCRIPTION	TINU	UNIT PRICE	QUANTITIES	AMOUNT × 1000 P	QUANTITIES	AMOUNT × 1000 P
Concrete Railing	r-M.	296.62	360	106-78	420	124-58
Concrete for Segmental Construction	Cu.M	2228.0	1490	3319.72	1880	4188.64
Reinforcing Steel	ŝ	6.43	169000	958.07	188000	1208-84
Prestressing Steel	Х.	61.20	82000	5018.60	112800	\$603 . 36
Metal Bearing Shoe	×8×	52.29	22700	1186.98	26230	1374.18
Total (1)			10589.95	.95	13799-60	-60
Bridge Surface Area			1454	145k24 ^{m2}	1696 8 ^{m2}	8m2
Construction Cost per (BSA) (1) (2)			7280	7280 P/m ²	8130 P/m ²	۲/m ²

			SPAN 40 th	범 (1) (1)	SPAN 50 th	50 th
NOTITIO	TTND	A A NUT	QUANTITIES	AMOUNT × 1000 F	QUANTITIES	AMOUNT × 1000 +
Concrete Railing	. ۲.א.	296.62	240	71.19	300	86,99
Concrete for Superstructure	CuM	977.0	366	357.58	458	447.47
Reinforcing Steel	×8	6.43	80520	517-76	100760	647.89
Structural Steel	Kę.	36.38	271000	9858.98	364000	13242.32
Metal Bearing Shoe	K8.	52.29	6300	329.43	7500	392.18
Total (1)			1118	11184.92	14818,85	85
Bridge Surface Area (BSA) (2)	·		96	969.60 ^{m2}		1212 0 2
Coastruction Cost per BLA (1) (2)			\$711	11480. P/m ²	12270 7/ ²	₽/ <u></u> ,2

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TABLE 1.13 (a) CONSTRUCTION COST FOR S.T.

E – 16

(u) S.T.

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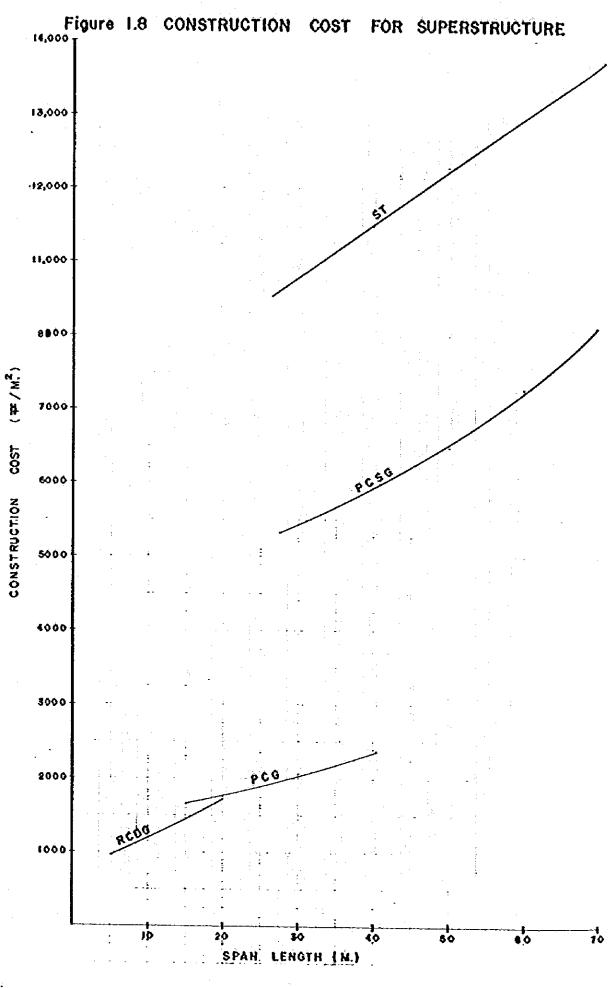
2 T. .

TABLE 1.13 (b) CONSTRUCTION COST FOR S.T.

			SPAN	SPAN 60 th	SPAN 70 th	70 ^m
DESCRIPTION	UNIT	UNIT PRICE	QUANTITES	AMOUNT X	QUANTITIES	A MOUNT × 1000 1
Concrete Railing	L.M.	296.62	360	106.73	420	125-58
Concrete for Superstructure	Cu.M	977-00	550	537.35	662	626-26
Reinforcing Steel	Кg.	6.43	121000	778.03	141020	906.76
Structural Steel	Kg.	36.38	465000	16911.70	\$77000	20991-26
Metal Bearing Shoe	Ke.	52.29	8700-	454.92	0066	517.67
Total (1)			18793.78	78	23167	.53
Bridge Surface Area (2)	_		1454	1454, 4 ^{m2}	1696	8 ^{m2}
Construction Cost per (BSA) (1) (2)			12930. P/m ²	P/m ²	13650	13650 2/m ²

E – 17

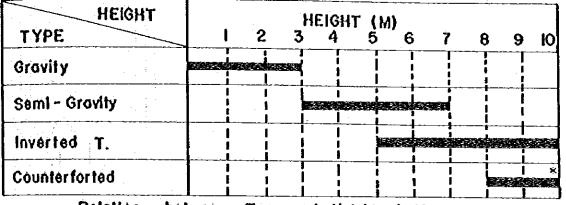
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E - 18

2. SUB STRUCTURE

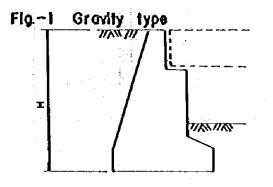
FIGURE 2.1

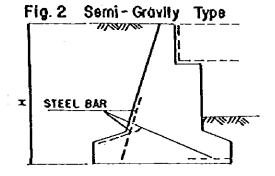


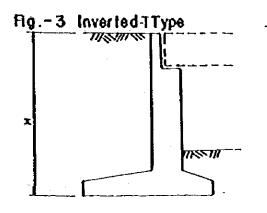
Relation between Type and Height of Abutment Note: Maximum height is about 15 meters.

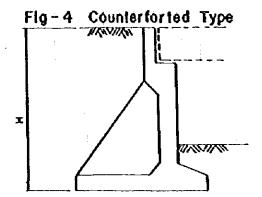
FIGURE 22

ABUTMENT TYPE"

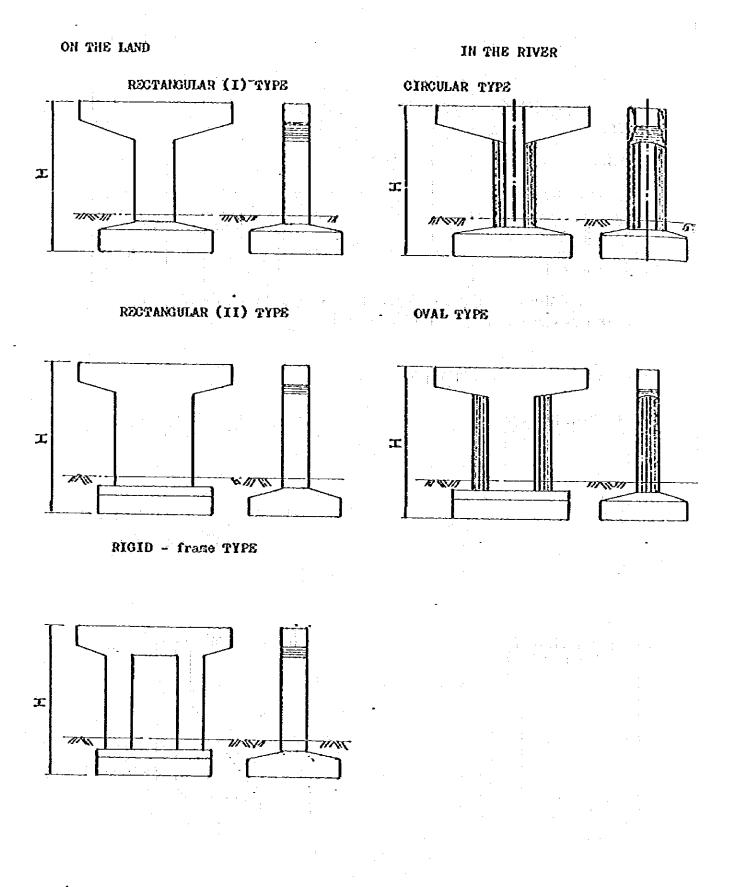


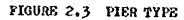






E -- 19





E - 20

Abutments and piers were determined based on the following:

A. Abutment

1144 Туре Inverted Type lleight ----5, 7, 9, 11 meters Span 15, 30, 50, 70 meters • • • Pier 8. Туре --------Rectangular (I) Type lleight 10, 15, 20, 25, 30, 35 m 15, 30, 50, 70 meters Span 1. St. 1994 1.1 . .

	and the second
	MAX-ILISBASHTO
2.2 STABILITY CALCULATION FOR SUBSTRUCTURE:	(8\$23-(4)
S.S.1 REACTION	Lincisa
	10.
Maximum Moment And Reaction due to Line, Load	89.18597886
For simple Beam	46.7369218 Likcisa
	15.
Fig. 2.4 Simple Span	169.1328239
	52,93061452
Å B	LINCISA
where L: Span Length (n)	20.
MC: Maxicum Moment at point o (tm)	250.625997
	LINCISA
SA: Maximum Reaction at end of Girder (t)	25.
	337.147368
	57.88556872
	LIKCISA :
Span length	. 39. 413.5746696
	59.12430726
Kogent	Liktosa
Reaction	35
	495.0549336
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	UX0.58 10.
	576.5945062
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	69.
	1162.2
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The needle in the	LINOSA
The results on the computed sheet at the right was programmed using AASHTO standards	70.
S	1452.5875 90.261
	WINE

(8) Maximum Reaction due to Dead Load for Simple Beam

The following table shows the maximum reaction at the end of the beam.

SPAN (m) TYPE YEIGHT (t/m) Rd (t) 10 RCDG 11.28 56.4 15 RCDG 13.68 102.6 20 FCG 13.57 135.7 25 FCG 13.39 167.4 30 RCG 15.94 239.1 35 RCG 15.29 267.6 40 **FCSG** 17.% 359.2 50 RCSG 18.90 472.5 60 RCSG 20.47 614.1 70 **RCSG** 22.09 773.2 40 10.18 ST 203.6 50 ST 10.35 258.8 60 ST 10.52 <u>315.6</u> 70 ST 10.67 373.5

TABLE 2.1 Maximum Reaction

 $\Sigma - 23$

-

SPAH (m)	ТҮРЭ	LL	ÐI.	LL + D
1^	30DG	36.7	56.4	300.3
15	RCDO	52.9	102,6	155.5
20	RYS	56.0	135.7	191.7
25	ICG	57.9	16.9.4	225.3
30	RXG	59.1	239.1	298.2
35	RCG	60,0	269.6	327.6
60	RCSG	61.7	359.2	420.9
50	ICSG	71.2	492.5	5/13.7
60	PCSG	80.7	614.1	694.3
70	PCSG	90.3	773.2	863.5
60	ST	61.7	203.6	265.3
50	ST	71.2	258.8	330.0
60	ST	80.7	315.6	3% 3
70	ST	70,3	373.5	463,8

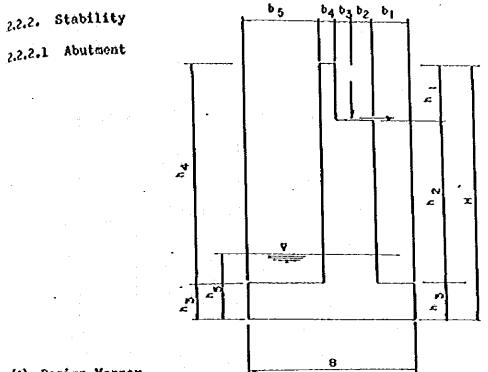
Table 2.2 Total Reaction

E - 24

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FIGURE 2.5



(A) Design Manner The following design criteria was used in calculating stability for abutment :

(1) Unit Weight

Concrete	2.4 t/m ³	
Compacted sand	1.9 t/m ³	

(2) Earthpressure

Coulomb formula and Mononobe-Okabe's formula gives the structure in which retail fill should be proportioned to withstand pressure. The coefficient of active pressure is shown as :

Ordinary Time	0.297
Earthquake Time	0.433

(3) Earthquake

The coefficient of seismic intensity for horizontal direction was assumed as :

$$Kh = 0.15$$

E - 25

(4) Live Load

HS 20 - 44

(5) Bearing Capacity of Soil:

- For Group VII - - - - 45 to 50 t/a^2
- (6) Safety factor for sliding:

For Group VII - - - - - - - - 1.5 For Group VII - - - - - - 1.2

E - 26

(B) Calculation of the Center of Gravity

SPAN	. 1	5.0	30.	0	50	.0	70.	.0
T.O.S.	RCDG	RCDG	PCG	RCG	PCSG	ST	PCSG	ST
В	3:00.	4.00	4.50	6.50	7.50	6.50	8.00	7.50
b]		.70	1.00	1.25	2.00	1.50	2.00	2.00
62	•55	•55	.65	.65	.65	.79	.79	.70
b3	.25	.25	•35	•35	.45	.50	.50	.50
ъ4	.40	.40	.40	.40	.40	.70	.50	.70
- b 5	1.10	2.19	2.19	3.85	4.00	3.10	4.30	3.60
H2	5.00	7.00	7.00	9:00^	9 :09 -	11.00	9.00	11.90
NI	1.40	1.40	2,00	2.00	1.80	5.80	2.39	7.80
<u>N2</u>	2.40	4.40	3.70	3.70	5.70	3.70	5.00	1.59
<u></u>	1.22	1.20	1.32	1.30	1.50	1.59	1.70	1.70
N4	3.80	5.89	5.70	5.70	7.50	9.50	7.30	9.30
<u>N5</u>	0	0	0	0	0	0	o	0
C	9.54	9.54	9.54	9.54	9.54	9.54	9.54	9.54
Xh	.15	.15	.15	.15	.15	.15	.15	.15

Table 2.3 Dimension of Abutment

ST-50-11 Pr SG-40-9 ST-40-11

	ANT1	*****	AIUI1	• ••		ANT1	
	15		TH -	 ÷	*	IK	
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	_151.644501		165.19		•		
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	4.743904935		3.93421	184 <u>8</u>		4.728114159	
	in the second second		· · · · · · · · · · · · · · · · · · ·				
	CENTER-ILU				••	CONCERTS-INU.	٠
		1	221	.805		- 700,9124	

E - 28

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K10713 - 5	<i>松悦-15-1</i> 1	PCG-39-7	703-230-0	PCG -50-9
AATT CALL	ABUT1	AEUT1	APUT1	AUI1
16	Ik -		IK	, IN
J	4.	· · · · · · · · · · · · · · · · · · ·	6.5	
0.7	6.7.	· · · · · · · · · · · · · · · · · · ·	1.25	<u>4</u>
£.55	0.55		<i>0.6</i> 5	0.65
0.25	0.25	0.35	0.35	045
0.4				. Ø.4
1.1	2. Jan 2. Jan -		3.85	· · · · · · · · · · · · · · · · · · ·
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2.4			J . <u>7</u>	57 - 91
12	<u> </u>			
1.8.1	5.C		. <u>51</u>	
0,		···· 0,	· · · · · · · · ·	1 #+ 1
	9.54		······································	· · · · · · · · · · · · · · · · · · ·
0.15	0.15	0.15		
			007 2:42:8:8:77	· · · · · · · · · · · · · · · · · · ·
276.95452	Krister Krister			. 1013.60592
- 111-7-1-1 716-65457	464.38812 464.38812	497.8279	728.16435	1013.6697
5.53178	69.659718	75.124185		152.040898
1.750070015		.2.648122516	1.741945071	4.459355428
7.10199735	3.150215703	3.01535468	7.154672591	3.973981251
	~~~ <b>~~~</b> ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			i
CNREIE-VIU.	CONCRETE-VLU.	CROEN-RU.	CONTRETE-VLU.	CONTRETE-TU.
67.1616		112.8532		195.760
	· · · · · · · · · · · · · · · · · · ·		·	· , •

Where W: Weight of body including soil.

Wb: Weight of body including soil with bouyancy.

II: Norizontal Paces at Earthquake time.

X: Morizontal distance from toe to the center of gravity.

Y:

011-15-1

mar

Height of the center of gravity from bottom of footing.

### (3) Stability Calculation

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SPA	N (m	]]	15.0	30	•0	50	.0	70	0.0
T.(	0.S.	RCDG	RCDG	PC0	PCG	PCSO	ST	PCSG	ST
¥.	(+)	236.95	464.39	487.83	728.16	1013.61	1010.96	1101.31	· 1089.0
¥B	(+)	236.95	464.39	487.83	728.16	1013.61	1010.96	1101.31	1089.0
11	(+)	35.54	69.66	73.17	109.22	152.04	151.64	165.20	163.3
X	(m)	1.76	2.26	2.65	3.74	4.49	4.00	4.74	4.7
Y	(n)	2.10	3.15	3.02	3.15	3.98	4.74	3.93	4.7
0	(+)	102.6	102.6	239.1	239.1	472.5	258.8	773.2	373.5
1.	(+)	52.9	52.9	59.1	59.1	71.2	71.2	90.3	90.3
DH	(+)	30.8	30.8	71.7	71.7	141.75	38.82	115.98	56.03
LF	(+)	2.65	2.65	2.96	2.95	3.56	3.56	4.52	4.52
кл		0.297	0.297	0.297	0.297	0.297	0.297	0.29,	0.29
KEA		0.433	0.433	0.433	0.433	0.433	0.433	0.433	0.43
llo	(a)	5.00	7.00	7.00	9.00	9.00	11.00	9.00	11.00
H1	(四)	3.60	5.60	5.00	5.00	7.20	5.20	6.70	3.20
<u>a</u>	(巾)	1.25	1.25	1.65	1.90	2.65	2.20	2.70	2.70
?	(m)	3.00	4.00	4.50	6.50	7.50	6.50	8.00	7.50
Fan	¢В	•55	•55	.55	•55	•55	•55	•55	•55
3	(m)	9.54	9.54	9.54	9.54	9.54	9.54	9.54	9.54
∦_Đe	gre:	300	° 30	30 ⁰	300	300	300	· 30°	30
/olu	_	³ )67.16	101.51	112.86	137.66	195.76		221.8i	200.91
	ing itic	n Fixe	Fix.	Fix.	Fix,	Exp.	Exp.	Exp	5xp.

### Table 2.4 INPUT DATA

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E-30

RUCI-15-5 RCD4-15-7 PCA-30-7 PCA-30-9 PCSA-50-9

				· · · ·
All 12 . Allen	ANUTSEL J.	hui+2 Dates	AND PERMIT	MIR-TAK CE
	18	IK.	111-man marine	Illing and a second second
236.95	·	487.83	128,16	1013.61.22
136.95	464.59	181.83 mil	778.16	Z. 1013.61.24
15.54		Ĩ <u> </u>	Mar 109.22	152.04
1.76	A	Satisfie 2.65	22.14 J.H	4.13
2.1	1838-11- <b>3.15</b> -12-1	Same J. Maria	Varia Billion	
102.6	107.6	239.1	239.1	17.5
52.9			Add \$ 53.1	and
30.8	·	· · · · · · · · · · · · · · · · · · ·	Sec. 3. 71.7	111.15
2.65	····· 2.65		2.98	VIII - 1. 5. 5. 4
0.237	0.297	0.235	0.221	
0.435		<u>12. 12. 0,133</u>	0.133	The Allowing (
Same Same	mane in loss .			Carling 9. 12
3.6	S. Series			·
1.25	1.25		And the second s	1.15 A
	and the first		. <u></u>	1.1.2.5
0.55		0.55	0.5	1211 0. <u>55</u>
9.91	9.51 min	9.54	<u>9,54</u>	9. Har 1
30		10	10	<u>11.224</u>
en-energenes	OUT-EXPLOSIONES	「WI-Ever>留vES	CONT-EXPERIMENTS	- OH-ENDESSES
0.102369419	0.242277275	0.15957895		0.032055314 v
18.19452845	21.74553193	24.25462821	23.03892701	23.5972921
11.95034921	11.55520874	. 15.74403526	5 <b>15.</b> 81901311. <u></u> ·	22.79701598
. 3.48478475 <u>1</u>	3.02191538		3.116991633	4.5651847122
创一日和创作日二	CUL-ENADERDES	MI-EXPERSE	OUT-EPADENES	MI-DADSWES
0.133634744	0.269057455		0.72110H465	0.(\$17818 <u>)</u>
19.12045439	25.17775158	24,89315641	23.4354939	24.351141 <u>37.32</u>
11.65442328	10.82604203		a 13.4224517 <u>6</u>	2.433164
1.355899158		3.611811735	3.011858518	4.455%601
WI-Eigherifs	OUT-EIOTICHIES	CUT-EURIDEMES	WI-ENTISHES.22	QUI-EXPOSICES
7.235835105-01		1.075206041	1.292155692	1.7832217243
32.72649344	46,74194824		1 E 36.19701289	43.55161849
1.72088131	£1,221959501	111132699824654_	N. J. 119482883	1.41.31.314854
-	• · · ·	ŧ.	# #	

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ST-50 - 11 PCS4 - 70-9 ST-70-11

ANUTAS TAL	TABUT-2 3/1: 4	(A101-41
IN	Margare States	- IN
1010.96	1101.51	1059.05
1010.96	1101.31	1089.05
151.64	165.2	163.36
· · · · · · · · · · · · · · · · · · ·	1.71	····· 1.27
4,74	3.93	Stanie 4.13
758.8	113.2	373.5
71.2	90.3	99.J.
38.82	115.98	55.0 <u>3</u>
	4.52	Same A.State 5
0.297	0.237	<u>. 0.297.</u>
0.433	0.133	
June 11. and 1	- man	and the second s
5.2	6.7	1.2 m
2.2	2.7	Manual 2.2
6.5 <u>.</u>	8	1.5
0.55	0.55	· · · · · · · 0.55 · · · ·
3.H.	9.54	3.4
30	<u>30,</u>	30
MI-EIQTICHIES	BUI-EVERVES	BUI-ENDERS
0.113937454	0.232640771	
. 26.91337221		22.65591384
- 21.8276261		25.49(07558
2.818572574	5.676561644	3.213769(72
W-EIQIJESI <u>FS</u>	QUI-ENDPROFS	CUI-EXPIRENES
0.138550385	0.232186903	-0.044515271
27.19530551	32:42160365	23.72459271
21.24(6928)		24.91015694
2.184951724	5.552265123	3.165253217
UT-EIOTICHIES	DUT-EIRIIERIES	OUT-EIQTICKIES
-1.18%59:69	1.11519392	0.589789788
47.01422102	46.97913019	37.69779771
1.219889762.	4.185400529	6.527076191
1	al 8111781.3-	1.37011855-1

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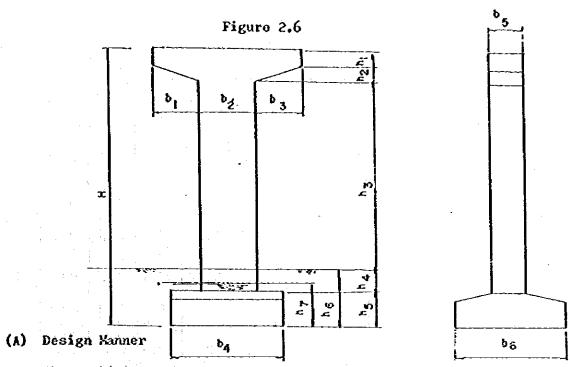
4.

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E - 32

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2.2.2.2 Pior



The stability calculation for pier will be provided the following design criteria:

2.4 t/4³

(1) Unit Weight

concrete

sand 1.8

(2) Earthquake

The coefficient of seismic intensity for horizontal direction

will be assumed as follow:

Kh = 0.15

(3) Line Load KS20 - 44

(4) Bearing Capacity of soil will be assumed as follow:

For Group I	- 30 t/a ²	40 t/a ²
For Group II	- 35 "	$46 t/a^2$
For Group III	- 45 to 50 t/	a ² 60 t/n ²
	RELLING	1114.5

≅£ – 33

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(5) Safety factor for sliding

For Group VII ----- 1.2

E - 34

### (B) CALCULATION OF THE CENTER OF GRAVITY

			THE ATT ANY DIMENSION OF FIER										
					:			•					
SPAN (H)	1	\$		30				50			70		
T.O.S	RCDG	RCDG	PCG	PCG	PCG	PCG	PCSG	PCG	PCSC	PCSG	PCSG	PCSG	
н	10	15	10	15	20	25	25	30	35	25	30	35	
bl	3.00	3,00	2.75	2.75	2,75	2.75	2,25	2.25	2,25	2.00	2.00	2.00	
b2	2.00	2.00	2.50	2.50	2.50	2,50	3,50	3,50	3,50	4.00	4.00	4.00	
b3	3,00	3.00	2.75	2.75	2.75	2.75	2,25	2.25	2.25	2.00	2,00	2,00	
ծ4	4.50	5.50	6.00	7.0	7.75	8,50	9,50	11.00	11,75	11,75	13.00	14.00	
<b>b5</b>	1.40	1.40	1.50	1.50	1.50	1.50	1,80	1.80	1.80	2,50	2,50	2.50	
<b>b</b> 6	5.50	6.00	7.00	8,00	8,75	9.50	9,25	9.50	10,25	10.75	11.25	11.75	
hl	0.80	0.80	0.80	0.80	0.80	0.80	1.00	1,00	1.00	1.00	1,00	1.00	
ħ2	0.70	0.70	0.70	0.70	0.70	0,70	0,70	0.70	0,70	0.70	0.70	0.70	
h3	7.10	2,10	7.00	12.00	11.00	22.00	20,80	25.80	30,80	20.30	25.30	30,30	
<u>h4</u>	.40	.40	. 50	. 50	.50	. 50	. 50	.50	. 50	.50	.50	.50	
ስ5	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.50	2.50	2,50	
hó	2.40	2.40	2.50	2.50	2.50	2,50	3,50	3,50	3.50	4.00	4.00	4.00	
ስ7	•	•	•	-	•	-	-	-	•	-	-	•	
Xh	.15	.15	.15	.15	,15	.15	.15	.15	.15	.1	5.1	.1	

# TABLE 2.5 (A) DIMENSION OF PIER

E – 35

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.

SPAN (m)		50	• ·		70	
T.Ó.S.	S.T	S.T	S.T	s.T	S.T	s.T
H (N)	25	30	35	25	30	35
51	2.25	2.25	2.25	2,25	2,25	2.25
Ն2	3.80	3.50	3,50	4.00	4.00	4.00
<b>b</b> 3	2.25	2.25	2.25	2.25	2.25	2.25
b4	8,75	9.50	10.00	9.75	10.50	11.00
b5	1.70	1.70	1.70	1.90	1.90	1.90
<b>b</b> 6	7.75	8.25	9.00	8,75	9.25	10.00
h1	1.00	1.00	1.00	1,00	1.00	1.00
h2	.70	.70	.70	. 70	.70	.70
h3	21.30	26.30	31,30	20.80	25,80	30.80
h4	. 50	, 50	. 50	. 50	. 50	• 50
እ5	1.50	1.50	1,50	2.00	2.00	2,00
h6	3,00	3.00	3.00	3,50	3.50	3.50
ስ7	•				•	
Kh	.15	.15	.15	.15	.15	,15

TABLE 2.5 (B) DIMENSION OF PIER (cont.)

E - 36

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State of the state

Dif=15=10	91681	<u>FC</u>	P(G-30-15	<u>- 1919 - 10</u> 1 19881	• <u>-</u> ·
1 <b>2-1</b>		18	IR	IA	
	3,	2.75	2,75	2.15	•
<b>3.</b>	2	2.5	2.5	2.5	
2.	3,	2.75	2.75	2.75	
3.	4.5	5.	§ .	- 7.5	<b></b>
f	1.4	1.5	1.5	. 1.5	
- 1.4	4.5	6.	7.	2 S.5	<b></b>
4.	0.8	0,8	9,8	0.9	
0.8	0.7	0.7 -	: 0.7	H 0.7	••
0.7	12.1	7.	12.	17.	
7.1	0.4	0.5	0.5		•
0.1	1	- 	1.	1.	
f.	2.4	2,5	2.5	- 25	••••
2.4	Ø	0.	Û.	<b>Ú.</b>	
0.	0.15	0,15	6.15	0.15	
0.15	(Пококрекот		EUDRIED XIY	<b>國由對於的對</b>	
1699181Y	i	i f	; 7.	1 7.75	
4.5	6,	-		- 8.75	
E C	<b>创办约约约</b>	(MI) KORONA I	Culozosto Kor	. Writishay	
DDDDDY	75,000	378.77	¹ / ₄ 453.57	-1 555.5575	
23.014	75.8	122.22	453.57	565,56375	
28.974	12.9332	(9.383	63.0355	84.8345525	
第2日 - ① 1 からまたのの	4.449375972	2.78551134	3.721427773	4.717356959	. ·
<u>1,778835078</u> - 2 - 2 Sector 164	CONTRE-WAL	- (CXXE1E-WL.	i conten-sa.	T concrete-val	
846-91 4.1	1 83.83	\$.118	112.885	166.534375	•

E ~ 37

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964 30 - 25	PCSG- 30-25	PC\$4-57-30	PCSG-50-35	PCS4-70-2
6176 ¥	0100 1	PIER1		PIER-+1
P1ER1	PIERI	IN .	<u><u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u></u>	i IN
l¥ A SE	IN	2.75	IN STREET	1 2.
2.75	2.25	3.5	2.25	4.
2.5	3.5	2.25	5	2.
2.75	2.25	9.5	2.25	4
5.5		1.8		2.5
1.5	1.8	8	1.8	10.75
7.5	. 8.	0,	10.	at a su
0.8	<b>1.</b>		to the second second	. 0.7
0.7	0.7	0.7	0.7	20.3
22.	20.8	25.8.		0.5
0.5	0.5	0.5	0.5	- 2.5
î 2 -	2.	2	2.	4
2.5	3.5	3.5	3.5	9
Ú.	<b>0.</b>	<i>Q</i>	-0	1 0.15
0.15	0.15	0.15	0.15	BUT I BERT
的行为财务	OUTOXOXIONOY		DUTERED RET 1	1703.23315_
\$.5.	9.5	i II.	11.75	1708.23375
9.5	9.75	9.5	10.25	256.2440625
MI-WWWWY	MIRAN SORT	ODDDDDD :	SUDVADION'	6.03394033
(83.97	1661.7615	1271.214	1475,59275	COLLETE-VA.
683.97	1061.7615	1271.214	1415.52275	52.203125
102.5555	159.264225	199.6921	221.3734125	
5.673571937	6.028755268	7.00313379	7.931735455	
DOTEIE-WIL.	CONCRETE-SOL.	CONCRETE-192.	CONCRETE-YA	
201.7375	. 354.67875	424.28	491,554875	

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p(54-70-30 PC54-70-35 ST-50-25 ST-50-30 ST-60-35

-	PIER1	PIER1 18	PIER1 18	P1ER1 IN	PIE81 IN
-	18		2.25	2.25	2.15
	1.	4	3.5	. J.5	3.5
	1	····· 2. ····	2.75	2.75	2.25 .
-	13.	13.75.	····· · <b>8.5</b>	95. 1991	···· 10,
	2.5	2.5	•	·	1.7
م	11.25	11.75		3,25	9,
	1	· · · · · · · · · · · · · · · · · · ·	<b>I</b> =	<u>I</u>	
-	0.7		9.7	0.7	0.7
	25.3	. 39.3	21.3	26.3	<i>31.3</i>
-	0.5	0.5011	<u>.</u>	0.5	0.5.
•	2.5	····· 2.5			· 15
	4	4. and 4		<u>.</u>	1 
:	0.	tin in the second se		<b>0</b>	· · · · · · · · · · · · · · · · · · ·
	0.15	0.15*	0.15	0,15	0.15
-	ē街韵题·放Y。	OD KOND SPY		OUDRORDERY	RUMBER
	2012.775	H	\$.75	947.9585	1101.218
-	2012.775	11.75	1.75	949.6565	1101.216
	101.91675	CITIZE STATE	<b>、创作的目的</b> 了。二日	142.478775	165.1624
-	7.643113353	2301.75	as.sm	8,275167827	9.661109419 —
	1000 KH-4R.	2341.75	\$15,55975	CATER-W.	
~	(33,8125	345.2625	170.893%75	318.12125	559,4275
÷.		8.045077755	7,03447481	•	
		CONVERTION	- (1997)[-12		
_			769.569175		·

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ST -70- 25	ST-70-30	. ST -70 -35
	P1ER1	PIER-+1
PIER1	IN	IN
R = 1		2.25
2.75	4	
	2.25	2.25
2.15	10.5	. Same Ilinaria
10	1.9_ha	
1.9	9.25	i alan ki 10.55
3.25	· · · · · · · · · · · · · · · · · · ·	and the second second
······································	0.7	
. 0.7	25.8.2.	30.8.2.
29.8	0.5	0.5
0.5		·
2	· · · · · · · · · · · · · · · · · · ·	
3.5	0	· · · · · · · · · · · · · · · · · · ·
<u> </u>	<u>, 11 0.15</u>	0.15
6.15	Quinkonster	CUTIKINE KIY
CUTHEREDENY	1296,3495	1491.552
9.75	12%.3495	1491.552
8.75	194.452425	773.7328
创口监督的第二——	7.599453404	3.054851711
	CCXXEIE-491	
1109,89575	44.6125.2.	5!1.2675
166,484567		-
6.687772426	;	······
CONTRACTOR		•
379.126875		

E – 40

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(C) Stability Calculation

Tabje 2-6(A) INPUT DATA

SPAN	+++ 	Ś		က် 	3-0			5.0			- 0 2	-
T.O.S.	RCDC	RCDC	. PCD	P C C	PCC	PC G	PCSC	PCSC	PCSC	PCSC	PCSC	PCSG
2 2	10	15	10	15	20	25	25	0 8	35	25	30	S S
Tq	4.50	5.50	6.0 0	7.0 0	7.75	8.5 0	9.5 0	11.00	11.75	17.75	130.0	1 4.0 0
P2	5.5 0	6.0 0	7.0 0	8.0 0	8.75	9.5 0	925	9.5.0	10.25	10.75	11.25	11.75
TV.	1 0.0 0	1 5.0 0	1 0.0 0	15.00	2 0.0 0	2 5.0 0	2 5.0 0	3 0.0 0	35.00	25.00	3 0.00	3 5.0 0
h2	1.0 0	1.0 0	1.0 0	1.30	1.30	1.30	1.3 0	2.0 0	2:0 0	2.00	3.00	3.00
A	205.20	205.20	478,20	47820	478.20	478.20	945,00	945.00	945.00	1546.40	1546.4.0	1546.4 0
ы	105.80	105.80	11820	118.20	11820	11820	142,40	142.40	142.40	1 \$ 0.6 0	1 80.60	1 8 0.6 0
К. Т	5.29	5.29	5.9 I	5.91	5.91	5.91	7.1.2	2.1.2	7.12	9.0.3	9.0.3	9.03
н	46.17	4 6.1 7	107.60	107.60	107.60	107.60	141.75	141.75	141.75	231.96	231.96	231.96
H2	3 0.7 8	30.78	7 1.7 3	7 1.7 3	71.73	7 1.7 3	141.75	141.75	141.75	231.96	231.96	23196
M	208.07	285.89	32922	453.57	5 6 5 5 6	683.97	1061.7 6	1271.21	1475,50	1708.2.9	2021.7 8	2301.75

	PCSG	2301.75	345.26	8.07	0.55	794.63	Exp.	Fix.			· · · ·
	PCSO	2012.78	301.92	7.04	0.55	613.81	ч х Э	•× • 2	-		
	PCSC	1708.29	256.24	6.0 6	0.5 5	58820	Exp.	Fix.	-		•
	PCSG	1475.5.0	22133	7.93	0.5 S	491.96	Exp.	Fix.			
	PCSC	1271.21	190.62	7.0 0	0.55	42426	ыхр. БХр	Fix.			-
	PCSG	1061.76	159.60	6.09	0.5 5	354.68	Схр.	Fix.			· • · · · · · · · · · · · · · · · · · ·
· .	PC C	683.97	102.60	5.6.7	0.5 5	201.74	Exp.	Fix.			к - с. -
	ЪСС	5.6.5.5.6	84.83	4.7.2	0.5.5	166.53	Exp.	Fix.			
	PCC	453.57	6 8.0.4	3.7.2	0.5 5	132.74	Exp.	Fix.	•		
	PCC	32922	4938	2.79	0.5.5	9 6.1 1	Exp.	Fix.			
	RCDC	285.89	4 2.8 8	4.4 5	0.5.5	8.8.8 S	КХ Р	Fix.	. :		
	RCDC	708.07	3121	3,30	0.5.5	64.7	Exp.	Fix.			
	T. O. S.	MB.	Ħ	*	Tan ØB	Concrete Volumo	Bearing	Condition	-	-	- - -

B - 42

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SPAN		50	· • · · · · · · · · · · · · · · · · · ·		70	
T.O.S.	S.T.	S.T.	S.T.	S.T.	ѕ.т.	S.T.
ч Н	25	30	35	25	30	35
b1	8.75	9,59	10.00	9.75	10.00	11.00
b2	7.75	8.25	9.00	8.75	9.25	10.00
hl	25.00	30.00	35.00	25,00	30.00	35.00
h2	3.50	3.50	3.50	4.50	4.50	4.50
Ð	517.60	517.60	517.60	747.00	747.00	747.90
L	142.40	142.40	142.40	180.60	189.69	180.60
LF	7.12	7.12	7.12	9.03	9.03	9.03
Hl	77.64	77.64	77.64	112,05	112.05	112.05
H2	77.64	77.64	77.64	112.05	112.05	112.05
¥.	805.96	949,86	1101.22	1109.90	1296.35	1491.55
ïВ	805.96	949.86	1101.22	1109.90	1296:35	1491.55
Н	120.89	142.48	165.18	166.48	194.45	223.73
Y	7.03	8.28	9.46	6.69	7.89	9.05
. <b>T</b> an ØB	.55	.55	55	.55	.55	.55
Conérat. Voluca (	e 1 269.57	318412	368143	379.13	444.06	511,27
Bearing Conditi		Fix.	Fix.	Fix.	Fix.	Fix,

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RCD4-	15-10	RCD	6-15-15	PCG -	0-10		A.O. 117		Dr. on to
₽}F <b>?2</b> →		1 P1222 15		PIER2		, Co	30-15	PIEZ2	PC4-20-20
4.5 .		5,5	· · · · · · · · · · · · · · · · · · ·	18				II -	;
5.5		- <b>6</b> ,		6	-			7.15	
10.		15.	i i					8.75	
1.		- 1.			-	15.		20.	
265.2		205.2		- 1.3		1.5			
15.3		-, 105.8	······································	473.2		473.2	s / s	478.2	
5.23		5.23	• •	118.2		118.2		. 118.2 1 5.31	-
45.17	<u>h-i</u>	÷ .n		5.91		\$.雅		• 107.6 :	
9.78		30.78	•	197.6		101.6		71.33	<u></u>
263.97	-	- 765,69		71.73	<b></b>	1.75.	• 	- <u>545</u>	
23.97	<b></b>	28.83	<del> </del>	. 375.22 - 373.22		61.11	- - 		-
31.21 3.3.	: •	- 97.93 / 15		- 207.00 - 49.55 -	•	(1.17	ļ	- 24,83	·
272. 075		f.45 y		2.73		8.M 3.72 -		172	
kap-Intosi.	6227-74.951.	ang-masi.	erez-mest.	e 0.55		5.11 - 1.55	L	. 0.55	2
N YAYDANYAE	With the state	Coppy Stre	EVD/PVD/bRDE	(CDP-11105).	SECOP-THENSI.		(128-74,981.	193.P-14651.	(83.9-7+10551.
1.245	Q1:Q2:F\$	91+P2+FS	strants	CUTO YO YO WHAT IS	的同时的意志	and the second	QIPPTPANTE.	每日日转局部任	创作和特别的新产。
519.07	413.27	558.59	01.0	. \$1>\$2+F\$	21.12.15		91.97.FS	朝韓時	\$1:\$2:FS
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Table 2.9 shows the direct cost for substructure of bridge construction, referring to Lacag-Allacapan Road Project (Phase II). The detailed design of this project was completed on February 1981.

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iteh No.	DESCRIPTION	UNIT	FINANCIAL. COST P	REHARK
106	Excavation	Cu.H	61,0	~
405 (2)	Class A-1 Concrete (Abutment)	Cu.My	733.0	
405, (3)	Class A-1 Concrete (Pier)	Cu.K	845.0	
406	Reinforcing Steel	Kg.	6.43	

Table 2-9 SUMMARY OF UNIT PRICE : DIRECT COST

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 $\mathbf{E} = 50$ 

### 2.3.2 Estimate of Quantities 2.3.2.1 Abutment

	15.0		30	.0	50	.0	70.0	
	RCDG	RCDG	jece	PCG	PCSG	ST	RCSG	ST
DESCRIPTION	5.00	7.00	7.00	9.00	9.00	11.00	9.00	11.00
Concrete (Cu.K)	67.2	101.5	112,9	137.6	195.8	198.8	221.8	200.9
Reinforcing Steel (Kg.)	- 5400	8100	9000	. 11000	15700	15900	17700	16100
Excavation (Cu.H)	63	103	118	162	200	176	229	216

Table 2-7 ESTIMATE OF QUANTITIES

The weight of reinforcing steel was assumed as 80 kg. per cubic meter of concrete volume. Excavation volume was assumed to be footing area plus 0.45 meters on each in width and length of base multiplied by depth of footing plus one meter.

			Table	2.8 Estimate	ite of Quai	of Quantities				
	SPAN (M)	15.0	0		30				Š	
17	3.05	RCDG	RCDG	SC	ъ СС	PCG.	2002 1	PCSG PCSG	SCS	PCSG
Description		10	15	10	15	20	25	25	Š	35
Concrete (C	(cu-n)	64.7	88.9	<b>%.</b> 1	132.7	166.5	201.7	354-7	424.3	0-:26+1
Reinforcing Steel (Kg.)	(Xg.)	5800	8000	8600	11900	15000	18200	31900	38200	<del>11</del> 300
Excavation	(CuM)	83	106	136	941	209	2444	369	433	761
17,	(W) NVAS		202	a 3.		50			02	
	K (a)	DSC4	FCSG	SSG	s.	c. S	ST	ST	ST	ST
DESCATPTION		ŝ	20 2	35	25	30	35	25	30 2	35
Concrete	(Cu.M)	588.2	693.8	9-462	269-6	318-1	368.4	379-1	444.1	S11-3.
Reinforcing Steel	(Xg-)	52900	62400	21500	24300	28700	33200	24100	00007	00097
Excavation	(cu-x)	589	676	256.	250	285	324	360	405	1424

of base multiplied by the depth of footing plus one meter.

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### 2.3.3 Construction Cost

### 2.3.3 Abutment

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# Table 2.9 (A) Construction Cost for Abuttent

• •	•			the second s		
DESCRIPTION	UNIT	UNIT	RCDO-	15-5	RCDG	15-7
		PRICE P	QUANTITIES	AMOUNT x 1000 p	QUANTITIES	AMOUNT × LOOO P
Excavation	Cu.H	61.0	63	3.84	103	· 6.28
Concrete for Abutgent	Cu.M	_733.0	67	49.11	· 102	74.77
Reinforcing Steal	Kg.	6.43	5400	34.72	8100	52.08
TOTAL		-		87.67		. 133.13

## Table 2.9 (B) Construction Cost for Abutcent

			·	<u> </u>		`
•		' Unit	PCG-3	0-7	RCDG-	30-9
DESCRIPTION	UNIT	PRICE P	QUANTITIES	AYOUNT X.1000 P	QUANTITIES	AHOUNT X 1000 P
Sxcavation	Cu.X	61.0	,118	7.20	162	9.88
Concreté for Abutment	Cu.N	733.0	113	82.83	138	101.15
Reinforcing Steel	_Kgai	6.43	9000	57.97	11000	70.73
TOTAL		· ·		147.90	-	181.76

### Table 2.9 (C) Construction Cost for Abutment

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		UNIT	PC60 - 5	-9	<b>ST-5</b> 0-	-n
DESCRIPTION	TIND	PRICE P	QUANTITIES	AKOUNT X 1000 P	QUANTITIES	AMOUNT X 1000 P
Excavation	Cu.K	61.0	200	12,20	176	10.74
Concrete for Abutment	Cu.H	733.0	196	143.67	199	145.87
Reinforcing Steel	Kg.	6,43	15700	100.95	15900	102.24
TOTAL .	•			· 256.82		258.85

DISCRIPTION	thirm	UNIT	PCSO	- 70-9	ST-7	0-11
DISCRIPTION	UNET	PRICE (P	QUANTITIES	AHOUNT X 1000 P	QUANTITIES	AMOUNT X 1000 P
Excavation	Cu.H	61.0	229	13.97	216	13.18
Concrețe for Abut-	Cu.H	733.0	555	162.73	201	147.33
Reinforcing Steel	Kg.	6.43	17700	113.81	16100	103,52
тотаl				290.51		264.03

.

### Table 2.9 (D) Construction Cost for Abutmont

.

E – 54

2.3.2 Pier

Table 2.10 (A)	Construction Cost	for Pier
----------------	-------------------	----------

STARNA PRION	HUITON	UNIT	RCDG-1	5-10	BCDG-15-15	
DISCRIPTION	UNIT	PRICE (P	QUARFITIES	ALOULE X - 1000 p	QUANTITIES	A209177 X 1000 P
Acavation	Cu.X.	61.0	83	5.06	105	6.47
Concrete for Pier	Cu.ll.	845.0	65	54.93	89	75 <b>.</b> 21
Reinforcing Steel	Kg.	6.43	5800	37.29	3000	51.44
				<b>~.</b> 28		133.12

Table 2,10	(3)	Construction	Cost	for	Pier
------------	-----	--------------	------	-----	------

4. 		UNIT	P0G-30-10		P00-30-15	
DISCRIPTION	UNIT	PRICE (?	QUARTITIES	AMOURIT X 1000 1	QUANTITIES	ANOURT X 1000 2
Excavation	Cu.H	<u></u> 61.0	136	8.30	1%	11.74
Concrete for Pice	Cu.E	845.0	<u>%</u>	81.12	133	112.39
Reinforcing Steel	Kg.	5.43	.8600	55.30	11972	75.52
TOTAL		*		144.72		199.65

Table 2.19 (C) Construction Cost for Pier

		UNIT	PCG-	-30-20	rce-	31-25
DISCRIPTION	זיזאט	PRICE (P	QUANTITIES	AMOUNT X 1000 ?	quantities	780087 7 3027 2
Axcavation	Cu.H	61.9	209	12.75	244	14.88
Concrete for Pier	Cu.H	845.0	167	141.12	202	170.69
Seinforcing Steel	Kg.	6.43	15770	95.45	18200	117.03
TOTAL				257.32	·	302.60

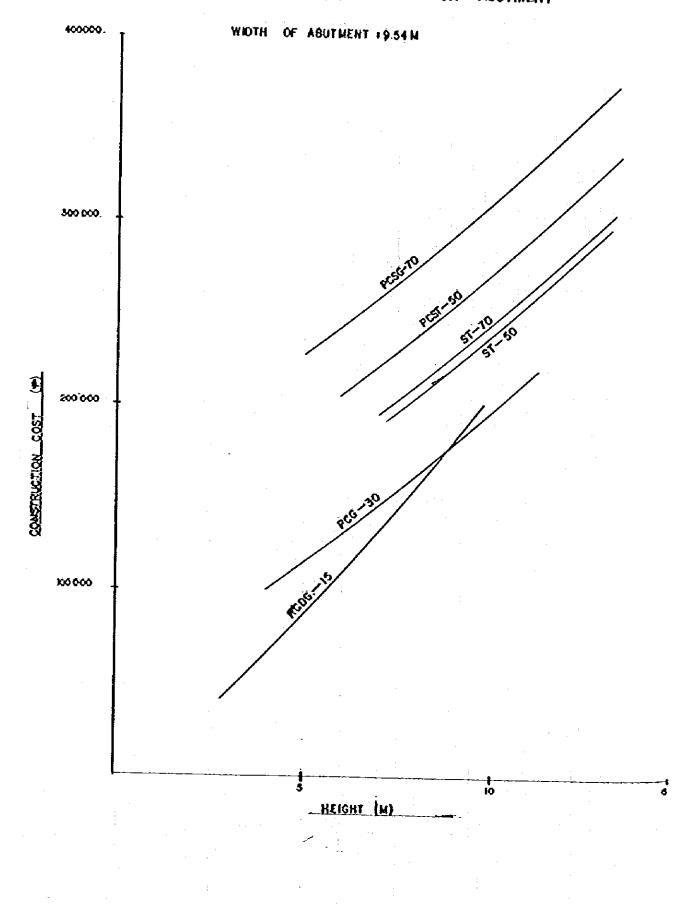
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	Т	abte 2.10	(D) Consti for Pier	ruction Cost		
DISCRIPTION	UNIT	UNIT PRICE (P		-50-25	PCSG	-52-32
DISCRIPTION	Ψ.Υ.Υ.	Fatos (	QUANPITIES	AHOUNT X 1000 P	QUA!ITITIES	ASSOURT: X 1070 P
Excavation	Cu.3	61.0	360	22.50	433	26.41
Concrete for Pier	Cu,X	845.0	355	299.98	424	358.28
Reinforcing Steel	<u>K.</u>	6.43	31922	205.12	38270	2'15.63
TOTAL				527.60		639.32
	Table	2.10 (3)	Constructi	on Cost for	Pier	
<b></b>		UNIT		-52-35	RCSG-	71-25
DISCRIPTION	TINU	PRICE (?	) QUANTITIES	AHOUIT X 1000 P	QUANTITIES	AMOUNT X 1.700 2.
Sxcavation	Cu.M	61.0	494	30.13	589	35.93
Concrete for Pier	Cu.M	845.0	492	415.74	598	196.%
Seinforcing Steel	Kg.	6.43	14300	284.85	52900	340.15
TOTAL.				730.72		872.94
	Table	8 2 <b>.</b> 19 (8	') Construct	ion Cost.fo	r Pier	
		UNIT		6-70-30	PCSG-7(	7-35
DISCRIPTION	UNIT	PRICE (?	) QUANTITIES	AMOULIT X 1000 P	QUANTITIES	AMOUNT X 1030 P
Excavation	Cu.X	61.0	676	41.24	754	41.00
Concrete for Pier	Cu.K	845.0	694	585.43	795	671.78
Reinforcing Steel	Х <u>с</u> .	6.4	62400	401.23	71500	459.75
TOTAL				1028,90		1177.52

.

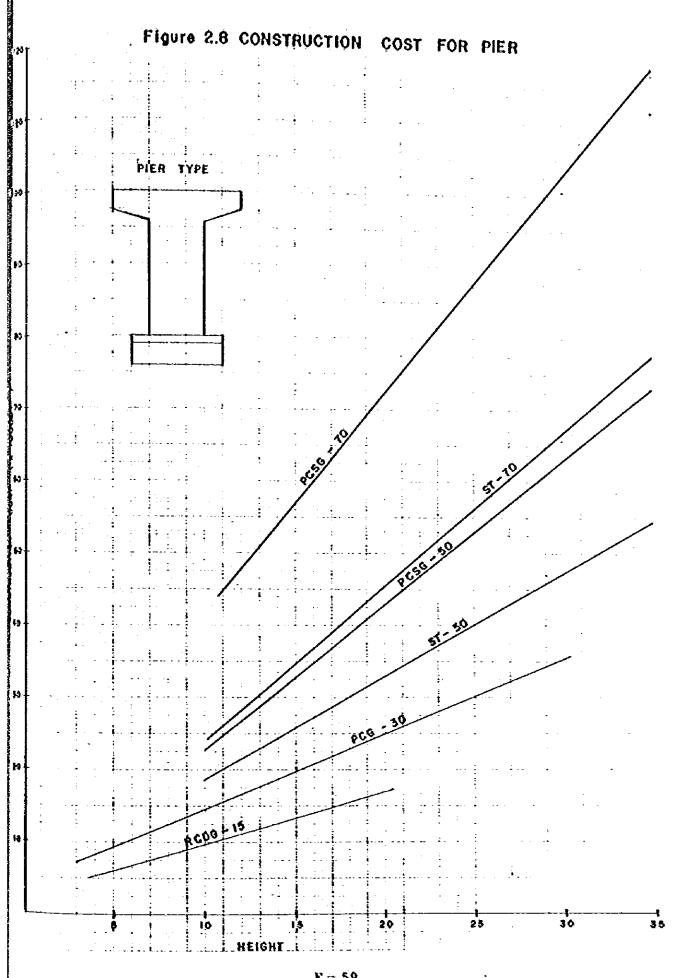
an a	~ <del>~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~</del>		the fat grint of the state of	~~~~		Martin
	Tabl	e 2,10 (G	) Constructi	ion ^J ost for	Pier	
DISCRIPTION	UNIT	UNIT PRICE (P	51	r-5^-25	ST-	-5?-30
			QUANTITISS	Al:0UIT X 1005 2	QUARTITISS	AZOUNT X 1000 2
Excavation	Cu.H	61.0	250	15.25	285	17.3?
Concrete for Pier	Cu.K	845.0	<b>27</b> 0	228.15	318	268.71
Reinforcing Steel	Kg.	6.43	24300	155.25	287:00	184.54
TOTAL				399.65		470.64
	Təbl	<b></b>	) Constructi		Pier	
DISCRIPTION	UNIT	UNIT PRICE (2	37-	-59-35 A!/0U:7T	ST-7:	
			QUARTITIES	X 1000 P	QUANTITIES	ANOUTT: • X 1000 P
Excevation	Cu.X	61.0	324	19.76	360	21.95
Concrete for Pier	Cu.K	845.0	368:	310.95	379	320.26
Reinforcing Steel	XR.	6.43	33200	213.48	3°100	219.26
TOTAL				544.20		561.68
	Tabl	e 2,10 (I	) Construct:	ion Cost for	Pier	
Diagotopted		UNIT		-70-30	ST-70-35	
DISCRIPTION	UNIT	FRICE (P	QUARTITIES	ANOUNT X 1000 P	QUANTITIES	170377 X 1000 P
Exeguation	Co.H	61.0	405	24.71	654	27.69
Concrete for Pier	Cu.X	845.0	141414	375.18	511	431.80
Rainforcing Steel	Kg.	6.43	4,0009	257.20	46000	235.78
TOTAL.				657.09		755.2

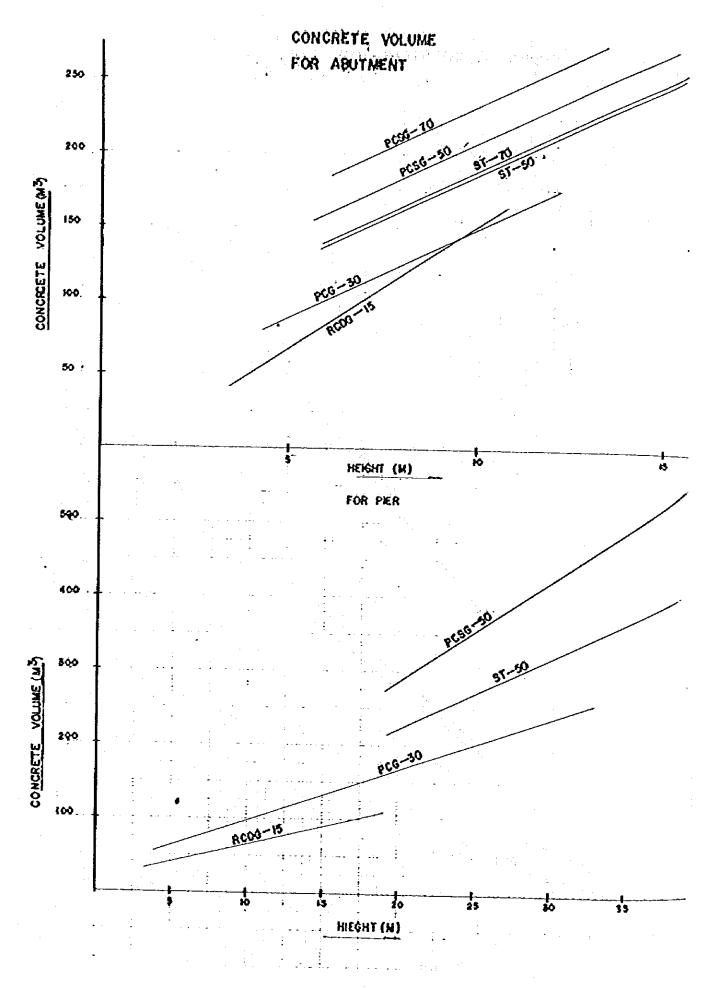
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# Figure 27 CONSTRUCTION COST FOR ABUTMENT

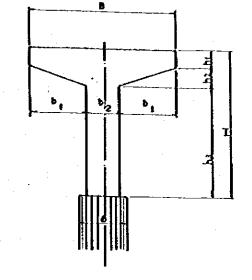
E = 58





CONSTRUCTION COST FOR THE PIER WITH SHISHO & SHISHO PILE

- 1. PIER WITH SHINSO
- 2. DIMENSION OF PIER



·	·	Toble	D	MENSION	OF PIE	R		
	H = 5.0	H =10.0	H= 15.0	H=20.0	H= 10.0	H = 15.0	K= 20.0	H + 25.0
8 (M)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
8 ₁ (M.)	3.0	3.0	3.0	3.0	2.75	2.75	2.75	3.75
ð ₂ (₩.)	2.0	2.0	2.0	2.0	2.5	2.5	2,5	2.5
H (M.)	_5.0_	10.0	15.0	20.0	10.0	15.0	20.0	25.0
Ъ ₁ (М.)	1.0	1.0	1.0	1.0	1.2	1.25	1.25	
H ₂ (M.)	1,29	1,25	1,25	1,25	1.2	_1,25		
», (N.)	2.79	7.79	12.75	12.75	7.5	12,50	-17,59	- 22.50
C.V (H. )	39.50	59.50	79.50	99.50	88.28	119.53	150,78	182,03

 $\mathbf{E} = \mathbf{61}$ 

### 2. SHINSO PILE

The following table shows the construction cost of shinso pile for a diameter of 2 meters and a length of 37 meters.

DESCRIPTION	UNIT	CONSTRUCTION COST
CONCRETE	Kip -	114541.86
REINFORCING STEEL	Kg	48557.43
STRUCTURAL STEEL	Kg	361000.00
EXCAVATION ( COMMON )	CuH	2492.94
EXCAVATION ( ROCK )	Cull	7200.86
TOTAL	2	533793.09

CONSTRUCTION COST PER ONE CUBIC NETERS

5.33 793.09 37 x 11. x 2.02 = 4592 P/K3

CONSTRUCTION. COST PER FACE DIANETER

FOR 3.0 DIAMETERS =  $4592 \times \frac{11. \times 3.0^2}{4} = 32500 P/M$ FOR 3.6 DIAMETERS =  $4592 \frac{112 \times 3.6^2}{4} = 46700 P/M$ 

1.2 ESTIMATE OF QUANTITIES

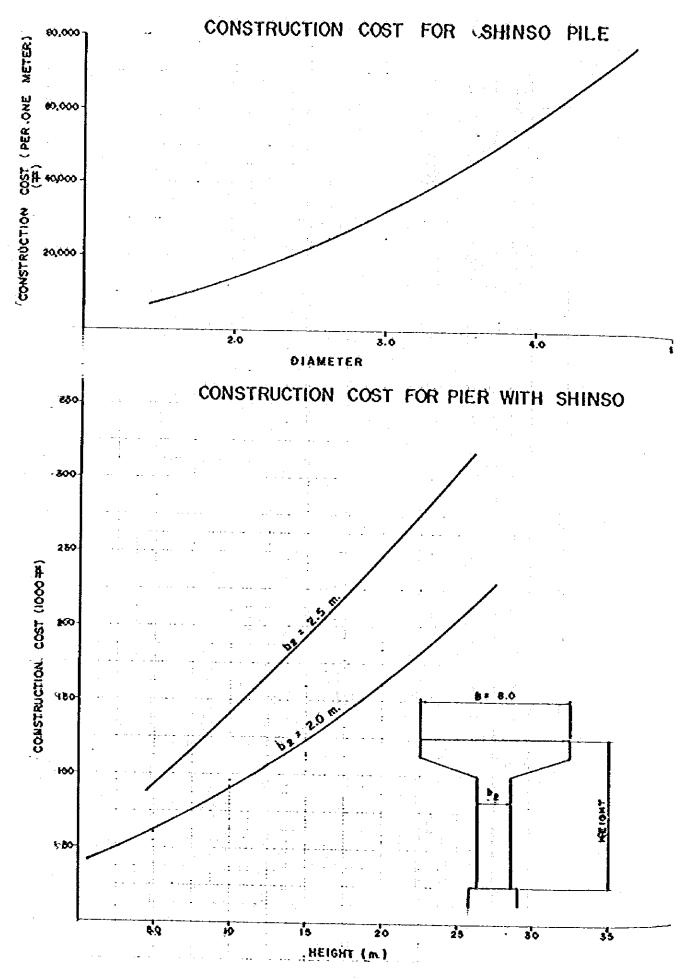
DESCRIPTION	UNIT	H = 5.0	н - Ю.О	H = 15.0	н • 20.0	H=10.0	о. н	H = 20.0	H = 25.0
CONCRETE	Cu. M.	39.50	05*65	29-50	05-66	88.28	119-53	150.78	182.03
REINFORCING STEEL . BAR	Å.	4150	6580	0776	11960	10150	24340	18850	23660

CONSTRUCTION COST

5

( - OOOT LINE )

153.8 152.1 305-9 H # 25.0 127.4 H # 20.0 121.2 248.6 101.0 92.2 193.2 H = 15,0 24.6 65.3 139.9 0'0' = H 34.2 160.9 8 % 8 H = 20.0 67.1 125.9 58.8 H = 15,0 92.4 <u>v.</u> S н = 10.0 42.1 33.4 26.7 60.1 н = 5.0 6-43 7/48 845 2/3 с х і т с о \$ т DESCRIPTION REINFORCING STEEL BAR CONCRETE TOTAL



# CONSTRUCTION COST

## FOR

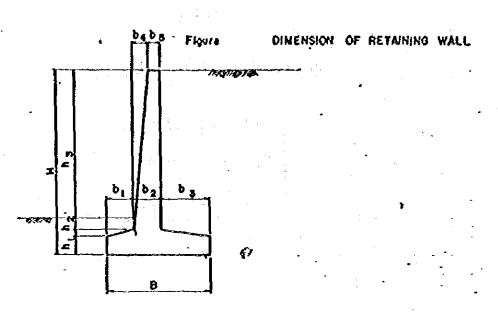
# RETAINING WALL

[Inverted-TType] Gravity Type Stone Masonry]

### Inverted Type

### Stability Calculation

The dimension of each height of the Retaining Walls are assumed as follows:



TODIO ASSUMED DIMENSION OF THE RETAINING WALL

ΤΥΡΕ	I _M - 3.0	I _M - 4.0	I _M - 5.0	I _M ~ 6.0	I _N - 7.0
н	3.000	4.000	5.000	6.000	7.000
h	0.400	0.450	0.500	0.500	0.550
he	0.150	0.150	0,150	0,200	0.200
h3	2.450	3.400	4.350	5,300	6.250
B	2.000	2.700	3,500	4,250	5,000
bi	0.400	0.550	0.700	0.850	1.000
^b ż	0.550	0.600	0.650	0.700	0,750
b3	1.050	1.550	2.150	2,700	3,250
b ₄	Q.245	0.340	0,435	0.530	0,625
bs	0.350	0.350	0,350	0.350	0.350

## Calculation of the Center of Gravity

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The following table shows the computerized calculation of the height of retaining walls.

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ISTATURA I	NIN ZEC	C. C	A THE AND A DECEMBER OF	
		ENGLIGE COM		
ALLEN MARK	a			
CARE CALLS		<u></u>	A CONTRACTOR OF A CONTRACT	AMELYZANSSE
0.15			0. <u>7.2.4</u>	CONTRACTOR OF THE
2.45	<u> 1178 - 114 - 1</u>	4.15		MANE STREET
	<u>382. 2.1</u>	Allen Allen	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1996 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	MARY CONCLESS
The to KOLES .	0.55	6.7 <u>~</u>	1. <u>1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1</u>	STANKS ( MAR
0143 <b>10.4521</b> ()		7 <u>22258-068522</u>	<u>Si sana</u>	E I MIL
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0.35	0.45	126372-1203 <u>15-22</u>	AND PROVIDE	
		The second second		<u>. Martina (</u>
<u> Allender</u>		<u> 26272-11-0,422</u>		<u>222233928</u>
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CELIMOKS76		· 臺2.123771574毫上	ALANNINS .	
SEASS (2019)	Link tons			
TRANS AN	GAENI,		後期最新的經過。	

### Stability Calculation

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	oble	INPUT	DATA		
ΤΥΡΕ	H - 3.00	H- 4.00	H - 5.00	H - 6.00	H - 7.00
W (t)	-9.85	17.04	27.13	38.86	52,77
× ₀ (M)	1.18	1.63	2.12	2.60	3.08
Y ₀ (M)	1.20	1.69	2.22	2.73	3.24
н (м)	3.00	4.00	5.00		2.00
дн (м)	0	10	.0	0	0
8 (N).	2.00	2.70	3,50	4.25	5.00
K ₄	0.297	0,297	0.297	0,297	0.297
KEA	0.403	0.403	0.403	0,403	0.403
5 <b>8</b>	30	30	. 30	30	30
Tan Ø ₃	0.55	0.55	0.55	0.55	0.55
K _h	0.15	0.15	0.15	0.15	0.15
Concrete Volumel m	2.09	3.08	4.24	5.40	6.76

AL ALENAN

The allowable value will be assumed as follows:

Bearing capacity of Soil

For Group I - - - - - - - 20  $t/m^2$ Por Group VII - - - - - - - 30  $t/m^2$ 

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Safety factor Against Sliding

### OUT PUT DATA

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ELAININIO	RETAININIG		RETAINIBIG	RETAININIS.
-麗氏(2)	-始1(2)	-脱化(2)	-照1(2)	-##L(2)
9,85	17.04	27.13	18.86	
1.18	1,63	2.12		<u>108</u>
1.2	1.63	2.22		J. <u>24</u>
J.	····· ···· ··· ··· ··· ··· ··· ··· ···		····	
- Ø				
	2.1	ŢĘ	1 4.13	<b>.</b>
.0.297		0.297	0 <u>.297</u>	0.297
0.403	<u> </u>		0,403	
30		<u>lji</u>		
.0.55	Ū.\$5	0.55 <u></u>	0 <b>.</b> 55. <u></u>	
0.15	0.15	0.15	0.15 ·	
<u>6969-1</u>	SKIMP-1	MIF-1		
	<b>初步影响。</b>	. WARKING		物的新闻。
11.11%75	19.7972	<b>10.65</b> 5815	43.9587	<u> </u>
2.199141609	<b>3.</b> 9395853 <u>97.</u>	6.168728892	_8.75656456	11.97316431
14.16235				
2.199141603	5.212780108	: <u>10.18121114</u>	17.59315287	. 27.53724338
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66119717\$	Explores	fill/02/fs	i ben <u>ezira</u>	£1 <u>9</u> [192159 <u></u>
-9.075859536	-0.155026831	-9.1%\$\$\$917	-0.31833372	0.134765153
4.234537421	5.60255154	5.66666669	5.691594547	<i>].14828</i> 442
5.875137578	9.7916N616	11.71204758		.16.72478557
2.781(61815	.2.714727976	2.769155716	. 2.747245452	. 2.74140707
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	"Pharate		.YikiKoki	YERDEN
10.74179984		<b>??(01</b> 72128	<u>   42.42713937        </u>	57.6253545 <u>9</u>
4.505742323	8.472875241.	13.31461755		25.03533342
. 13,46659968	. 37.0553374	£5.18587674	_118.5281973	16€.8033734
5.101242321	12.20882698	24.11281925	. 47.53916558 <u></u>	.67.9272243
·····	s i su	، متساعد ،		
EQUERS	E1011021FS	E101102155	. Penenes	Fre1102/ES
2.268188311-91	.0.284411571	. 0.340105574		
5.975563643		<u>11.19174598</u>		17.56880786
1.716736196	2.538397116			
1.22936525	1.77937551		1.210075969	1.217315531
	<b>.</b> .	<b>x</b> .		

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### CONSTRUCTION COST

## ESTIMATE OF QUANTITIES ( per one meter )

DESCRIPTIÓN	UNIT	R _w - 3.0	R _w - 4.0	Ŕ _w ~ 5.0	R _w - 6.0	R _W - 7.0
CONCRETE	Cu.N	2.09	3.08	6:24	5.40	6.76
REINFORCING STEEL	Xg	1.70	2.50	3.40	4.30	5.40
EXCAVATION	Cu,H	4,50	5.76	7.26	8.76	10.33

The reinforcing steel bar is assumed at 80 kg. per unit in a concrete volume.

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### CONSTRUCTION COST

DESCRIPTION	UNIT COST	R _W - 3.0	R _w - 4.0	R _w - 5.0	R <mark>w</mark> - 6.0	R _{.4} - 7.0
CONCRETE	733P/H ³	1532	2258	3108	3958	4955
REINFORCING STEEL	6.43P/Kg	1093	1608	2186	2765	3472
EXCAVATION	61.0P/H ³	275	351	443	534	620
TOTAL		2900	4217	5737	7257	9057

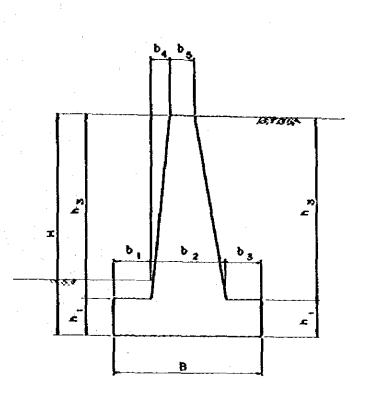
Gravity Type

# Stability Calculation

The dimension of the gravity type each height are assumed as follows

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Toble	ASSUN	ED DIMENSION	OF THE GRA	ATY TYPE	
ΤΥΡΕ	6 _H = 1.0	G _H = 2.0	G _H = 3.0	Ġ _H = 4.0	G _H = 5.0
Н	1,00	2.00	3.00	4.00	5.00
h	0.30	0.35	0.40	0,45	0.50
h ₂	0	0	0	0	0
h3	0.70	- 1,65	2,60	3.55	4.50
8	0.55	0.95	1.65	2.30	3.00
<b>ხ</b> ე	0.05	0.05	0.25	0,40	0.50
b ₂	0,50	0.850	1.15	1.45	1,700
bz	.0	0,05	0,25	0.45	0.60
b4	0.07	0.165	0.26	0,355	0.45
bs	0,35	0.35	0.35	0.35	0.35

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## Calculation of the Center of Gravity

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The following table shows the computerized calculation of the height of gravity wall.

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	至時14月25年	THE REAL PROPERTY AND A PROPERTY AND	THAT NO SERVE	SPATIDASZES	THE REAL PROPERTY OF
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	CHALLAND		à dates	STORING STALLY	12 14 15 25
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	a a forman	TOTAL ALEXA	素 选择作为主义	1014年(104-1142) 1014年(104年)) 1014年(104年)) 1014年(104年))	
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	3.2.2.2.1.555555-01.	達6.1889月15五。	ALLER KARD	121218101113	SEE INNE
I	F#311270412.DL	<b>TEA S18148336-01</b>	5.0.8717519 <b>1</b> 52	THUMBLE	1.421313181
	TERES (202-01-	空[3769]] <u>94-01</u>	SEA SUMMENTE	N37-019115372-915	en <u>kuma</u>
				ARE ALL	22 1 20 20 20 20 20 20 20 20 20 20 20 20 20

### Stability Calculation

100	IN IN	PUT DATA			
TYPE	G _H - 1.00	G _H - 2.00	6 _H -3.00	G _H - 4.00	6 _H - 5.00
W (1)	1.22	4,38	10.17		
X ₀ (M)	0.29	0.45	0.83	1.16	29.21 1.55
Y ₀ (N)	0.18	0.17			
н (й)	1.00	2.00	<u>0.46</u> 3.00	<u>     0.70</u> 4.00	<u>1.07</u> 5.00
"Н (M)	0				5.00
B (N)	0.55	0,95	1.65		0
KA	0.297	0.297	0.297	2.30	3.00 0.297
K _{EA}					
ø	<u>0.403</u> 30 [°]	0.403 30 ⁰	0.403 30 ⁰	0.403 30 ⁰	0.403 30 ⁰
Yan Ø ₃					
3	0,55	0,55	0.55	0.55	0.55
Kh	0.15	0.15	8.15	0.15	0,15
CONCRETE VOL.	0.46	1.32	2,61	4.23	6.11

Toble INPUT DATA

#### The allowable value will be assumed as follows:

Bearing Capacity of Soil

For Group  $1 - - - - 20 t/m^2$ For Group VII - - - - 30  $t/m^2$ 

Safety Factor Against Sliding

For Group I - - + -- - 1.5 For Group VII - - - - 1.2

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# оттрат ала в стали в с

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RETAININIS	RETATNINIG	RETRIKINIG	RETRININIS	RETAININIG
-2211(2)	-##L(2)	-Kill(2)	-KALL(2)	- 照1(2)
1.77	4.33	10,17	18.21	29.21
0.29	0.45.	0.83	1.16	1.55
0.18	0.17	0.45	ñ 7	1.07
. June	2.		4	Ę
0	<del></del>	Ē.	<u>6</u>	
0.55	Ø.95	1.65	2.3	I
. 0.237	V.(XI	0.297	0.797	0.797
0.403	0.403	6.103`	0.403	0.103
	the second states	. 猫	Th	30
0.55.	0.55	0.55	0.55	0.55
0.15	0.15	0.15	0.15	0.15
680#-1	58@\$~1	GREP-1	6x008-1	68015-1
PERKAY	Y+B+KX+KY	₩##¥ <b>₩</b> ₩	THE BRIEF	HERIN
1.561075			29.4672	32,735975
2.443490676:01		2.199141603	3.903535082	6.103776592
0.43139125	2.507085	10.53605375	26.31516	
8.144988919-32	6.515975137-01	.2.199141609	5.212780108	
		· · ···		l
Exp1:07:155	E:01:02:FS	Exelverits	E-Q1-02-FS	Expligners
.1.78932566-02	9.9721904 <u>9-02</u>	9.62273533-52	D.11896556 <u>1</u>	_0.104785992
.2.957737635	8.497454386	9.359163376	11.66043406	13.19922403
1.991625998	1.926598242		.6.137081152	8.625359222
3.063614104	2.782254323	2.851035052	2.879373448	2.347468786
· · · · · · · ·				• • • • • • • • • • • • • • • • • • • •
6RAF-7	GRUP-7	581EUP-7	68718-7	5804F-7
轻静缓缓。	物构取时	• • • • • • • • • • • • • • • • • • • •		わわばれ ニュー
.1.319082971	4.776355435	11.06179984	13,73542194	31.68722178
5.528047025-01		4.853742323		. 13.62661756
<.002789792-01	2.347537711	9.91256974	24.77027046	52.70716535
1.562082341-01	1.097835373	4.023372323	9.801216986	.20.03613426
			- AL LE VARAGE	· · · · · · · · · · · · · · · · · · · ·
E-01-02-FS	1919795	Englander States	Ex01:02:FS	Exelicities
8.38903253-02	Z.155565101-01	2.932(\$1235-01	3.938224598:01	. 0. 170564934
4.593778519	3.1\$42369 <u>2</u>	7.374533226	13.19694796	. 20.50334165
0.71458777_4	1.22850241	.1.7534\$3724	1.2553191	
1.317396359				4.2184532

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## CONSTRUCTION COST

# ESTIMATE OF QUANTITIES (per one meter)

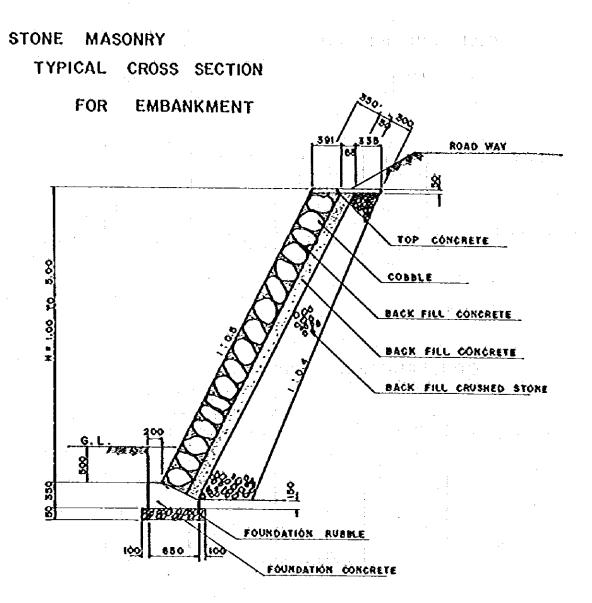
DESCRIPTION	UNIT	6 _H = 1.0	6 _H e 2.0	G _H = 3.0	G _H = 4.0	G _H = 5.0
CONCRETE	Cu.H	<b></b>	1 32	2.0		
			1	2.61	-4.23	6,11
EXCAVATION	Cu.N	0.51	1.57	2.30	3.04	3,90

## CONSTRUCTION COST

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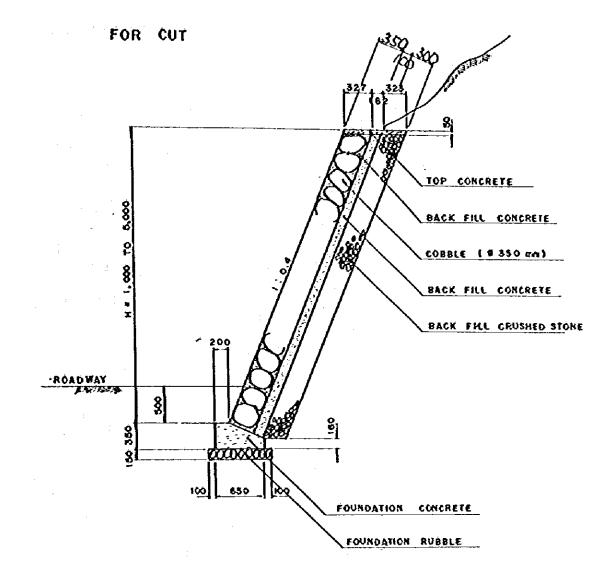
DESCRIPTION	UNIT COST	G _H = 1.0	G ² 5.0	G _H = 3.0	G _H = 4.0	G _H ≠ 5.0
CONGRETE	733 P/X ³	337	768	1913	3101	4479
EXCAVATION	61 P/H ³	31	96	140	185	238
TOTAL (#)		368	864	2053	3241	4717

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ESTIMATES	OF	QUANTITIES	
			•

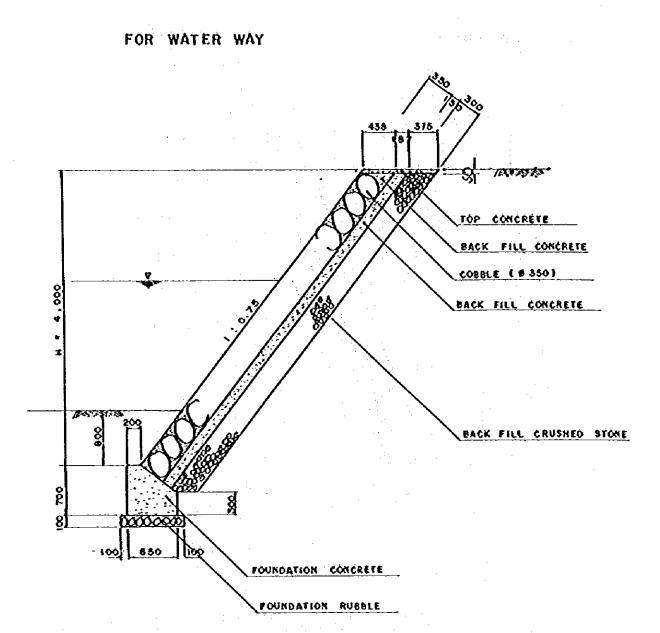
DESCRIPTION	UNIT	H * 1.0	H+2.0	H = 3.0	H= 4.0	H= 5.0
COBBLE (\$ 350 mm)	Sg.N	10.62	21,80	32.98	44.16	55,34
BACK FILL CONCRETE	Cv . N	4.32	7.96	11.60	15.24	18.87
FOUNDATION CONCRETE	Cu.N	1.83	1.83	1.83	1,83	1.83
BACK FILL CRUSHED STONE	Cu.H	4.50	9,55	15.59	22,62	30.64
FOUNDATION RUBBLE	Cu.X	1.28	1.28	1.28	1,28	1.24



### ESTIMATE OF QUANTITIES

DESCRIPTION	UNIT	H = 1.0	H =.2.0	H=3.0	H = 4.0	K≠5.0
COBBLE ( \$ 350 mm)	Sq.H	10.23	21.00	31.77	42.54	53.31
BACK FILL CONCRETE	Cu.N	4.00	7.51	_11.02_	14.53	
FOUNDATION CONCRETE	Cu,H	1.81	1.81	1.81	1.81	1.81
BACK FILL CRUSHED STONE	Cu.H	3.68_	6,91_	10.14		16,60
FOUNDATION RUBBLE	Cu.K	0.85	0.85	0.85	0.85	0.85

•



ESTIMATE QUANTITIES (per 10 m.)						
DESCRIPTION	UNIT	H = 4.0				
COBBLE ( Ø 350 mm)	Sq.X	49.38				
BACK FILL CONCRETE	Cu.H	16.86				
FOUNDATION CONCRETE	Ċu.H	3.90				
BACK FILL CRUSHED STONE	Cu.N	15.52				
FOUNDATION RUBBLE	Cu.N	0,85				

## CONSTRUCTION COST

### FOR EMBANKMENT

C	ONSTRU	CTION	COST		ų.	
DESCRIPTION	UNIT COST	H = 1.0	H ± 2.0	H = 3.0	H= 6.0	H = 5.0
COBBLE (\$ 350 mm)	41P/H ²	435	894	1352	1811	2269
BACK FILL CONCRETE	645.0P/N	3 2786	5134	7482	9830	12171
POUNDATION CONCRETE	645.0P/1	³ 1180	1180	1180	1180	1180,
BACK FILL CRUSHED STONE	60.0P/M	270	573	935	1357	1838
FOUNDATION RUBBLE	80.0P/H	77	77	. 17	- 77	77
TOTAL ( Par 10 m.)	P	4748	7858	11026	14255	17535
PER ONE SQ.M.	P/H ²	447	360	334	322	317

# CONSTRUCTION COST

FOR CUT

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	CONSTRUCTION	COST
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•		011011	~~~.			
D E S CRIPTION	UNIT COST	H ≠ 1.0	H = 2.0	H = 3.0	H = 4.0	H = 5.0
COBBLE ( Ø 350 mm)	41	419	861	1303	1744	2186
BACK FILL CONCRETE	645	2580	4844	7108	9372	11629
FOUNDATION CONCRETE	645	1167	1167	1167	1167	1167
BACK FILL CRUSHED STONE	60	221	415	608	802	996
FOUNDATION RUBBLE	60	51	51	51	51	51
TOTAL ( Per 10 m.)	P	4438	7338	10237	13136	16029
PER ONE SQ. M.	۶/H ²	434	349	322	309	301

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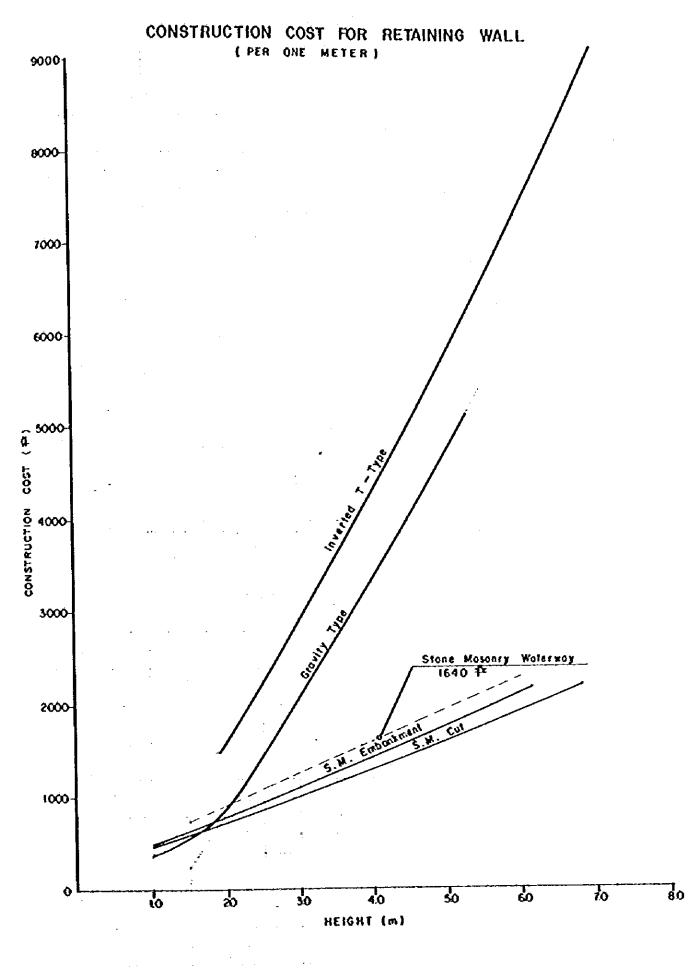
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CONSTRUCTIO	N COST	
DESCRIPTION	UNIT COST	H = 4.0
COBBLE ( Ø 350 mm)	41P/H ²	2025
BACK FILL CONCRETE	645P/H ³	10875
FOUNDATION CONCRETE	645P/H ³	2516
BACK FILL CRUSHED STONE	60P/H ³	931
FOUNDATION RUBBLE	60P/H ³	57
TOTAL (Per IOm)	P :	16398
PER ONE SQ. M.	₽/X ²	332

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E – 81

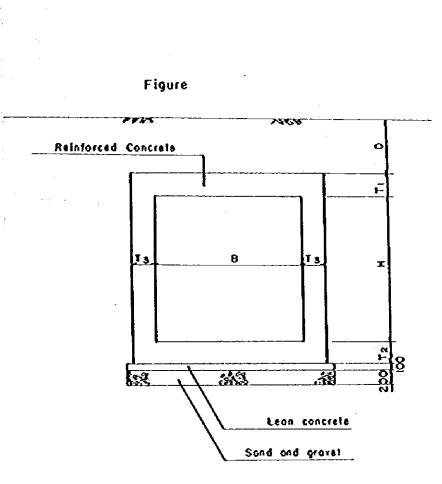
CONSTRU	CTION	COST
	FOR	÷
BOX	CULVE	RT
	AND	
PIPE	CULVE	ERT

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#### Dimension of Box Culverts

The standard design of Japan Highway Public Corp. was adopted for structures of box culverts ;



where , D= Earth Covering (0.15 m to 2.0 m)

-

LIST	OF DIME	VSION	( UNI	T: M )
вхн	T ₁	τ2	T ₃	Areo ( m 2 )
2.0X 20	.30	.30	.30	4.00
2.0 X 2.5	.30	.30	.30	5.00
2.5 X 2.5	.30	.30	. 30	6.25
2.5 X 3.0	.30	.30	. 30	7.50
3.0 X 3.0	. 35	.35	.35	9.00
3.0 X A.O	.35	.40	.40	12.00
3.5 X 3.5	. 35	.40	. 40	12.25
3.5 X 4.0	.40	. 45	. 45	14.00
4.0 X 4.0	.45	.45	. 45	16.00
4.0 X 5.0	.45	.50	. 50	20.00
4.5 X 4.5	. 45	. 50	. 50	20.25
4.5 X 5.0	- 50	. 55	- 55	22.50
50 X 50	.50	.55	. 55	25.00

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E- 84

# ESTIMATE OF QUANTITIES

ESTIMATE OF QUANTITIES ( PER IO METERS )

вхн	CONCRETE (M ³ )	LEAN CONCRETE(M ⁸ )	SAND A GRAVEL (M ³ )	EXCAVATION (M ³ )	REINFORCING STEEL (M3)	REMARKS
2.0X2.0	27.6	2.8	5.6	580	4700	
2.0X2.5	30.6	2.8	5.6	68.0	4930	
2.5 X 2.5	33.6	3.3	6.6	76.5	5234	
2.5X3.0	36.6	3.3	6.6	87.8	5571	
30 X 3.0	46.9	3.9	7.8	97.5	5782	· · · · · · · · · · · · · · · · · · ·
30 X4.0	60.5	4.0	8.0	122.5	6391	
3.5X 3.5	60.3	4.5	9.0	121.0	6447	
3.5X 4 0	73.4	4.6	9.2	134 . 8	6785	
40X40	80.1	5.1	10.2	147.0	7351	
4,0 X 50	97.5	5.2	10.4	\$77.0	юоээ	·
4.5X 4.5	97.3	5.7	11.4	175.5	9831	
4.5X 5.0	113.8	5.8	11.6	- 191 . 8	10252	
50X 5.0	119. 1	6.3	12.6	206.5	11647	

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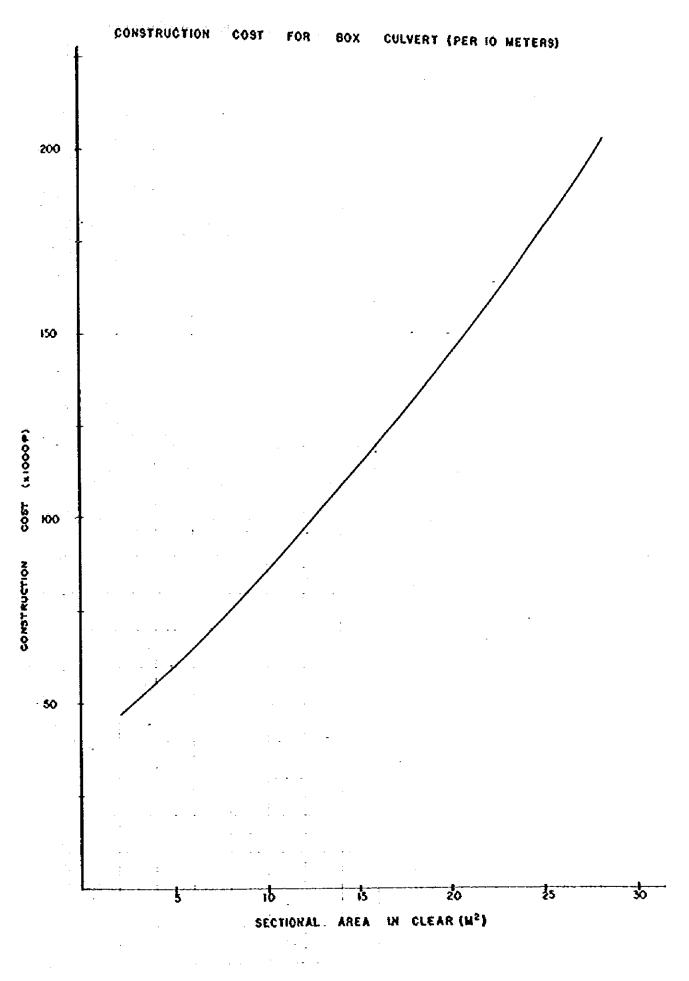
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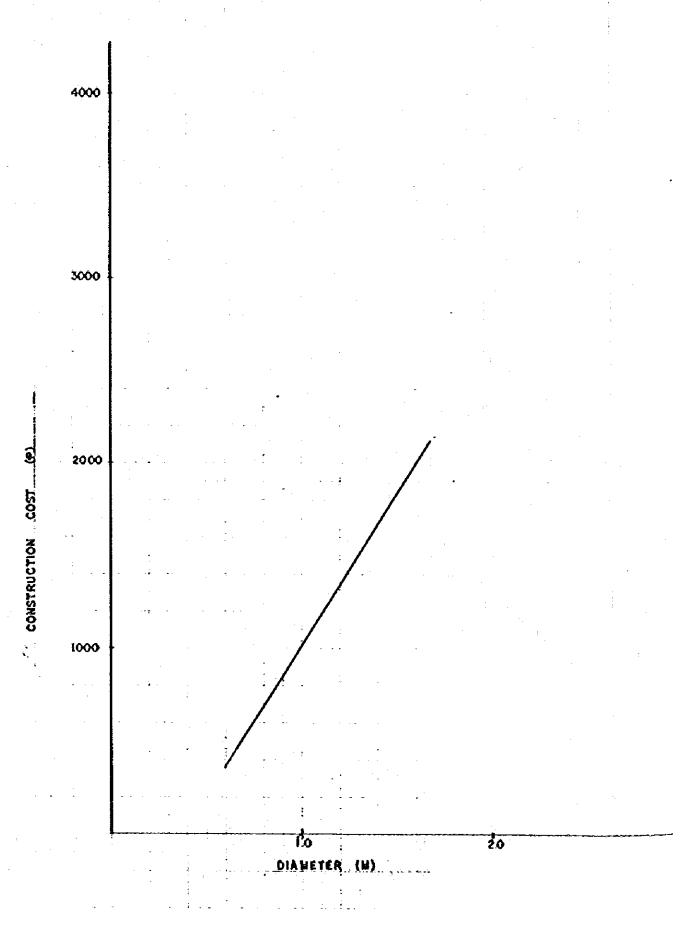
## CONSTRUCTION COST

OLSCROTION CAR CLOSE	CONCRETE	LEAN CONCRETE	SAND AND GRAVEL	EXCAVATION	REINFORCING STEEL	TOTA
TYPE	733 P/M ⁸	645 P/M ³	60.0 P/M ³	61.0 P/M ³	6.43 P/Kg	(F)
20X 20	20230	1810	340	3540	30220	561
20X25	22430	1810	340	4150	31700	604
25 X 25	24630	2130	400	4670	33650	654
25 X 30	26830	2130	400	5360	35820	705
30X 30	34380	2520	470	5950	37180	805
30X40	44350	2560	480	7470	4 1090	959
3.5X 35	44200	2900	540	7380	41450	964
35X40	53800	2970	550	822.0	43630	1091
4.0 X 40	58710	3090	610	8970	47270	1188
4.0X 50	71470	3350	620	10600	64940	1511
45X45	71320	36 80	680	10710	63210	1496
4.5X50	83415	3740	700	11700	63920	1634
50X 50	87300	4060	760	12600	74890	1796

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## APPENDIX F

## CONSTRUCTION COST ESTIMATES

## OF STRUCTURES

## TABLE OF CONTENTS

1.	Schemes of Proposed Bridges along the Most Likely Route (Section A)	F-2
2.	Countermeasure Works for Section A and Section B	F~14
3.	Schemes of Proposed Bridges in Section B	F-39
4.	Comparative Studies on Bridges along Alternative Routes	F-50

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STA. (Km.)	DO DOP LOTALIN				
STA: (Kin.)	BRIDGE 'NAME	TYPE	LENGTH (m)	DIRECT COST (9*)	<b>≄/</b> М
202 + 560.0	S.D.P NO.1	PCG	220	5355500	3010
203+702.5	\$.0.P NO. 2	PĆG	90	2130800	2930
204+ 180.0	\$.0.P NO. 3	PCG	90	2140,800	2940
205 + 95:0	\$.0.P + NÓ. 4	ACDG PCG	115	2484500	.2670
	, S	UB - TOTAL	515	1 12111600	
207 + 900.0	N.D.P NO.I	RCDG	45	863,200	2650
208 + 474.0	N.O.P NO. 2	PCG	48	, 1035300	2670
208+872.0	N.D.P NO. 3	" RCDG PCG	55	1695,700	3820
209+160.0	N.D.P NO. 4	PCG	60	, 1811,400	3740
209+558.5	N.O.P NO. 5	PCG	155	3570900	2850
209+830.0 .	N.D.P NO. 6	RCDG	30	596900	2460
216 + 400.0	SANTA FE	PCG	30	814 800	3360
•	S	UB-TOTAL	423	10488200	

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## Schemes of proposed bridges along the Most Likely Route (Section A)

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1			<u> </u>	<b></b> ]	<u>,</u> 1	r	<b>,</b>	r	r	
	TOTAL	1265	000111	]	24.80					
	ABUT.'8"	125	10000	1	- 166	172000	1000 P/M2	5355500 <del>7</del>	3010 #/M ²	O UTIT
	PIER	061	20000	<b>I</b> .	1600	23	õ	3	ð	
	PIER	625	56000	1	1250					
	ABUT "A"	125 .	10000-		165	N COST		ION COST	0	
		CONCRETE	REIN, BAR	PILE	EXCAVATION	CONSTRUCTION COST	()÷€3	TOTAL CONSTRUCTION COST	0 - 3	
	ŀ	@	яг (8)	:UI:	(C) 218		ns	<b>@</b>  TC	ම	
	17775.6	20.0,35.0,25.0	52	558	706	64200	440	Ă	2020*	PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PRO
	O AREA OF BRIDGE	LENGTH	EACH	CONCRETE	CONCRETE	REINFORCING BAR	RAILING	CONST. COST	() + ()	PROFU
	ARE		ş	<b></b>		RUT:		S83	ans	
ដ	0	ً	3	0	٢	9	9	$\bigcirc$	•	
PROPOSED BRIDGE	202 + 560	S.D.P. NO. 1	220,00-M	7. 32	P.C.G	INVERTED-T	RECTANGULAR	SPREAD	5660	
	<b>OSTATION</b>	2) BRIDGE NAME	BRIDGE LENGTH	C ROADWAY WIDTH	Seridee The	6 ABUTHENT TYPE	T PIER TYPE	B FOUNDATION TYPE	SHOCHT WATERLEVEL	

£ - 3

	TOTAL	4.90	4.1700	1	9.20 9.20	65000 +   75000 +   85000+  5000 = 640,000 7	2			
	PIER 2 ABUT"8"	103	8400	1	200	5000 + 18; 40,000 #	880 ™/ _M ²	00. <del>#x</del>	∓/ M. ²	
		1.25	1 1300	l	250	2 = + 0000 = 0	~	2130800	2950	PER TYPE
	PIER	120	10.800	1	250		-	<del>ب</del>		
	ABUT. "A"	140	11200	•	N 230	ON COST		TION COS	0+	
		CONCRETE	U REIN, BAR	PILE	EXCAVATION	CONSTRUCTION COST	s 23 ֩	23 TOTAL CONSTRUCTION COST	)+ <b>63</b>	
		۲	8		G		F 1	<u>چ</u> ا ۲	ලි	
	727.2	30	, <b>1 2</b> ,	265	2.90	27600	180	149 0800 🗚	2050 Pr/ H.2	
	AREA OF BRIDGE	LENGTH	PCG EACH	CONCRETE		S REINFORCING		CONST. COST	©  C ans	PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PROFILE PRO
ω.	@	$\underline{\bigcirc}$	0	0	3	9	9	©	0	
PROPOSED BRIDGE	203+702.5	S.D.P NO.2	90.0	7.32	9 <b>9</b> 9	INVERTEO-T	RECTANGULAR	SPREAD		
ũ.	() STATION	(2) BRIDGE NAME	3 BRIDGE LENGTH	C ROADWAY WIDTH	SERIDCE TYPE	CABUTNENT TYPE	T PIER TYPE	8 FOUNDATION TYPE	DHECHT WATERLEVEL	<b></b>
					<u> </u>				<b></b>	F-{

PROPOSED BRIDGE 204+180 [(0) AREA OF BRIDGE 727.2 [ABUT."" PIER 1 PIER 2 ABUT." TOTAL	S.D.P NO.3 (1) LENGTH 30 (3) CONCRETE 105 140 105	900 (2) PCG EACH 12 (2)	7.32 (3) CONCRETE 263 (2)		INVERTED-T (3) 2 REINFORCING 27600 (2) 2 CONSTRUCTION COST (115000+210	RECTANGULAR (C) Z RAILING 1.80 2	SPREAD (7) 2 CONST. COST 1490800 TH 2 TOTAL CONSTRUCTION COST 2	9
D STATION	2) BRIDGE NAME	3) BRIDGE LENGTH	A ROADWAY WIDTH	S)BRIDGE TYPE	6 ABUTHENT TYPE	PIER TYPE	NOC	D HECHT WATERLEVEL

F ~ 5

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PROPOSED BRIDGE

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()) STATION	2) BRIDGE NAME	3. BRIDGE LENGTH	A.ROADWAY WIDTH	SBRIDGE TYPE	6 ABUTMENT TYPE	T PIER TYPE	B FOUNDATION TYPE	BHEGHT WATERLEVEL	

BEDGE TAKE         N.D. P. NO.3         (1)         LENGTH         30M.         (5)         colorect E         iso         i	N.D. P. NO.3     (1)     LENGTH     30,4     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (4)     (5)     (4)     (5)     (4)     (5)     (4)     (5)     (4)     (5)     (4)     (5)     (4)     (5)     (4)     (5)     (4)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)     (5)	N.D. P. NO.3     (1)     LENGTH     30 M.     (3)     LENGTH     36 M.     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)     (3)<	N.D. P. NO.3         О. Цеметн         30. М.         Сомовете         45. М.         35. M.         36. M.	N.D. P. NO.3 (1) 1.25.0 (2) 55.0 (2) 7.32 (3) R.C.D. P.C.6 (2) R.C.D. P.C.6 (3) R.C.D. P.C.6 (3) R.C.N. CONCRETE R.C.D. P.C.6 (3) R.C.N. CONCRETE REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINFORCING REINF	30 M. 30 M. 22400 K0 7,756.80 F 1750 F/M ² 1750 F/M ² 1750 F/M ²		CRETE -	60 8000 4 20 7 7 7 7 7 7 7		60	230
53.0     (2)     PCG     EACH     4     (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)     (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)     (2)     (2)     (2)     (2)     (2) <th>35.0     (3)     PCC     EACH     4     (3)       732     (3)     (3)     (4)     (4)     (4)       732     (3)     (4)     (4)     (4)     (4)       732     (3)     (4)     (4)     (4)     (4)       732     (3)     (4)     (4)     (4)     (4)       732     (3)     (4)     (4)     (4)     (4)       733     (4)     (4)     (4)     (4)     (4)       734     (4)     (4)     (4)     (4)     (4)       735     (4)     (4)     (4)     (4)     (4)       734     (4)     (4)     (4)     (4)     (4)       735     (4)     (4)     (4)     (4)     (4)       736     (4)     (4)     (4)     (4)     (4)       737     (4)     (4)     (4)     (4)     (4)       737     (4)     (4)     (4)     (4)     (4)       737     (4)     (4)     (4)     (4)     (4)       737     (4)     (4)     (4)     (4)     (4)       74     (4)     (4)     (4)     (4)     (4)       74     (4)     (4)</th> <th>35.0 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (201</th> <th>33.0     (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)     (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)     (2)     (2)     (2)     (2)     (2)     (2)     (2)     (2)     (2)<!--</th--><th>PCGE LENGTH 55.0 20 PCG EACH ROADWAY WOTH 7.32 0 20 CONCRETE BRIDGE TYPE R.C.D. P.C.G C. C. CONCRETE ABUTNECHT TYPE R.C.D. P.C.G CONCRETE ABUTNECHT TYPE RCHINGRETE BRIDGE TYPE RENTOCRETE PIER TYPE RETAILING FOUNDATION TYPE SPECAD PILE 0 20 CONST COST PIER TYPE RELEVEL 0 0 FOR CONST COST PIER TYPE 0 FOR CONST COST 0 FOR CONST COST PIER TYPE 0 FOR CONST COST 0 FOR CONST COST 0 FOR CONST COST PIER TYPE 0 FOR CONST COST 0 FOR COST 0 FOR COST 0 FOR CONST COST 0 FOR CONST COST 0 FOR CONST COST 0 FOR CONST COST 0 FOR COST 0 FOR CONST COST 0 FOR COS</th><th>85 M³ 811 M³ 211 M³ 211 M³ 22400 Kg 110 110 110 110 110 110 110 110 110 11</th><th></th><th>AVATION C</th><th>8000 44 2057 4 TYPI</th><th></th><th>4800 120 0000 P/M²</th><th>18600</th></th>	35.0     (3)     PCC     EACH     4     (3)       732     (3)     (3)     (4)     (4)     (4)       732     (3)     (4)     (4)     (4)     (4)       732     (3)     (4)     (4)     (4)     (4)       732     (3)     (4)     (4)     (4)     (4)       732     (3)     (4)     (4)     (4)     (4)       733     (4)     (4)     (4)     (4)     (4)       734     (4)     (4)     (4)     (4)     (4)       735     (4)     (4)     (4)     (4)     (4)       734     (4)     (4)     (4)     (4)     (4)       735     (4)     (4)     (4)     (4)     (4)       736     (4)     (4)     (4)     (4)     (4)       737     (4)     (4)     (4)     (4)     (4)       737     (4)     (4)     (4)     (4)     (4)       737     (4)     (4)     (4)     (4)     (4)       737     (4)     (4)     (4)     (4)     (4)       74     (4)     (4)     (4)     (4)     (4)       74     (4)     (4)	35.0 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (2015) - 10 (201	33.0     (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)     (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)     (2)     (2)     (2)     (2)     (2)     (2)     (2)     (2)     (2) </th <th>PCGE LENGTH 55.0 20 PCG EACH ROADWAY WOTH 7.32 0 20 CONCRETE BRIDGE TYPE R.C.D. P.C.G C. C. CONCRETE ABUTNECHT TYPE R.C.D. P.C.G CONCRETE ABUTNECHT TYPE RCHINGRETE BRIDGE TYPE RENTOCRETE PIER TYPE RETAILING FOUNDATION TYPE SPECAD PILE 0 20 CONST COST PIER TYPE RELEVEL 0 0 FOR CONST COST PIER TYPE 0 FOR CONST COST 0 FOR CONST COST PIER TYPE 0 FOR CONST COST 0 FOR CONST COST 0 FOR CONST COST PIER TYPE 0 FOR CONST COST 0 FOR COST 0 FOR COST 0 FOR CONST COST 0 FOR CONST COST 0 FOR CONST COST 0 FOR CONST COST 0 FOR COST 0 FOR CONST COST 0 FOR COS</th> <th>85 M³ 811 M³ 211 M³ 211 M³ 22400 Kg 110 110 110 110 110 110 110 110 110 11</th> <th></th> <th>AVATION C</th> <th>8000 44 2057 4 TYPI</th> <th></th> <th>4800 120 0000 P/M²</th> <th>18600</th>	PCGE LENGTH 55.0 20 PCG EACH ROADWAY WOTH 7.32 0 20 CONCRETE BRIDGE TYPE R.C.D. P.C.G C. C. CONCRETE ABUTNECHT TYPE R.C.D. 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T32       (3)       CONCRETE $35M^3$ (3)       HLE       12       12       12         R.C.D. P.C.G       (4)       (CONCRETE $21M^3$ (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)       (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)	732     (C.C. P.C.)     (C.C. P.C.)<	732     0     0000557     56.40     0     12     12     12       R.G.O. P. C.G     Q     R. C.G. P. C.G     Q     R. C.G. P. C.G     Second     Second       INVERTED-T     Q     R. C.G. P. C.G     Q     R. C.G. P. C.G     Second     Second       INVERTED-T     Q     R. C.G. P. C.G     Q     R. C.G. P. C.G     Second     Second       RECTARGULAR     Q     R. C.G. P. C.G     Q     R. C.G. P. C.G     Second     Second       RECTARGULAR     Q     Notestration     10     Q     Second     Second     Second       RECTARGULAR     Q     Notestration     Notestration     Notestration     Second     Second     Second     Second       RECTARGULAR     Q     Notestration     Notestration     Notestration     Second     Second     Second       Rectard PLE     Q     Second     Notestration     Second     Second     Second     Second       Rectard PLE     Q     Second     Notestration     Second     Second     Second       Rectard PLE     Q     Second     Second     Second     Second     Second       Rectard PLE     Q     Second     Second     Second     Second     Second	T32     Oxocent     6+M0     U       T32     Oxocent     6+M0     Oxocent     11       Wrearton     Exc.n P.c.6     Oxocent     211 M ³ Oxocent     2200 PM ² Wrearton     Oxocent     211 M ³ Oxocent     211 M ³ 2200 PM ² Rc.n P.c.6     Oxocent     211 M ³ Oxocent     211 M ³ 2200 PM ² Rc.n P.c.6     Oxocent     211 M ³ Oxocent     211 Oxocent     2200 PM ² Rc.n P.c.6     Oxocent     Oxocent     211 M ³ Oxocent     2200 PM ² Rc.n P.c.6     Oxocent     Oxocent     Concent     Concent     200 PM ² Rc.n P.c.6     Oxocent     Oxocent     Concent     Concent     200 PM ² Rc.n P.c.6     Oxocent     Oxocent     Concent     Concent     200 PM ² Rc.n P.c.6     Oxocent     Oxocent     Concent     Concent     200 PM ² Rc.n P.c.6     Oxocent     Oxocent     Concent     Concent     200 PM ² Rc.n P.c.6     Oxocent     Oxocent     Concent     Concent     200 PM ² Rc.n P.c.6     Oxocent     Oxocent     Concent     Concent     200 PM ² Rc.n P.c.7     Oxocent     Oxocent     O	T32 R.C.O. 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•••	<b>OSTATION</b>	(2) BRIDGE NAME	BRIDGE LENGTH	4 ROADWAY WIDTH	SBRIDGE TYPE	CABUTNENT TYPE	DPIER TYPE	SFOUNDATION TYPE	OHEGHT WATERLEVEL	

TOTAL	-280	22400	1	670	0				
ABUT B	041	11200	1	555	2 X 165,000+ 330,000	1360 77, M.2	¥ 0	× ¥	
PIER	* * *		•		2 X 165,00	1360	814,800	3360.4	
PiCR PiCR		÷.	I			-			A00080004
ABUT, "A"	- 40	11 200	-	335	N OST		TION COST	ത	90008 000 19 19 19 19 19 19 19 19 19 19 19 19 19 1
	CONCRETE	REIN, BAR	PILE	EXCAVATION	CONSTRUCTION COST	(0) ÷ €3	23 TOTAL CONSTRUCTION COST	0) + CZ	
V	0	3E (8)	() 101		158 ©		23 701	63	
242.4 M. ²	29.80M	4			,	60.0 M.		2,000 ⁻³⁵ / M ² (	PROFILE CALCOTA 20.00 CANCE LENOTA 20.00 CANCE LENOTA 20.00 SPAN L
EA. OF BRIDGE	LENGTH	G EACH	CONCRETE		REINFORCING BAR		CONST. COST	() + ()	PROFIL CANDER LENGTH 29.00 CANDER LENGTH 29.00 SEAN LENGTH 20.00 SEAN LENGTH 20.00 S
(O) AREA		22 (2)	0	3 (1)	BUT:	اللاند اللاند	1	ans @	
216+ 400	SANTA FE	30.00 M.	7.32	)) )&	INVERTED - T	•	SPREAD	555,5 M.	State of the second sec
. D.STATION	2) BRIDGE NAME	S BRIDGE LENGTH	C ROADWAY WIDTH	SERIDGE TYPE	GABUTMENT TYPE	T PIER TYPE	B FOUNDATION TYPE	D HEGHT WATERLEVEL	ے ج

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PROPOSED BRIDGE

## 2. Countermeasure Works for Section A and Section B

r Section A

F = 14

## CONSTRUCTION COSTS OF COUNTERMEASURE WORKS

NO.	STATION	ITENS	
•	107 1050 00 100	SLOPE PROTECTION, ORAINAGE AND OTHERS	OIRECT COST (₽)
2	167 + 400	DRAINAGE	521 000
3	1711100 00 800	SPUR DIKE AND OTHERS	56000
4	17214780 546		18014000
5	173110 11731180	SABO SLOPE PROTECTION DRAINAGE AND OTHERS	809000
6		SLOPE PROTECTION , DRAINAGE	97000
	177 + 100 00 750	NEW ALIGNMENT, BRIDGE AND OTHERS	3128000
7	1811100 00 500	BRIDGE AND OTHERS	1881.000
8	1821047 0 200	SLOPE PROTECTION AND OTHERS	481000
9,Ю 11	1851660 0 1861240	SLOPE PROTECTION, DRAINAGE	1483000
łż	187 +700 os 800	SABO	1288000
13	1881085 0 335	SLOPE PROTECTION	942000
14	196108 10 265	SLOPE PROTECTION	275000
16	0001001 0001801	BRIDGE ALIGNMENT AND OTHERS	18Ю000
17	201193702021060	SABÓ AND OTHERS	1531000
18	203+787.3	SABO, CHANNEL WORK AND OTHERS	336000
19	2041550 10 2051150	NEW ALIGNMENT	1469000
20	205 1900 14 207 1500	SLOPE PROTECTION, CHECK DAN AND OTHERS	14510000
21	2101700	SABO , DRAINAGE AND OTHERS	442000
55	213+4000 550	SLOPE PROTECTION	7 51000
23	216 1000 0 550	BRIDGE	815000
24	2161720 0 880	SABO, AND OTHERS	418000
25	217+250 0 275	SLOPE PROTECTION AND OTHERS	913000
26	2191400	SLOPE PROTECTION AND OTHERS	1723000
27	2201550 W 900	SABO , SLOPE PROTECTION	1988000

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	₽ _₽ ₽ _₽ ₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽	<del></del>	and the second secon	
Construction cost - 1	(sta. 1	67 + 50 -	157 + 100	)
DESCRIPTION .	UNIT	UNIT PRICE	QUANTITIES	DIRECT COST
CUP	Cu.H	20.8		
EMBANKAENT	Cu.N	13.05	1100	.14355
STRUCTURE EXCAVATION	Cu,H	61	110	. 6710
CONCRETE PAVEHENT (t=230 m)	L.H	1428	·	······
SIDE DITCH	L.M.	433		
GUARD RAIL	L.H	540		•
PLANTATION HORK	L.H	1		
VZGETATICH NORK	Sq.H	1		· · · · · · · · · · · · · · · · · · ·
SODDING	Sq.H			
RETAINING WALL GRAVITY TYPE (H= )	L.H			•
-d0- (H= )	L.H			
STONE HASCHERY FOR WATERWAY (H= 5.0 E)	LN	1950	200	390000
-do- (H= 2.0 n)		950	50	46000
-do- (H= 4.0)	L.N.	1540	20	. 32800
CONCRETE PIPE Ø 1.20	L.H	13:0	12	16200
Ø	L.M	·······		
CONCRETS FOR SABO	Cu.H	733		•
CONCRETE FOR RIVER BED	Cu.h	645		
GROUFED RIPRAF	Cu.H	384		
FRICE FOR FAILING ROCK	L.H	6150		
BRIDGE	L.S			
CONCRETE DOX CULVERT	L _a H			
DROP INLET	EACH	1250	• 1	1250
OVTLEA	EACH	1250		
Cabion:	Cu.n	178	5	023
DRAINAGE	L.n	368	35	12880
REINFURCING STEEL BAR	Kg.	6.43		
	(-' <u>```</u>			·
TOTAL				<b>2 521 0</b> 25

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CONSTRUCTION COST - 2	( 59%	10		
DESCRIPTION	UIIT	167 + 400 Witt Price	QUANFITTES	) DIRECT COST
CUT	Cu.H	20.8		DIRDOT COST
EHBANKALAT	Cu.K	13.05	2500	32625
STRUCTURE EXCAVATION	Cu.H	61		Jule,
CONCRETE PAVE-LEAT (t=230 m)	L.K	1428		
SIDE DITCH	·L.H.	433		·····
GUARD RAIL	L.H	540		
PLANTATION WORK	L.H	1		
VEGETATION WORK	Sq.k	1		
SODDING	Sq.H			
RETAINING WALL GRAVITY TYPE (H=	L.K			
-d6- (X=				
	L.H			
	LK			
	L.H	·		
CONCRETE PIPE Ø 1:00	L.K.			
	Liti	1020	11.5	11730
-do- Ø	L.H			
CONCRETE FOR SABO	Cu.li	_ 233		
CONCREME FOR RIVAR BED	Cu.n	645		
GROUTED RIPRAF	Cu,ti	384		
YERCE FOR FALLING ROCK	L.H.	6150	-	
BRIDG3	L.S			
CONCRETE BOX CULVERT	L.n			
DROP INLEY	EACH	1250		
owner	EACH	1250		
CABIOI:	Curr	178		
DRAINAGE	1.11	368	· 32	11776
REINFORCING STEEL BAR	Kg.	6.43		
	]			•
TOTAL				56131

CONSTRUCTION COST - 3	(STA.	171 + 100	- 800	
DESCRIPTION .	UNIT	UNIT		<del>~~~~</del> ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
CUT	Cu.H	PRICE 20.8	DUANTITIES	DIRECT COST
EHBANKASHT	Cu.K	13.05		
STRUCTURE EXCAVATION	Cu.H	61	17800	.1085800
CONCRETE PAVENENT (t=230 n)	L.N	1428	1 . 1	
SIDE DITCH	·L.N.	433		
GUARD RAIL	L.H	540		
PLANTATION FORK	L,H	1	· · · · · · · · · · · · · · · · · · ·	
VZGEFATIQI YORK	Sq.H	25	15600	390000
SODDING	Sq.H	,		
RETAINING WALL GRAVITY TYPE (H= 7.5 L)	L.N	8600	460	3056000
-dő- (Н= 4.0 п)	L.H	3200	300	960000
STOLE MASOLEY FOR JATERJAY (H= 4.0 m)	L.N	1640	600	1131600
-do- for energies and -op-	L.H	770	1650	1303500
-do(H=)	1.4			
CONCRETE PIPE Ø	L.H	· · · · · · · · · · · · · · · · · · ·		
-do- Ø	L.H		-	
CONCRETE FOR SABO or SPUR DIKE	Cu.H	233	11200	8549400
CONCRETS FOR RIVER BED	Cu n	645		
GROUAED RIPRAF	Cu.H	384		
PERCE FOR FALLING ROCK	L.H	6150		
BRIDGE .	L.S		· · · · · · · · · · · · · · · · · · ·	
CONCRETE BOX CULVERT	L.H			
DROP INLAS	EACH	1250	1.	· · · · · · · · · · · · · · · · · · ·
outer	EACH	1250		
GABION:	Cu.n	178	100°	160200
DPAINAGE	<u>ь.</u> н	368	· ·	
REINFORCING STEEL BAR	Kg.	6.43		••••••
REMAINS WALL INVERTED-T TYPE (H=3.01)	-	5:00	130	377000
ΤΟΤΑΙ				2 18,013,500

- . .

CONSTRUCTION COST - 4	(STA.	172 + 476	, chr	
DESCRIPTION .	UIIT	MARY		)
CUT	Cu.K		QUARTITIES	DIRECT COST
EMBANKHEIM	Cu.H		650	91.2-
STRUCTURE EXCAVATION	Cu.H		360	2463
CONCRETE PAVE/HIT (t=230 m)	L.H	1428		21060
SIDE DITCH	·L.H.	433	150	: G4050
GUARD RAIL	L.H	540		
PLANTATION WORK	L,H	1		······································
VEGETATION WORK	Sq.H		1	
sodding	Sq.H	,		
RETAINING YALL GRAVITY TYPE (H= 5.0	) L.K	4700	60	282000
-d6- (H≈	) L.H			
STOKE HASCHERY FOR FEBANZAEUR H= 5.0	) 1.1	1750	25	43750
-do- (H=	) L.H			
-do- (K=	) L.H.			•
CONCRETE PIPE Ø	L.H			-
-do- Ø	LH			
CONCRETE FOR SABO	Cu.H	733		• •
CONCREME FOR RIVAR BED .	Cu.h	645		
GROUTED RIPRAF	Cu.ti	384		-
FENCE FOR FAILING ROCK	L.H.	6150	50	369000
BRIDGE	L.S			
CONCRETE DOX CULVERT				
DROP INLES	EACH	1250	· .	
OUTLES	EACH	1250	- <b>  </b>	·····
GABION	Cum	178	108	19224
DRAINAGE	L.H	368	·	· · · · · · · · · · · · · · · · · · ·
REINFORCING STEEL BAR	. Kg	6.43		•
TOTAJ,				2 80°,357

CONSTRUCTION COST - 5	(sta. 1	73 + 110	- 173 + 18	0)
DESCRIPTION .	UNIT	UNIT PRICE	DUANTITIES	DIRECT_COST
CUT	Cu.H	20.8		
EMBANKKENT	Cu.H	13.05	40	522
STRUCTURE EXCAVATION	Cu.H	61	180	10080
CONCRETE PAVEMENT (t=230 m)	L.M	1428		
SIDE DITCH	L.N.	433		<b>_</b>
GUARD RAIL	L.H	540	•	
PLANTATION WORK	L.H	1		
VESERATION SORK	Sq.H	• 1		
SODDING .	Sq.H	,		
RETAINING WALL CRAVITY TYPE (H= )	L.H			•
-dð- (K= )	L.H			
STONE KASOLERY FOR PABANKAENT (H= 2.0 u)	LH	20	45	35550
-do- FOR WATERWAY (H= 5.0 a)	L.H	1050	12	23:00
-do- (H= )	L.H.			· · · · ·
concrete PIPE ø	L.H			
-do- Ø	L.X			
CONCRETE FOR SABO	Cu.H	233	•	•
CONCRETE FOR RIVER BED	Cu.fi	645		
GROUPED RIPRAF	Cu.H	384		
FEIKCE FOR FALLING ROCK	L.H.	6150		<u></u>
BRIDGE	L.S			
CONCRETE BOX CULVERT	Lait			
DROP INLEY	EACH	1250	•	
ontel	EACH	1250		· · · · · · · · · · · · · · · · · · ·
GABIOI:	Cu.n	178		
DEAINAGE	L.n	368	72	26496
KEINPORCING STEEL BAR	Kg.	6.43		
				•
2077F				V 76, Mis

CONSTRUCTION COST - 6	(STA.	177 + 100	- 177 + 75	0.)
DESCRIPTION	UNIT	UNIT PRICE		DIRECT COST
ĊUT	Cu.K	20.8		PARAT COST
EHBANKHENT	Cu,ří	13.05	4650	60583
STRUCTURE EXCAVATION	Cu.H	61	1	
CONCRETE PAVELENT (t=230 w)	L.K	1428	310	442680
SIDE DITCH	· L.H.	433	7.0	442000
GUARD RAIL	L.H	540		
PLANTATION WORX	L.H	1		<u> </u>
VEGETATICH NORK	Sq.F.	1		
SODDING	Sg.H	,		
RETAINING WALL GRAVITY TYPE (H= )	L.K			
-d6- (H= )	Lifi		1	
STONE HASOHRY FOR EMBANDEENT (H= 3.0 G)		1100	100	110000
-do- HATENAY (H= 4.0 )	Lin	1640	40	65600
-do- (H= )	L.H.			
CONCRETE PIPE Ø	L.H			-
-do- Ø	L.H			
CONCRETE FOR SABO	Cuiti			•
CONCRETE FOR RIVER BED	Cu,n	645		
GROUTED RIPRAT	Cu.H.	384		-
FEICE FOR FALLING ROCK	L,H	6150		-
BRIDGE $(L = 75 \text{ n})$	L.S		1	24:35000
CONCRETE BOX CULVERT	L ₄ ñ			
DROP INIET	EACH	1250		
oulei	EACH	1250		
GABION	Cu,n	178	60	11:240
DRAINAGE	Lati	368		
REINFORCING STEEL BAR	Kg.	6.43		
· · · · · ·			-	7 3,123,203

CONSTRUCTION COST - 7	(STA.	181 + 100	- 500	• ).
DESCRIPTION	UNIT	UNIT PRICE	QUANTITIES	DIRECT COS
CUI	Cu.H	20.8		
EHBANKSENT	Cu.H	13.05	4300	56115
STRUCTURE EXCAVATION	Cu.H	61		
CONCRETE PAVEMENT (t=230 m)	L.H	1428	300	556920
SIDE DITCH	L.H.	433		
GUARD RAIL,	L.H	540	220	151200.
PLANTATION WORK	L.H	1		
VEGETATION WORK	Sq.H	1		
SODDING	Sq .H			
RETAINING WALL GRAVITY TYPE (R= )	L.H			• •
-d0- (K= )	L.H			
STONE HASOMEY FOR WATERDAY (H= 4102)	LH	1610	170	278800
-do- (H= 3.0 m)	L.H	1280	10	12800
(H=)	Latt.			<b>120000</b>
Concrete Pipe Ø	L.H			· · · · · · · · · · · · · · · · · · ·
-do Ø	L.H			· · · · · · · · · · · · · · · · · · ·
CONCRETE FOR SABO	Cu _s li	233		
CONCRETE FOR RIVER BED	Cu,h	645		
GROUPED RIPRAT	Cu.H	384		
FENCE FOR FALLING ROCK	LH	6150		
BRIDG2	L.S	714600	1	714600
CONCRETE BOX CULVERT 2.0 x 2.0	L,ri	5100	1.6	81600
DROP INLET	EACH	1250	•	
THING	EACH	1250		
GABIO):	Cn.H	178	160	28490
DRAINAGE	L.n	368		
EINFORCING STEEL BAR	Kg.	6.43		•
				•
TOTAL				2 1,880,515

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CONSTRUCTION COST - 8	(574	480	<del></del>	
DESCRIPTION		182 + 47 - UNIT		)
CUT	UNIT Cu.H	PRICE		DIRECT COST
EHBANKGENT		20.8	2100	43680
STRUCTURE EXCAVATION	Cu.H	13.05		· · · · · · · · · · · · · · · · · · ·
CONCRETE PAVENENT (t=230 m)	Cu.H L.H	61		
SIDE DITCH		1428	·	t
GUARD RAIL	·L.M.	433	153	66240
PLANTATION WORK	L.H	540		·
VEGETATION WORK	L.H	1		
SODDING	Sq.H	1		
RETAINING WALL GRAVITY TYPE (H= 3.0)	Sq.H			
		2050	153	313650
VI /	L.H			
	Litt	r <del></del>	· · ·	
-do- (H= )	L,H			·
	L.H.			
Concrete PIPE Ø	L.H			
-do- Ø	L.H			
CONCRETE FOR SABO	Cu ₁ H	_233	[]	
CONCRETE FOR RIVER BED .	Cu,Fi	645		
GROUPED RIPRAF	Cu.H	384		-
FRICE FOR FALLING ROCK	L.H	6150		-
BRIDGE	L.S	-		
CONCRETE BOX CULVERT	Lari			
DROP INLET	EACH	1250	1.	1250
OVILIER	ЕАСН	1250		
GABION .	Cu.s	178		
DRAINAGE	Litt	368	· 153	56304
REINFORCING STEEL BAR	Kg	6.43		
				•
TOTAL				2 481,133

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CONSTRUCTION COST - 9	(STA.1	85 + 600	- 186 + 240	
DESCRIPTION .	UIIT	UNIT PRICE		DIRECT COST
CUP	Cu.H	20.8		······································
EABARKAENT	Cu.M	13.05	11880	155034
STRUCTURE EXCAVATION	Cu.H	61	1760	107360
CONCRETE PAVEIENT (t=230 11)	L.H	1428		·
SIDE DITCH	·L.H.	433		en e
GUARD RAIL	L.H	540		
PLANTATION WORX	L.H	1		-
VEGETATION NORX	Sq.H	1		
SODDING	Sq.H	,		
RETAINING WALL GRAVITY TYPE (H= )	L.H			
-d6- (K= )	L.H			
STONE KASCHAY FOR WATERHAY (H= 5.0 p)	L.H	1950	500	975000
-do- (H= 4.0 m)	L.H	1610	150	246000
-do- (X= )	Г.Ж			······
CONCRETE PIPE Ø	L,H			••••••••••••••••••••••••••••••••••••••
do Ø	1.н		·	
CONCRETE FOR SABO	Cu _s ki	733	~	•
CONCRETE FOR RIVER BED	Cu,h	645		
GROUTED RIPRAF	Cu.H	384		•
FERCE FOR FALLING ROCK	L.H	6150		
BRIDG:	L.S			
CONCRETE BOX CULVERT	Lati			
DROP INLET	EACH	1250		· · · ·
oatres	EACH	1250		,
GABIOI:	Cu.fi	178		· · ·
DRAINAGE	Lati	368	·	•
REINFORCING STEEL BAR	Kg.	6.43		
				·
TOTAL				1,438,3%

F = 24

CONSTRUCTION COST - 10	(STA.	187 + 200	- 187 + 80	
DESCRIPTION	UIIT	UNIT PRICE	2 107 + 80 RUANTITIES	
CUT	Cu.H	20.8		DIRECT COST
EMDANKAEHT	Cu.H	13.05	-	
STRUCTURE EXCAVATION	Cu.H	61	920	564400
CONCRETE PAVEMENT (t=230 m)	L.H	1428		561120
SIDE DITCH	· L.M.	433	100	
GUARD RAIL	L.H	540	100	43300
PLANTATION WORK	L,H	1	+	
VEGETATION WORK	Sq.H	1		
SODDING	Sq.H			
RETAINING WALL GRAVITY TYPE (H= 5.0 m)	L.H	4700	100	. trongge
-d0- (K= )	L.H			470000
STONE HASOHRY FOR VATERIAY (H= 5.0 m)	and the second se	1950	69	134550
-do- (H= 4.0 c)	L,H	10/10	. 53	. 45920
-do- (H= )	L.K.			
CONCRETE PIPE Ø	L.H			
-do- Ø	1.н			
CONCRETS FOR SABO	Cu.H	.733	611	447263
CONCRETE FOR RIVER BED .	Cu.li	645	140	<b>~0300</b>
GROUPED RIPRAT	Cu.H.	384		
FEICE FOR FAILLING ROCK	L,H	6150		-
BRIDGE	L.S			
CONCRETE BOX CULVERT	L,ri			·
DROP INLES	ЕАСН	1250	<i>i</i> .	
outler	EACH	1250		······································
<u>CABION</u>	Cu.n	178		· · · · · · · · · · · · · · · · · · ·
DRAINAGE	L.tı	368	· ·	
REINFORCING STEEL BAR	Kg.	6,43		
and the second				•
TOTAL				P 1,268,053

CONSTRUCTION COST - 11	(STA. 1	88 + 85 -	183 + 335	
DESCRIPTION .	UNIT	UNIT	QUANTITIES	
CUT	Cu.H	20.8		
EMBANKMENT	Cu.H	13.05	2400	31320
STRUCTURE EXCAVATION	Cu.H	61		
CONCRETE PAVEHENT (t=230 m)	L.N	1428		
SIDE DITCH	· L.H.	433		
GUARD RAIL	L.H	540	· · ·	
PLANTATION WORK	L.H	181	330	59730
VZGETATION WORK	Sq.H	1		<u>):(N</u>
SODDING	Sq "H			
RETAINING WALL GRAVITY TYPE (H= )	L.H			· · · · · · · · · · · · · · · · · · ·
-do- (k= )	г.н			
STONE HASGERY FOR WATERNAY (H= 6.0)	Juli	1950	400	780000
-do- (H= )	L.H			-
-do (X= )	L.H.	. :		•
CONCRETE PIP3 Ø	L₄H			
-do- Ø	L,H			
CORCRETZ FOR SABO	Cu.H	233		•
CONCRETE FOR RIVER BED	Cu h	645		-
GROUTED RIPRAF	Cu.H.	384		
FRICE FOR FALLING ROCK	L.H.	6150		
BRIDGE	L.S			
CONCRETE BOX CULVERT	L,ń			
DRCP INLST	EACH	1250	•	
outler	EACH	1250	÷	
GABION	Cu,n	178	<i>l</i> ;00	71200
DPAINAGE	Lat	368	•	
REINFURCING STEEL BAR	Kg.	6.43		· · · · · ·
		• -•, , :		•

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CONSTRUCTION COST ~ 12		(STA. 1	96 + 15 -	196 + 265	
DESCRIPTION		UIIT	UNIT PRICE		DIRECT COST
CUT		Cu.H	20.8		
EHBANKAENT		Cu.M	13.05	6500	84825
STRUCTURE EXCAVATION		Cu.H	.61	- 0/00	04023
CONCRETE PAVE-FAIT (t=230 m)		L.H	1428		
SIDE DITCH		·L.H.	433		
GUARD RAIL		L.H	<del></del> 540	260	112580
PLANTATION WORK		L.H		<u> </u>	
VEGETATION WORK		Sq.H	1	<b>}</b>	
SODDING		Sq.H		}	
RETAINING WALL GRAVITY TYPE (H=	)	L.H		<u> </u>	•
-dø- (K=	)	L.M			•
STONE HASCHRY FOR (H=	2	LB			
-do- (H=	)	L'H		· ·	-
-do- (H=	>	L.N.			
Concrete Pipe ø	- 4	L.H			•
-do- Ø		1.H			· · · · · · · · · · · · · · · · · · ·
CONCRETE FOR SABO		Cu.ki	733	-	• ·
CONCRETE FOR RIVER BED		Cu,h	645		
GROUTED RIPRAT		Cu.H.	384		•
FENCE FOR FAILING ROCK		L.H.	6150	· ·	
BRIDGE		L.S			· · ·
CONCRETE BOX CULVERT		L.H			
drop inler		ЕАСН	1250	ŀ .	· · · · · · · · · · · · · · · · · · ·
ovrier		EACH	1250		·····
GABION		Ċu,M	178	1000	178000
DRAINAGE	•	L.H	368		
REINFORCING STEEL BAR		Kg.	6.43		
TOTAL					¥ 275405

CONSTRUCTION COST - 13		UNIT	<u>- 199 + 60</u>	**************************************
DESCRIPTION . CUT	UNIT	1	RUANTITIES	DIRECT COST
	Cu.H	20.8		•
ENBANKAENT	Cu.M	13.05	1950	25448
STRUCTURE EXCAVATION	Cu.H	61	510	. 31110
CONCRETE PAVEHENT (t=230 m)	LaN	1428	160	228480
SIDE DITCH	·L.H.	433		
GUARD RAIL	L.H	540		
PLANTATION WORK	L.H	1		
VEGETATION NORX	Sq.K	1		
SODDING	Sq.H			
RETAINING WALL GRAVITY TYPE (H= )	L.H			
-d6- (H= )	L.H			· · · · · · · · · · · · · · · · · · ·
STONE HASONRY FOR EMBANKHEIR (H= 2.0 )	LIN	790	320	252800
-do- HATERHAY (H= 3.5 )		1440	270	388800
-do- (K= )				
Concrete PIPE Ø	L.H		λ.	
-do- Ø	Ги			
CONCRETE FOR SABO	Cu.H	733	370	271210
CONCRETE FOR RIVER BED	Cu.li	645		
GROUTED RIPRAF	Cu.H	384		
FERCE FOR FALLING ROCK	L.H	6150		
$b_{\rm RIDG3} = 20.0$	L.S	594800	1	594800
CONCRETE BOX CULVERT	Ľ, ń	721000		254000
DROP INLET	EACH	1250		
OUTLET	EACH	1250		
•••••••••••••••••••••••••••••••••••••••				
CABION DRAINAGE	Cu.M	178 368	100	17800
	L.H.			
REINFORCING STEEL BAR	Kg.	6.43		•
	 			*****

Construction cost - 14	(STA.	204.07	*****	€~~~~ <u>₩~~₩~</u> ₩~₩~₩~₩~₩~₩~₩~₩~₩~₩~₩~₩~₩
		201493 011T	7 - 202+60	)
DESCRIPTION .	VIIIT	PRICE	QUANTITIES	DIRECT COST
	Cu.K	20.8		
ENDARGAENT	Cu.M	13.05		
STRUCTURE EXCAVATION	Cu.H	61	540	32040
CONCRETE PAVE1ENT (t=230 m)	L.H	1428		
SIDE DITCH	L.H.	433	170	
GUARD RAIL	L.H	540	•	
PLANTATION WORK	L.H	11		
VZGETATION VORK	Sq.X	1		
SODDIKO	Sq.H	,		
RETAINING WALL GRAVITY TYPE (H= 5.0 r)	L.K	4700	145	681500
-d6- (H= )	T'H			
STONS KASCHRY FOR WATERWAY (H= 4.0 m)	T'H.	1610	-280	459200
-do- (H= )	L.H			
-do- (H= )	L.H.			
CONCRETE PIPE Ø	L.H		1	
do Ø	LH		· · · ·	
CONCRETS FOR SABO	Cu.K	233	360	263880
CONCRETE FOR RIVER BED	Cu.h	645		
GROVIED RIPRAF	Cu.ti.	384		-
FERCE FOR FALLING ROCK	L,H	6150	· ·	· ·
BRIDG3	L.S			
CONCRETE BOX CULVERT	L ₄ ri	1		
DROP INLE?	EACH	1250	}	
onifei	EACH	1250	· · · · · ·	· ····
GABION	Cu,fi	178	110	19580
DRA INAGE	L.H	368	÷	
KEINPURCING STEEL BAR	Kg.	6.43		
POTAL				₽ 1,530,710

DECODITION		203 + 787   UNIT		
DESCRIPTION . CUT	UNIT Cu.M		PUANTITIES	DIRUCT COST
EMBANKMENT	Cu.N	20.8		
STRUCTURE EXCAVATION		13.05	700	
CONCRETE PAVEMENT (t=230 p)	Cu.H L.H	61 1428	375	22875
SIDE DITCH	·L.H.	433		
GUARD RAIL	L.H	540	•	
PLANTATION WORK	L,H	1		
VZGETATIČI MORK	Sq.H	1		
SODDING	Sq.H			
RETAINING WALL GRAVITY TYPE (H= )	L.K			€
-d8- (X= )	L.H	· · · · · · · · · · · · · · · · · · ·		
STONE HASOIRY FOR HATERWAY (H= 3.5 m)	LH	1440	83	119520
-do- (H= )	L,H			
-do- (X= )	LaN.			· •
concrete pipe ø	Ĺ,ĸ		· · · · · ·	· · · · · · · · · · · · · · · · · · ·
Ø	L.H	·		
CONCRETE FOR SABO	Cu.H	733	270	168590
CONCRETE FOR RIVER BED	Cu.h	645	42	27090
GROUTED RIPRAF	Ću.H	384		
FERCE FOR FALLING ROCK	L.H	6150		- 1 ⁻
BRIDGE	L.S			
CONCRETE BOX CULVERT	L.H			· · · · · · · · · · · · · · · · · ·
DROP INLET	EACH	1250		-
OVILET	EACH	1250		
GABION	Cu,n	178		
DRAINAGE	L,h	368	· ·	
REINFORCING STEEL BAR	Kg.	6.43	· · · · · · · · ·	

CONSTRUCTION COST - 16	(STA.2	2t + 950 -	205 + 150	)
DESCRIPTION	UNIT	UNIT PRICE		
CUT	Cu.H	20.8	<u>PUANTITIES</u>	
EMBARKHERT	Cu.H		32500	676000
STRUCTURE EXCAVATION	Cu.H	· ····································		
CONCRETE PAVEAENT (t=230 m)	L.N	<u>61</u> 1428		
SIDE DITCH			250	397000
GUARD RAIL	<u>L.H.</u> L.H	433	250 ·	108250
PLANTATION WORK		540	-	· · · ·
VZGETATION WORK	L.H Sq.M	1		
SODDING		1		
RETAINING WALL GRAVITY TYPE (H= )	Sq.H			
	L.H			
	L.H			· · ·
STONE HASOHRY FOR CUT (H= 4.0 D)	Litt	1310	180	235800
-do	Т'н.	1750	- 40	
<u>-do- (H= )</u>	L.K.	:		
CONCRETE PIPE Ø 1.20	L.H	1350	15	20250
-do- Ø	L.H			
CONCRETE FOR SABO	Cu.K	233		
CONCRETE FOR RIVER BED	Cu.h	645		
SPOULED RIPRAF	Cu.H	384		
FRICE FOR FAILLING ROCK	L.H.	6150		-
BRIDGE	L.S	-		
CONCRETE BOX CULVERT	L,H			
drop inler	EACH	1250	· 1 .	1250
Dutler .	EACH	1250		16,70
BABION	Cu,ri	178		
DRAINAGE	Lin	368	·	
KEINTORCING STEEL BAR	Kg.	6.43		•
	<u>  ''&amp;'`</u> 			•
				·····
TOTAL	ļ	·	ll	P 1,468,550

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CONSTRUCTION COST - 17	(STA.	T the second	- 207 + 50	0)
DESCRIPTION .	UNIT	UNIT PRICE	QUANTITIES	DIRECT COST
CUT	Cu.H	20.8	28/100	590720
EHBANKHENT	Cu.N	13.05	33500	438/180
STRUCTURE EXCAVATION	Cu.H	61	13300	.811300
CONCRETE PAVEHENT (t=230 m)	L.H	1428	700	9999600
SIDE DITCH	·L.H.	433	700	303100
GUARD' RAIL	L.H	540	,	
PLANTATION WORK	L.H	1		
VEGETATION WORK	Sq.H	25	13500	337500
SODDING	Sq .H			7
RETAINING WALL GRAVITY TYPE (H= 5.03)	L.N	4700	510	2397000
-d6- (K= 7.04)	L.H	2050	630	1291500
STORE HASORRY FOR HIBANGHAM (H= 5.0 m)	L.H	1750	50	87500
-do- (K= 4.00)	L,H	1430	300	429000
-do- (K= 3.0 H)	L.N.	1100	240	. 26/1000
Concrete Pipe ø	L.H			
-do- Ø	J.H			
CONCRETE FOR SABO or CHECK DAN	Cu.H	733	8850	6487050
CONCRETE FOR RIVAR BED	Ču, H	645		
GROUPED RIPRAF	Cu.H.	384		
FENCE FOR FALLING ROCK	L.fi	6150		
BRIDGE	L.S			
CONCRETE BOX CULVERT	L.H			
DROP INLET	EACH	1250		
OWLER	ЕАСН	1250		
GABION	Cu,fi	178		
DRAINAGE	L.H	368	500	73600
REINPORCING STEEL BAR	Kg	6.43		
				•
TOTAL	[		:	P 14,510,350

• .

210 + 700	)	}
UNIT PRICE		DIRECT COST
20.8	Providence and	
13.05	350	4568
61	603	48800
1428		10000
433	· · · · · · · · · · · · · · · · · · ·	•
540	,	
1		
1		······································
· · · · ·	600	600
		· · ·
1280	225	288000
	·	
850	17	14450
350	12	4200
233	20	14660
645	95	61275
384		-
6150		
1250	• 2 .	2500
1250	2	2500
178		
368 ·	·	
6.43		. •
	-	-
		₽ 441,553

CONSTRUCTION COST - 19	(STA.	213 + 400	- 550	)
DESCRIPTION	UNIT	UNIT PRICE	QUAINTITIES	DIRECT COST
СИТ	Ċu.H	20.8	.3700	76960
EMBANKSENT	Ċu,N	13.05		
STRUCTURE EXCAVATION	Cu.H	61	The second	
CONCRETE PAVEHENT (t=230 m)	L.H	1428	160	228480
SIDE DITCH	L.H.	433		
GUARD RAIL	L.H	540		
PLANTATION WORK	<b>Г</b> .Н	1		
VZGETATION WORK	Sq.H	1	-	· 
SODDING	Sq.H		1	
RETAINING WALL GRAVITY TYPE (H= )				
-do (H= )				
STONE HASOHRY FOR EXBANKAENT (H= 3.0 0)	L.H	1100	150	165000
-do- FOR CUT (H= 5.0 m)	L.H	1600	110	126000
-do- (K= )	L.H.			
CONCRETE PIPE Ø	L H			•
-do- Ø	L.H	· · · · ·		
CONCRETE FOR SABO AND GROUND SILL	Cu.H	233	110	80630
CONCRETE FOR RIVAR BED	Cu.łi	645		XXX
GROUTED RIPRAT	Cu.H	384		
FERCE FOR FALLING ROCK	L.H	6150		
BRIDGE	L.S			
CONCRETE BOX CULVERT	L.H			<del></del>
DROP INLET	ЕАСН	1250	1.	
OUTLER	ЕАСН	1250	·	·
GABION	Cu,H	178		
DRAINAGE	L.H	368	· 66	24283
REINFORCING STEEL BAR	Kg.	6.43	00	
				•
TOTAL				2 751358

CONSTRUCTION COST - 20	(STA.	216 + 720	- 880	)
DESCRIPTION .	UNIT	UNIT PRICE	QUANTITIES	
CUT	Cu.H	20.8	1800	YVVA-
EHBANKAENT	Cu.H	13.05	7/100	<u> </u>
STRUCTURE EXCAVATION	Cu,H	61		<u></u>
CONCRETE PAVENERT (t=230 m)	L.M	1428		
SIDE DITCH	· L.H.	433		
GUARD RAIL	L.H	540		
PLANTATION WORK	L,H	1		
VEOETATION WORK	Sq.H			:
SODDING	Sq.H			
RETAINING WALL GRAVITY TYPE (H=	) L.K	•		
-d0- (X=	) L.H			· · ·
STONE HASORRY FOR WATERANY (H= 4.0	) L.H	16/10	170	278800
-do- (H=	) L.H.			<u> </u>
-do- (H=	) L.K.	1		   
concrete PIPE Ø	L,H			· ·
-do- Ø	1.11	- <b> </b>		
CONCRETE FOR SABO	Cu.H	233		
CONCRETE FOR RIVER BED .	Cu.n	645		
GROUPED RIPRAF	Cu.H	-		
FENCE FOR FALLING ROCK	L.H	6150		
BRIDGE	L.S			
CONCRETE BOX CULVERT	L,ti	·		
DROP INLET	FACH	1250		
outlex	EACH	1250		
GABION	Cuit	178	32'1	57672
DRAINAGE	L.n	368	· ·	······
REINFORCING STEEL BAR	Kg.	6.43		- `
	Ì			E
TOTAL				- h45 - 260
	Į	+		2 416,282

CONSTRUCTION COST - 21	(sta. 2	217 + 250		)
DESCRIPTION .	<u> Wiit</u>	UNIT		DIRECT COST
CUT	Cu,H	20.8		
EHBANKSEZIT	Cu.H	13.05		
STRUCTURE EXCAVATION	Cu.H	61	870	53070
CONCRETE PAVEMENT (t=230 m)	L.M	1428		
SIDE DITCH	L.N.	433		······································
GUARD RAIL	L.H	540		······································
PLANTATION WORK	L.H	1	· · · · · · · · · · · · · · · · · · ·	••••••••••••••••••••••••••••••••••••••
VEGETATION WORK	Sq.H	25	34:00	85000
SODDING	Sq.H			
RETAINING WALL GRAVITY TYPE (H= 5.0 A	L.H	4700	105	• 493500
-db- (K= 3.0 ;)	I,∎H	2050	60	123000
STONE HASONRY FOR EMBANKHENT (H= 2.05)	L.H	700	200	158000
-do- (H= )	L.H		-	······································
-do- (X= )	L.H.			
Concrete PIPE Ø	L.H			••••••••••••••••••••••••••••••••••••••
-do Ø	L.H			
CONCRETE FOR SADO	Ĉu.H	233		
CONCRETE FOR RIVER BED	Cu.ii	645		
GROUTED RIPRAF	Cu.H	384		- · · · · ·
FRICE FOR FALLING ROCK	Ĺ,H	6150		-
BRIDGE	L.S	•		
CONCRETE BOX CULVERT	L.H			
DROP INLET	FACH	1250	•	
outles ·	EACH	1250	· · · · · · · · · · · · · · · · · · ·	······
GABION	Cu,fi	178		
DRAINAGE	L.H	368	•	
REINFORCING STEEL BAR	Kg.	6.43		· · · · · · · · · · · · · · · · · · ·
				•
TOTAL				P 912,570

CONSTRUCTION COST - 22	(STA.	219 + 400	and the second	)
DESCRIPTION	UNIT	WIT		
CUT	Cu.H	PRICE	1 (	DIRECT COST
EMBANKAENT	Cu.H	20.8	1700	35360
STRUCTURE EXCAVATION		13.05	╉╍╍╍╍┥	
CONCRETE PAVEHENT (t=230 m)	Cu.H L.H	61 1428		
SIDE DITCH	<u>-</u>		·	
GUARD RAIL	<u>.</u> Г'ң	<u>433</u> 540		
PLANTATION WORK				
VEGETATION WORK	L.H Sq.H	1		
SODDING		25	0030	170000
RETAINING WALL GRAVITY TYPE (H= 5.0 m)	<u>Sq.н</u> L.н	4700		•
-d6- (H= )	L.H	-1/00	180	- 346000
STONE HASOHRY FOR EMBAKKEDT (H= 9:0 g)				
-do- (H= )	L.H L.H	1430	470	672100
-do(H=)				
CONCRETE PIPE Ø	<u>р.н.</u> Г.н			
-do- Ø			{	
CONCRETE FOR SABO	L.K Cu.H		<u>├</u>	·
CONCRETE FOR RIVER BED		_733 645	<u></u> -	
GROUPED RIPRAF	Cu ₂ h Cu ₂ h	<u> </u>		······································
FENCE FOR FALLING ROCK		504 6150		
BRIDGE	L.H. L.S			-
CONCRESS BOX CULVERT				·
DROP INLET	L.H EACH	1250	<u>├</u> ────┼	
ovilet	·	1250	-	- 
GABIO!!	FACH	1250		
DRAINAGE	Си,н L.н	178 368		
•		6.43	<u> </u>	
REINFORCING STEEL BAR	Kg.	0,43		*
				······································
TOTAL				2 1,723,460

CONSTRUCTION COST - 23 (STA. 220 + 550 - 220 + 900)				
		UNIT		
DESCRIPTION .	UNIT	PRICE	PUAITITIES	DIRECT COST
CUT	Cu.H	20.8	· • • • • • • • • • • • • • • • • • • •	·
EHBANKHENT	Cu.M	13.05	1250	16313
STRUCTURE EXCAVATION	Cu.H	61	8800	. 536800
CONCRETE PAVEAENT (t=230 b)	Ъ.Н	1428		•
SIDE DITCH	· L.H.	433		
GUARD RAIL	L.H	540		
PLANTATION WORK	L.H	1		
VEGETATION WORK	Sq.H	1		
SODDING	Sq.H	í		
RETAINING YALL GRAVITY TYPE (H= )	L.K			
d6- (H= )	L.H			
STONE HASOHRY FOR HATERWAY (H= 4.0 D)	LH	1640	240	373500
-do- (H= 2.0 n)	L.H	920	. 70	6/400
-do- (X= )	L.8			
Concrete Pipe ø	L.H			•
do- Ø	L.H			
CONCRETE FOR SABO	Cu.H	_733	980	718310
CONCRETE YOR RIVER BED	Cu,h	645		
GROUTED RIPRAF	Cu.H.	384		•
FENCE FOR FALLING ROCK	L.H.	6150		•
BRIDGE	L.S			· · · · · · · · · · · · · · · · · · ·
CONCRETE BOX CULVERT	Leit			
DROP INLET	EACH	1250		
owner	EACH	1250		
CABION:	Cu.A	178	1450	258100
DRAINAGE	L.H	368 ·	•	
REINFORCING STEEL BAR	Kg.	6.43		
ŤOTAL				P 1,987,553