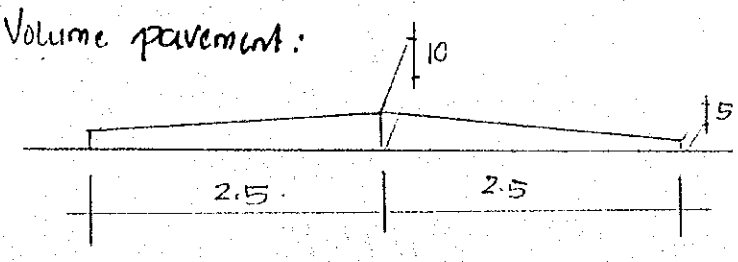
Name of Structure		Category of calculation		Page	

IV. PAVEMENT.

Volume pavement :



$A = (0.10 + 0.05)/2 * 2.5 * 2 = 0,375\ m^2$.

L : 8.30 m.

Volume : $8.30 * 0.375 = 3.113\ m^3$.

V. PVC Drainage pipe :

Pvc ø 10 cm.

- length : : 0,90m.
- Number of Hole : 6 nos.
- total length : $0.90 * 6 = 5.4$ m.

VI. Hand rail : $2 * 8.30 = 16.6$ m.

VII. Expansion joint : 12m. (4x2)

VIII. Bearing shoe : 12 nos.

Name of Structure		Category of calculation		Page	

DRAFT VOLUME

SIMONGAN BRIDGE NO:6

(RC)

SPAN 13.00 m.

1. CONCRETE VOLUME

2. REINPORCEMENT BAR.

THE SUMMARY TABLE of SUPERSTRUCTURE

NAME and KIND			Concrete 400 m3	Concrete 200 m3	Reinforcement kg	PC cable 7T12.7 kg	PC cable 12T12.7 kg	PC cable 1T12.5 kg	Form m2	pavement m3	Expansion joint m	Road rail m	Drain pipe m	Bearing shoe size mm	Bearing shoe Number	Note
Spillway	1	Pc														
Gua kureo	1	Rc														
	2	Rc														
	3	Rc														
	4	Rc														
	total															
simon weir	1	Rc														
	2	Pc														
	3	Pc														
	4	Pc														
	5	Rc														
	6	Rc	-	46.25	8.645	-	-	-	292.5	4.883	12.80	26.00	9.20	268/316	12	-
	7	Rc														
	total															
Asin	no1	Pc														
	no2	Pc														
	pump	Pc														
	total															
SYNTHETIC TOTAL																

Name of Structure	SIMONGAN RC BRIDGE NO 6. 130m.	Category of calculation	CONCRETE VOLUME / REINF.	Page	

SUMMARY OF BILL QUANTITY.

SIMONGAN BRIDGE NO. 6.

I. CONCRETE.

1. SLAB	:	21.457 m^3.
2. BEAM	:	22.818 m^3
3. DIAPHRAGM	:	1.975 m^3
	Σ :	46.25 m^3.

II. REINFORCEMENT.

1. BEAM.	:	5865 kg.
2. DIAPHRAGM	:	188 kg.
3. SLAB.	:	2035 kg.
4. CURB.	:	586 kg
	Σ :	8674 kg.

III. Form.

1. Beam.	:	164.85 m^2.
2. Diapphagm	:	20.70 m^2.
3. Slab	:	76.034 m^2.
4. Curb	:	30.472 m^2.
	Σ :	292.056 m^2

Name of Structure	SIMONGAN RC BRIDGE NO 6.	Category of calculation	RESUME.	Page	

IV. PAVEMENT. : 3.4 m^3.

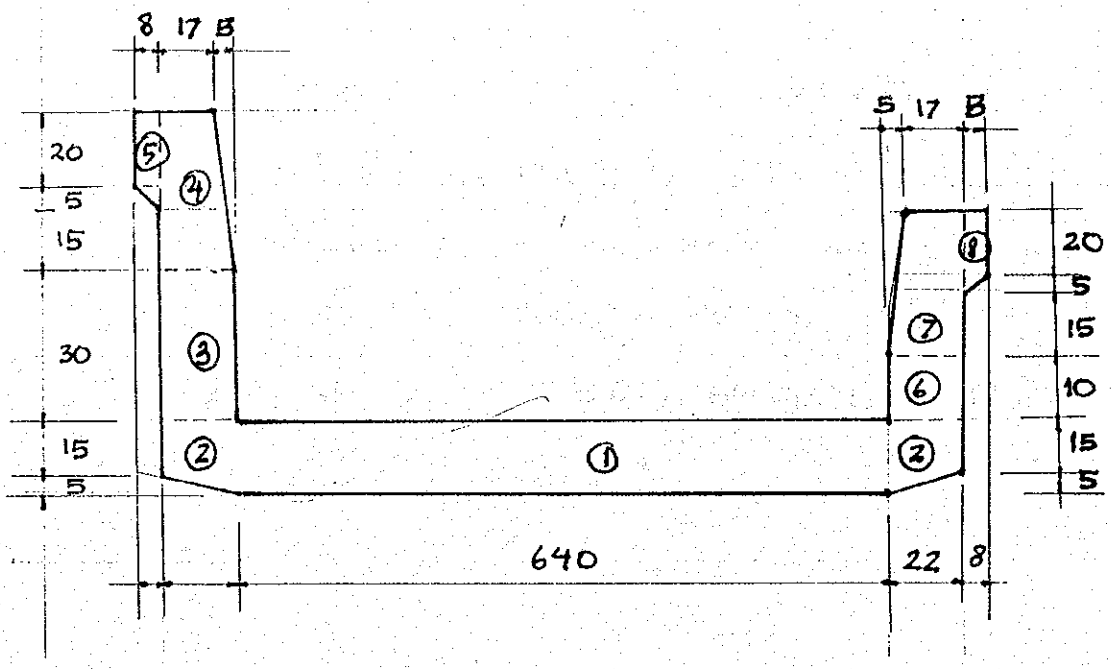
V. PVC PIPE ø 10 cm : 5.7 m.

VI. HAND RAIL : 18.02 m.

VII. EXPANSION JOINT. : 12.8 m ←

VIII. BEARING SHOE : 12 nos.

Name of Structure	SIMONSEN RC 13.50 m BRIDGE	Category of calculation	CONCRETE VOLUME.	Page	1.



CONCRETE VOLUME

1) SLAB :

1. $0.20 * 6.40 = 1.280\ m^2$
2. $(0,15 + 0.20)/2 * 0.22 * 2 = 0.077\ m^2$

total: $1.357\ m^2$. ✓

3. $0.22 * 0.35 = 0.077\ m^2$.
4. $(0,17 + 0.22)/2 * 0.40 = 0,078\ m^2$.
5. $(0.20 + 0.25)/2 * 0.08 = 0,018\ m^2$.
6. $0.10 * 0.22 = 0.022\ m^2$
7. $(0,17 + 0.22)/2 * 0.40 = 0.078\ m^2$
8. $(0.20 + 0.25)/2 * 0.08 = 0,018\ m^2$

$0,291\ m^2$.

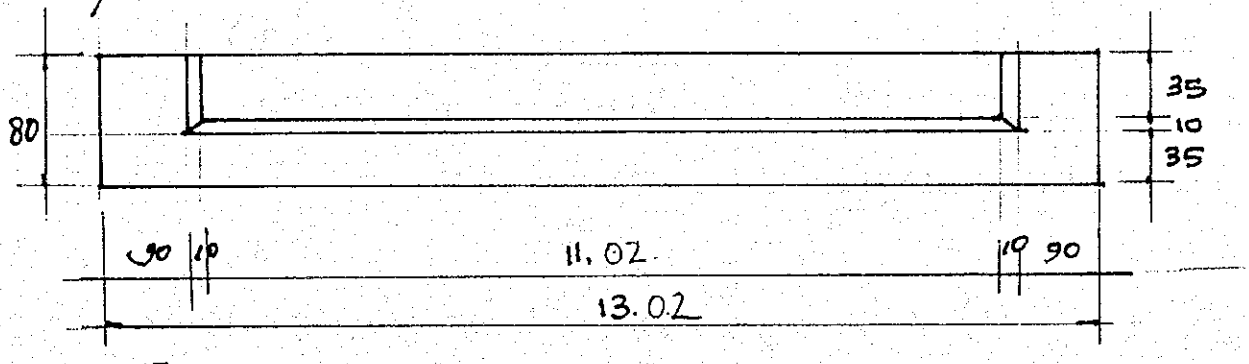
total: $1.648\ m^2$!

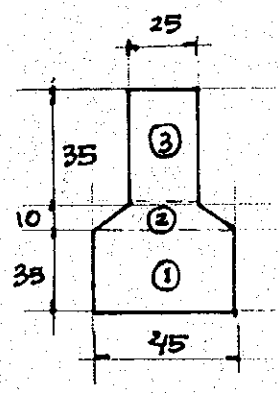
Name of Structure	SIMONGAN RC 13.5 BRIDGE.	Category of calculation	CONCRETE VOLUME.	Page	2

Total of spans : 13.0 m.

Volume : 13.02 * 1.648 = 21.457 m^3.

2) BEAM :





BEam Centre :

① 0.45 * 0.35 = 0.158 m^2.

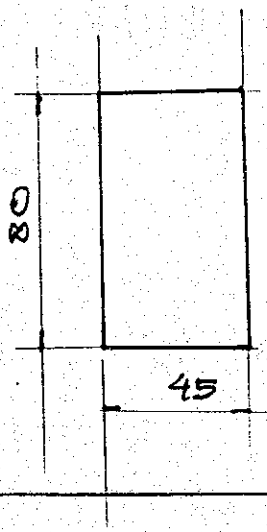
② (0.25 + 0.45)/2 * 0.10 = 0.035 m^2.

③ (0.25 * 0.35 = 0.0875 m^2.

A_1 = 0.2805 m^2.

V_1 = 0.2805 * 11.02

= 3.091 m^3.



END BEAM.

A_2 = 0.80 * 0.45 = 0.36 m^2.

$V_2 = 0.36 * 0.90 + \frac{0.36 + 0.2805}{2} * 0.10 * 2$

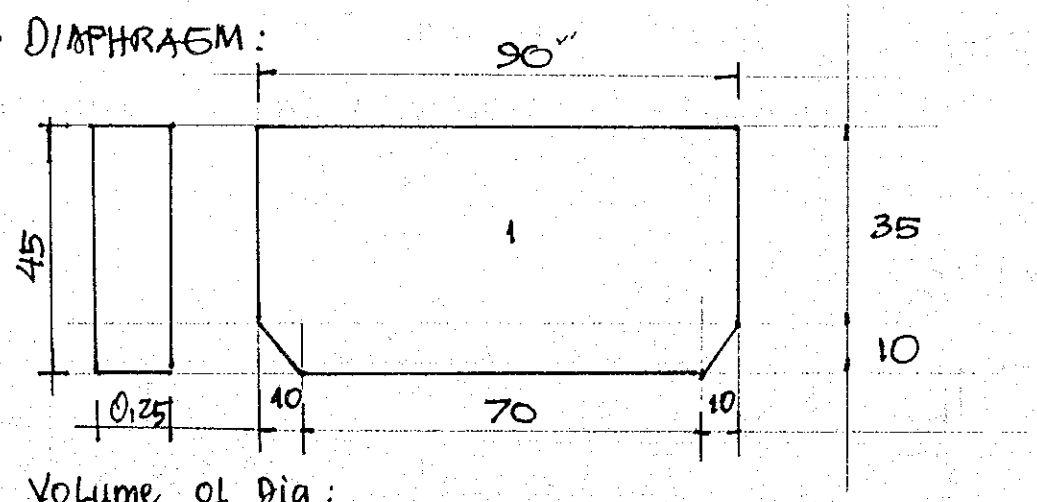
= 0.712 m^3

Total Volume Concrete Beam

$V_1 + V_2$ = 3.091 + 0.712 = 3.803 m^3

Name of Structure	SIMONGAN BRIDGE RC 13.50 m.	Category of calculation	CONCRETE VOLUME.	Page	3.

③ DIAPHRAGM:



Volume of Dia:

① $A = 0.90 * 0.45 - 0.5 * 0.1 * 0.10 * 2$

$= 0.395 m^2$.

Volume : 1 Dia : $0.395 * 0.25 = 0.098 m^3$.

number of Diaphragm : 20.

Volume of Diaphragm in bridge 13.50 m

$20 * 0.098 = 1.975 m^3$

Total Volume Of Concrete In Bridge Superstructure:

1. Slab and Curb = 21.457 m^3
2. Beam. $6 \times 3.803 = 22.818 m^3$
3. Diaphragm = 1.975 m^3.

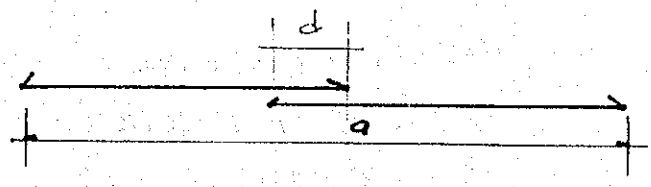
Total : 46.25 m^3.

Name of Structure	SIMONGAN BRIDGE 13.00	Category of calculation	REINFORCEMENT VOLUME.	Page	1.

BRIDGE REINFORCEMENT.

BEAM :

B1



a : 1296 cm hook : 30.0

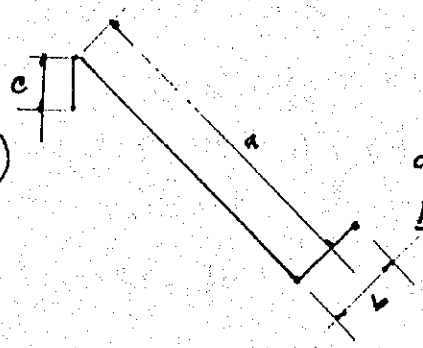
d : 150 cm

total length a + d + hook.

= 1296 + 150 + 30 = 1476 cm.

↳ 14.76 m.

B2



a = 125 cm c : 37.5 cm

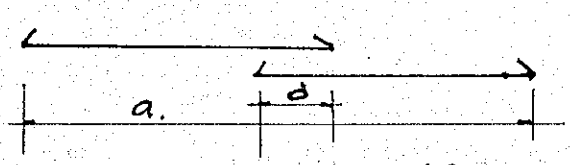
b = 25 cm Hook: 15 cm.

total length a + b + c + hook.

125 + 25 + 37.5 + 15 = 2025 cm.

↳ 2.025 m.

B3



a = 1344 cm. hook : 12 cm.

d = 150 cm

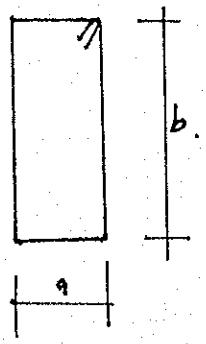
total length : a + d + hook.

= 1296 + 150 + 12 = 1458 cm.

↳ 14,58 m.

Name of Structure	SIMONGAN RC BRIDGE 13.50m.	Category of calculation	REINFORCEMENT VOLUME.	Page	2

B4



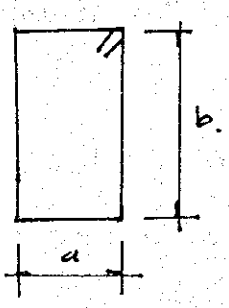
a = 19 cm. Hook : 12 cm.
b = 94 cm.

total : 2*a + 2b + Hook.
= 2*19 + 94*2+12 : 238 cm.
↳ 2.38 m.

B3'

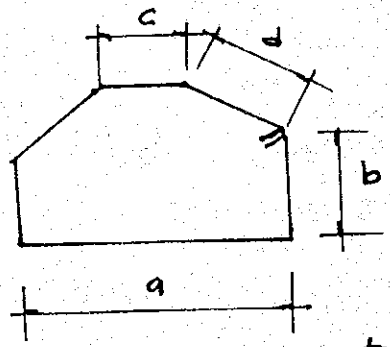
a = 84 cm. Hook : 6 cm.
total a + hook.
84 + 6 = 90 cm
↳ 0,90 m.

B4'



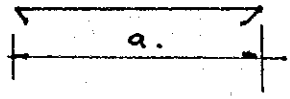
a = 39 cm hook : 12 cm.
b = 94 cm
total length : 2 a + 2b + hook.
= 2 * 39 + 2 * 94 + 12
= 278 cm ↳ 2.78 m.

B5



a = 39 cm. d = 14.00 cm.
b = 29 cm. hook = 6 cm.
c = 19 cm
total length a + 2b + c + 2d + hook
39 + 2 * 29 + 19 + 2 * 14 + 6
= 150 cm ↳ 1.50 m

(B6)



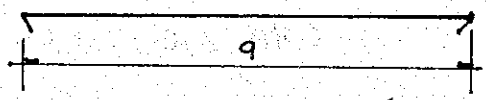
a = 39 cm Hook = 6 cm.

total length: 39+6 = 45 cm

↳ 0,45 m.

DIAPRHAGM

(D1)



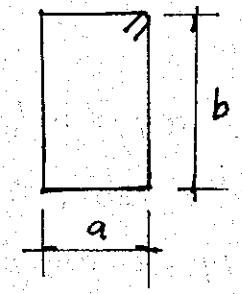
a = 619 cm. hook: 11.40

total length: a + hook.

= 619 + 11,4 = 630,4 cm.

↳ 6.304 m.

(D2)



a = 19.0 cm. b = 39.00 cm. hook = 6cm.

total length

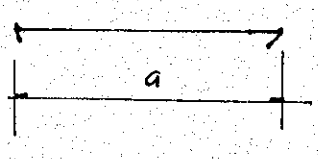
a *2 + b*2 + Hook.

= 19*2 + 39*2 + 6 = 122 cm.

↳ 1.220 m.

SLAB:

(T1a)



a = 678 cm. Hook: 7.2cm.

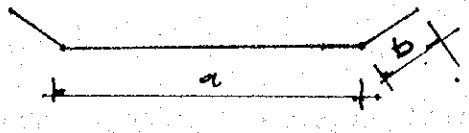
total length: a + hook.

= 678 + 7.2 = 685.2 cm.

= 6.852m.

Name of Structure	SIMONGAN RC BRIDGE 13.50 m.	Category of calculation	REINFORCEMENT VOLUME.	Page	4

Tub.



a = 634 cm hook : 7.2 cm.

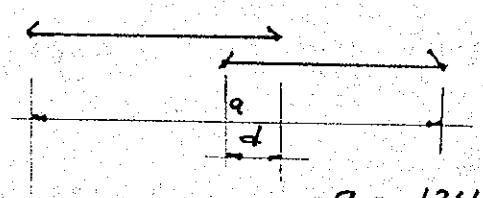
b = 24 cm.

total length : a + 2b + hook

= 634 + 2 * 24 + 7.2

= 689.2 cm. ↳ 6.892 m.

Tp



a = 1344 cm d = 150 cm

hook : 7.2 cm.

total length : a + d + hook.

= 1296 + 150 + 7.2

= 1453.2 cm ↳ 14.532 m.

Name of Structure	SIMONGAN RC BRIDGE	Category of calculation	REINFORCEMENT VOLUME	Page	5.

LEFT GURB.

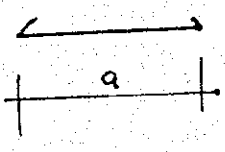
S1

Length

a : 220 hook 7.2.

total length : 2.272 m.

S2

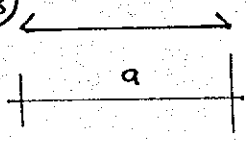


a : 16 cm hook 6 cm.

Total length : 22 cm

↳ 0.22 m.

S3



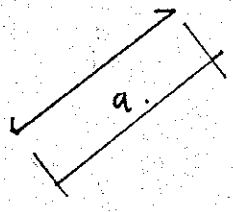
a = 1296 cm.

hook : 9.6 cm.

total length : 1296 + 9.6 = 1305.6

↳ 13.056 m.

S4



a = 50 cm. hook = 7.2 cm.

= 57.2 cm ↳ 0.572 m.

RIGHT SLAB.

S_1' = a = 170 hook 7.2 ⇒, L = 1.772 m.

S_2' = a = 16 cm hook = 6cm, L = 0.22 m.

S_3' = a : 1296 hook - 9.6, L = 13.06 m.

S_4' = a = 50 cm hook 7.2, L = 0.572 m.

REINFORCEMENT BAR OF SIMONGAN RC BRIDGE ⇒ 13.50 m.

REINF NO	DIA	TYPE	BENDING DIMENSION (cm) a	b	c	d		TOTAL LENGTH (m)	WEIGHT (kg/m)	NUMBER	NO OF BEAM	TOTAL WEIGHT (kg).	REMARK
	25	B_1	1296	-	-	150	30	14.76	3.850	11	6	3751	
	25	B_2	125	25	37.5	-	15	2.025	3.850	4	6	187	
	10	B3	1296	-	-	150	12	14.58	0,616	4	6	216	
	10	B3'	84	-	-	-	6	0.70	0,616	4	6	11	
BEAM	10	B4	19	94	-	-	12	2.38	0,616		6	765	
	10	B4'	39	94	-	-	12	2.78	0,616	26	6	267	
	10	B5	39	29	19	14	6	1.50	0,616	87	6	482	
	10	B6	39	-	-	-	6	0.45	0,616	111	6	186	
													5865
DIAFHR.	16	D_1	619				11.40	6.30	2.224	6	5	84	
	10	D2	19	39	-	-	6	1.122	0,616	30	5	104	
													188
SLAB.	12	T_{ua}	678				7.2	6.852	0,887	131	1	796	
	12	T_{ub}	634	24			7.2	6.892	0.887	131	1	801	
	12	T_P	1296			150	7.2	14.532	0.887	34	1	438	
													2035.
CURB.	12	S_1	220	-	-	-	7.2	2,272	0,887	66	1	133	
	10	S_2	16	-	-	-	6	0.220	0,616	198	1	26	

Name of Structure: SIMONGAN RC BRIDGE SPN 13.5m.
Category of calculation: CONCRETE REINFORCEMENT
Page: 6

REINFORCEMENT BAR OF SIMONGAN RC BRIDGE => 13.50 m.

REINF NO	DIA	TYPE	BENDING DIMENSION (cm) a	b	c	d	TOTAL LENGTH (m)	WEIGHT (kg/m)	NUMBER	NO OF BEAM	TOTAL WEIGHT (kg).	REMARK
	12	S_3	1296	-	-	-	9.6	13.06	0.887	9	1	133	
	12	S_4	50	-	-	-	7.2	0.572	0.887	67	1	34.	326
RIGHT	12	S_1'	170	-	-	-	7.2	1.772	0.887	66	1	104	
CURB.	10	S_2'	16	-	-	-	6	0.220	0.616	132	1	18	
	12	S_3'	1296	-	-	-	9.6	13.036	0.887	9	1	104	
	12	S_4'	50	-	-	-	7.2	0.572	0.887	66	1	34	260
											TOTAL ~~8675~~	
											8674	

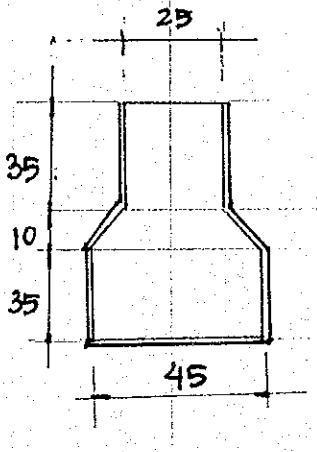
Name of Structure: SIMONGAN RC BRIDGE 13,50 m
Category of calculation: CONCRETE REINFORCEMENT
Page: 7

3-474

Name of Structure	SIMONEAN BRIDGE SPAN 13.50 m.	Category of calculation	FORM WORK VOLUME.	Page	1.

FORM WORK :

(1.) BEAM :



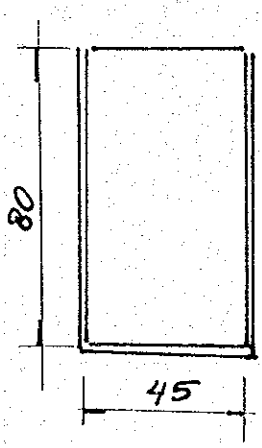
CENTRE OF BEAM:

$L = 0.35 * 2 + \sqrt{(0.10^2 + 0.10^2)} + 0.35 * 2 + 0.145 = 1.991\ m \simeq 2.00\ m.$

Length of Beam centre = 11.50 m.

$A_1 = 11.02 * 2.00 = 22.04\ m^2.$

END OF BEAM.



$L = 0.80 * 2 + 0.45 = 2.05\ m$

Length : 1.15 m.

$A_2 = 1.15 * 2.05 * 2 = 4.715\ m^2$

END SIDE BEAM.

$A_3 = 0.45 * 0.8 * 2 = 0.72\ m^2$

$\Sigma = 27.475\ m^2$

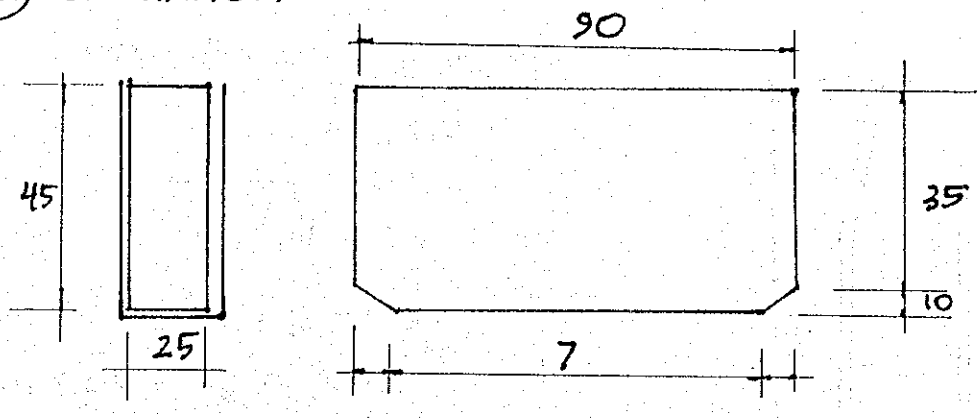
Number of Beam : 6.

Volume Of Form at Beam :

$27.475 * 6 = 164.85\ m^2.$

Name of Structure		Category of calculation		Page	

② DIAPHRAGM :



L = 0.45 * 2 + 0.25 = 1.15 m.

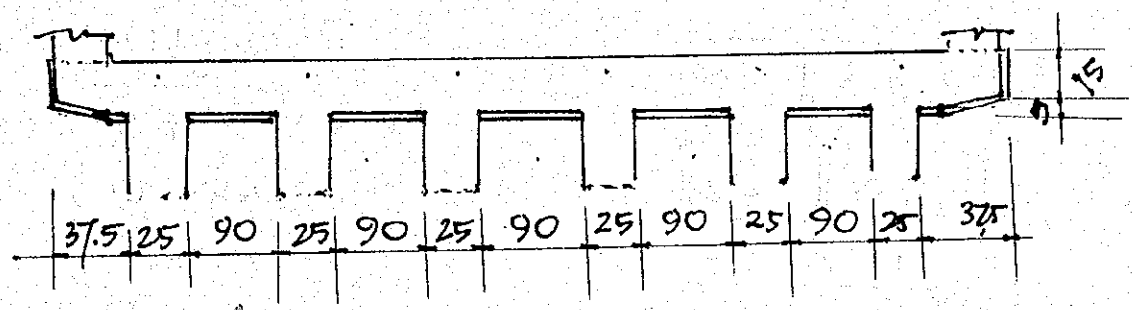
Length of Beam : 0.90 m.

A = 1.15 * 0.90 = 1.035 m^2.

Number of Beam : 20.00

Volume of form : 20 * 1.035 = 20.70 m^2.

③ SLAB.



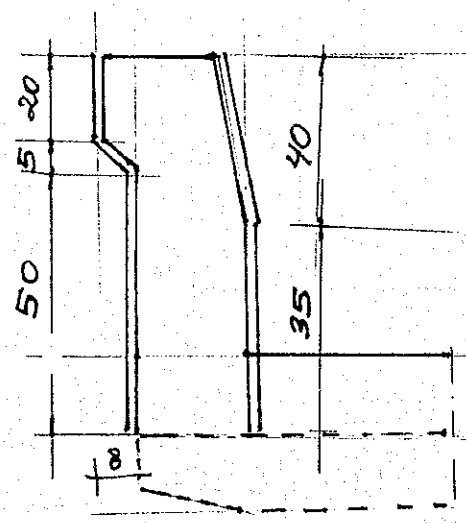
L = (15 + 22.56 + 29.5)*2 + 90 * 5 = 584.12 cm.

length of = 13.02 m.

Volume of Form : 13.02 * 5.84 = 76.034 cm^2.

Name of Structure		Category of calculation		Page	

LEFT HAND RAIL



$L_1 = 20 + \sqrt{5^2 + 8^2} + 50$

$= 0.79$ m.

$L_2 = 35 + \sqrt{5^2 + 40^2}$

$= 0.5031$ m.

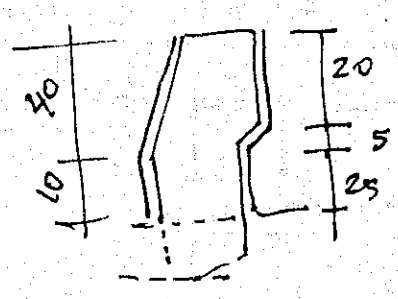
$L = L_1 + L_2 = 1.293$ m.

length Bridge = 13.02

$A = 1.293 * 13.02 =$

16.84 m^2.

RIGHT HAND RAIL



$L_1 = 20 + \sqrt{5^2 + 8^2} + 25$

$= 0.544$ m.

$L_2 = \sqrt{5^2 + 40^2} + 10$

$= 0.503$ m.

$L = 1.047$.

$A = 1.047 * 13.02$

$= 13.63$ m^2.

Total Form of Bridge:

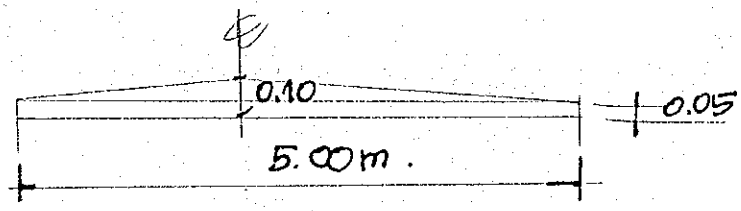
(1.) Beam : 164.85 (3.) kerb : 30,472 total:

(2.) Slab : 76.034 (4.) diaphragm : 20,70

292.05 m^2.

Name of Structure	SIMONSEN RC 13.50m BRIDGE	Category of calculation	Pavement Volume.	Page	4.

4) Pavement :



Volume : $\frac{0,10 + 0.05}{2} * 2.5 * 2 = 0,375\ m^2$.

L = 13.02 m .

Volume : 13.02 * 0,375 = **4.883 m^3**

5) Drainage pipe :

Pvc ∅ 10 cm .

Length : 0,25 + 0.90 = 1,15 m

Number of hole Drainage : 8 hole .

total length of pipe : 8 * 1,15 = 9,20 m .

6) Hand rail :

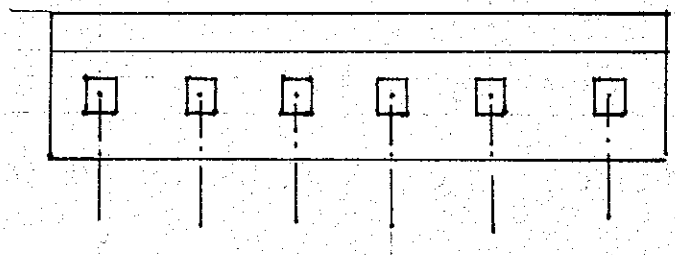
13.02 * 2 = 26.00 m .

Name of Structure	Simongan 13.5m RC Bridge.	Category of calculation	Expansion Joint.	Page	5

7) Expansion Joint :

2 * 6.40 = 12.80 m.

8) Bearing Shoe :



Size : 268 * 316 mm.

Number : 2 * 6 = 12 nos.

Name of Structure		Category of calculation		Page	

DRAFT VOLUME

SIMONGAN RC BRIDGE NO 7.

9.00 m.

1. CONCRETE VOLUME

2. REINFORCEMENT BAR.

THE SUMMARY TABLE of SUPERSTRUCTURE

NAME and KIND			Concrete 400 m3	Concrete 200 m3	Reinforcement kg	PC cable 7T12.7 kg	PC cable 12T12.7 kg	PC cable 1T12.5 kg	Form m2	pavement m3	Expansion joint m	Road rail m	Drain pipe m	Bearing shoe size mm	Bearing shoe Number	Note
Spillway	1	Pc														
Gua kureo	1	Rc														
	2	Rc														
	3	Rc														
	4	Rc														
	total															
simon weir	1	Rc														
	2	Pc														
	3	Pc														
	4	Pc														
	5	Rc														
	6	Rc														
	7	Rc		27.108	5.673				175	3.4		18.02		218*316 x 24	12	
	total															
Asin	no1	Pc														
	no2	Pc														
	pump	Pc														
	total															
SYNTHETIC TOTAL																

Name of Structure		Category of calculation		Page	

SUMMARY OF BILL QUANTITY.

I. CONCRETE

1. Slab	= 14.832	m^3.
2. Beam	= 11.316	m^3.
3. Diaphragm	= 0.96	m^3.
	Σ = 27.108	m^3.

II. REINFORCEMENT.

1. Beam	= 3361	kg.
2. Diaphragm.	= 303	kg.
3. Slab	= 1671	kg.
4. Curb	= 338	kg.
	Σ = 5673	kg.

III. FORM WORK.

1. Beam	= 91	m^2.
2. Diaphragm	= 12.15	m^2.
3. Slab	= 50.02	m^2.
4. Curb	= 21.063	m^2
	Σ = 174.233	m^2.

IV. Pavement : 3.4 m^3

V. PVC pipe ϕ 10 cm : 5.70 m

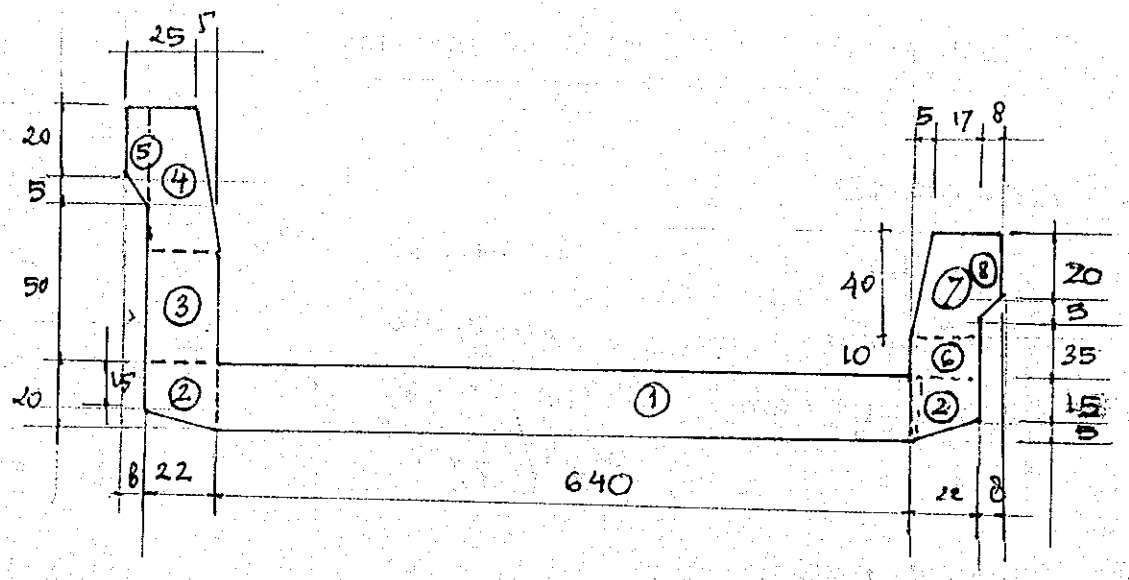
VI. Hand rail = 18.02 m.

7. Expansion joint : 12.8 m.

8. Bearing sho = 12 nos.

Name of Structure	SIMONGAN RC BRIDGE 9.00m	Category of calculation	CONCRETE VOLUME	Page	1.

CONCRETE VOLUME



1. CONCRETE SLAB.

1. 0.20 * 6.40 = 1.280 m^2 ✓
2. (0.15 + 0.20)/2 * 0.22 * 2 = 0.077 m^2 ✓

total : 1.357 m^2

3. 0.22 * 0.35 = 0.077 m^2 ✓
4. (0.17 + 0.22)/2 * 0.40 = 0.078 m^2 ✓
5. (0.20 + 0.25)/2 * 0.08 = 0.018 m^2 ✓
6. 0.10 * 0.22 = 0.022 m^2 ✓
7. (0.17 + 0.22)/2 * 0.40 = 0.078 m^2 ✓
8. (0.20 + 0.25)/2 * 0.08 = 0.018 m^2 ✓

total : 0.291 m^2

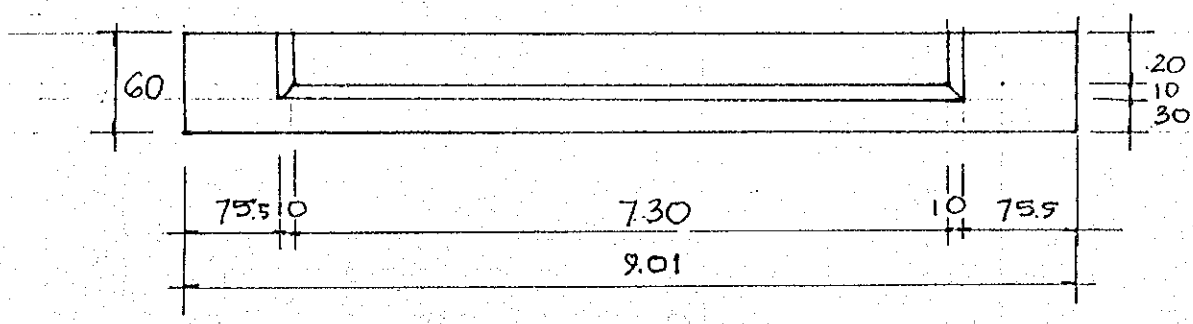
Σ tot = 1.648 m^2.

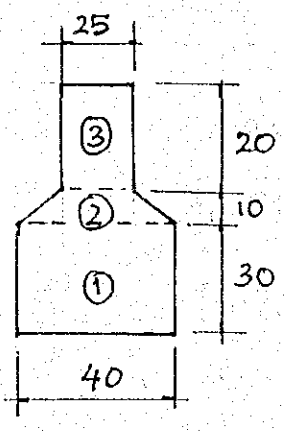
Span of Slab = 9.00 m.

Volume of Slab : 1.648 * 9.00 = 14.832 m^3 ✓

Name of Structure	SIMONGAN RC BRIDGE 9.00m.	Category of calculation	CONCRETE VOLUME.	Page	2

2. BEAM :





BEAM CENTRE.

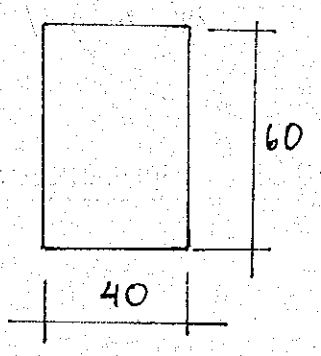
① 0.40 * 0.30 = 0,120 m²

② (0,4+0,25)/2 * 0.10 = 0,033 m²

③ 0.25 * 0,20 = 0,050 m²

A1 = 0,203 m²

V_1 = 0,203 * 7.30 = 1.482 m³



END BEAM

A2 = 0,40 * 0,60 = 0,24 m²

V2 = 0,24 * 0,75 * 2 = 0,360 m³

$\frac{0,24 + 0,203}{2}$ * 0,1 * 2 = 0,044 m³

V2 = 0,404.

Total volume of Concrete beam :

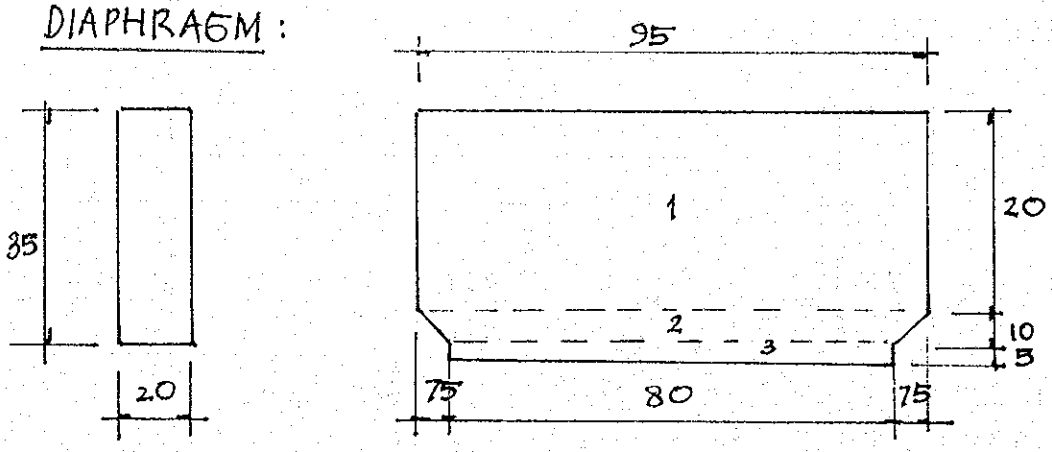
$V_1 + V_2$ = 1,482 + 0,404 = 1.886 m³.

Number of Beam : 6

Volume total : 6 * 1.886 = 11.316 m³

Name of Structure	SIMONGAN RC BRIDGE 9.00	Category of calculation	CONCRETE VOLUME	Page	3

DIAPHRAGM :



① 0.20 * 0.95 * 0.20 = 0.038 m³.

② $\frac{(0.95 + 0.80)}{2}$ * 0.10 * 0.20 = 0.018 m³

③ 0.85 * 0.80 * 0.20 = 0.008 m³

0.064 m³

number of Diafragm : 15

Volume of Diaphragm : 15 * 0.064 = 0.96 m³.

TOTAL VOLUME OF CONCRETE IN BRIDGE SUPERSTRUCTURE

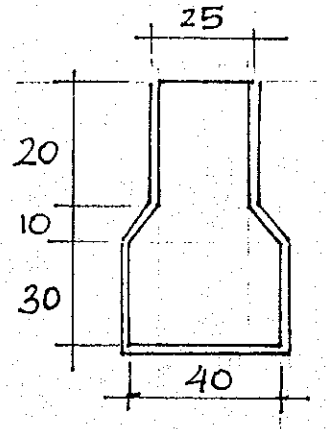
1. Slab and Curb : 14.832
2. Beam : 11.316 m³
3. Diaphragm : 0.96 m³

Σ Concrete : 27.108 m³

Name of Structure	SIMONGAN BRIDGE SPAN 9.00 M.	Category of calculation	FORM WORK.	Page	4

FORM WORK :

1. BEAM.



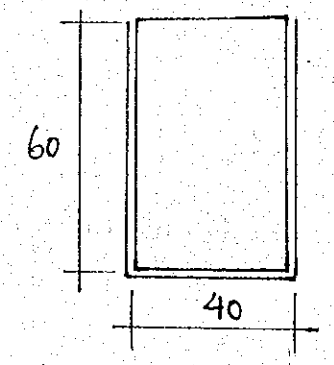
→ CENTRE OF BEAM.

L : $(0.2 + \sqrt{0.1^2 + 0.075^2} + 30) * 2$

$+ 0.40 = 1.65$ m

Leng of Beam Center = 7.30 m.

$A_1 = 1.65 * 7.30 = 12.045\ m^2$ ✓



→ END BEAM.

$L = 2 * 0.60 + 0.40 = 1.60$ m

Length : 0.90 ✓

$A_2 = 1.60 * 0.90 * 2 = 2.88\ m^2$.

→ END SIDE OF BEAM

$A_3 = 0.40 * 0.60 = 0.24\ m^2$

Total : 15.165 m^2. ↓

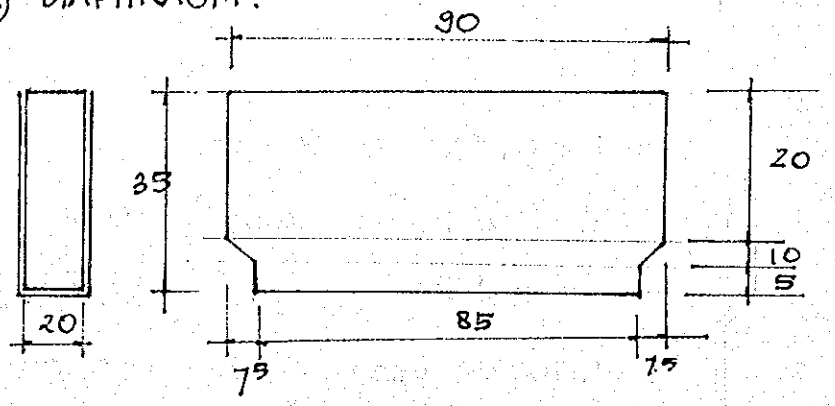
NUMBER OF BEAM : 6.

VOLUME OF FORM WORK AT BEAM:

$15.165 * 6 = 91\ m^2$. ✓

Name of Structure	SIMONGAN RC BRIDGE 9.00 m.	Category of calculation	FORM WORK VOLUME.	Page	5.

(2.) DIAPHRAGM.



L = 0.35 * 2 + 0.2 = 0.90 m.

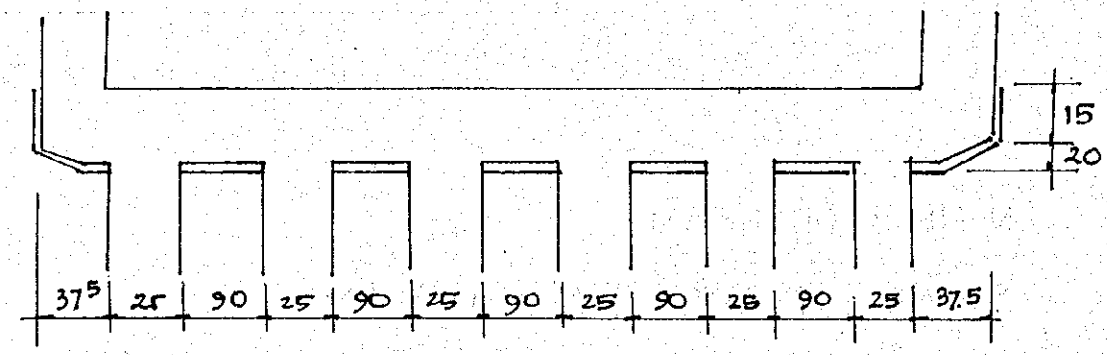
Length of Beam : 0.90 m.

A = 0.90 * 0.90 = 0.81 m^2

Number of Beam : 15.

Volume of form : 0.81 * 15 = 12.15 m^2 ✓

(3) SLAB.



L = (15 + 22.56 + 15) * 2 + 90 * 5 = 5.5512 m.

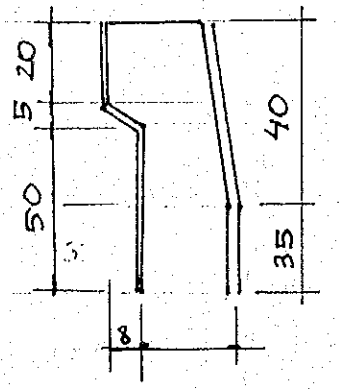
Leng of Beam/Slab : 9.01

Volume of Form : 5.551 * 9.01 = 50.02 m^2 ✓

Name of Structure	SIMONGAN RC BRIDGE 9.00.	Category of calculation	FORM WORK.	Page	6

4. CURB.

→ LEFT CURB.

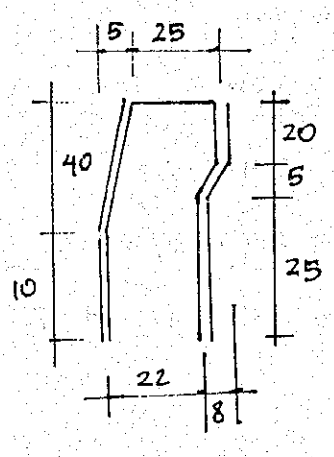


$L_1 = 20 + \sqrt{5^2 + 8^2} + 35 + \sqrt{5^2 + 40^2}$

$= 1.293\ m.$

Length of Bridge : 9.00 m.

$A_1 = 1.293 * 9.00 = 11,64\ m^2$ ✓



→ RIGHT CURB.

$L = 20 + \sqrt{5^2 + 8^2} + 25$

$+ 10 + \sqrt{5^2 + 40^2} = 1.047\ m$

$A_2 = 1.047 * 9.00 = 9.423\ m^2.$

$A = A_1 + A_2$

$= 11.64 + 9.423 = 21.063\ m^2.$ ✓

Total Form Of Bridge:

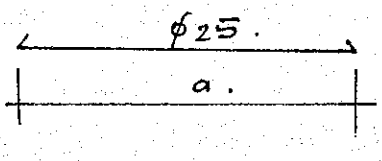
1. Beam	= 91 m^2.
2. Diaphragm	= 12.15 m^2
3. slab	= 50.02 m^2.
4. curb	= 21.063 m^2.
	Σ = 174.233 m^2. ✓

Name of Structure	SIMONEAU RC BRIDGE 9.00 m.	Category of calculation	REINFORCEMENT VOLUME.	Page	1.

BRIDGE REINFORCEMENT.

1. BEAM

(B1)



a = 894 cm.

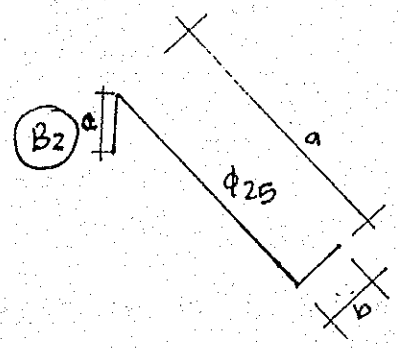
hook : 15 cm.

Total length : a + hook

: 894 + 15 = 909 cm.

↳ 9.09 m. ✓

(B2)



a: 120 cm. hook : 15

b: 25 cm.

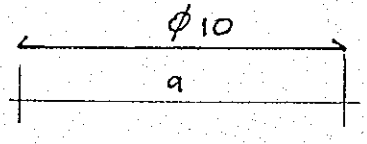
c : 37.5 Cm

Total length : a + b + c + hook

: 120 + 25 + 37.5 + 15

= 197.5 cm ↳ 1.975 m. ✓

(B3)



a = 894 cm.

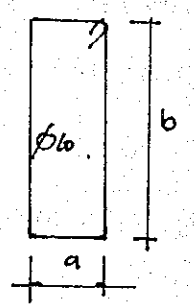
hook : 6 cm.

Total length : a + hook

: 894 + 6 : 900 cm

↳ : 9m ✓

(B4)



a: 19 cm hook : 6 cm

b: 74 cm

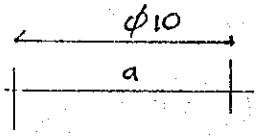
Total length : 2a + 2b + hook

= 2 * 19 + 2 * 74 + 6

= 192 cm ↳ 1.92 cm. ✓

Name of Structure	SIMONGAN RC BRIDGE 9.00m.	Category of calculation	REINPORCEMENT VOLUME.	Page	2

B3'



a : 69 cm.

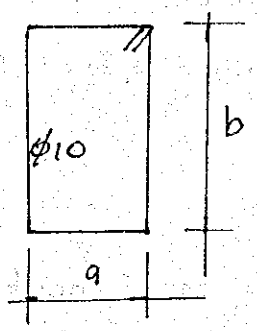
hook : 6 cm.

Total length : a + hook.

: 69 + 6 cm = 75 cm.

↳ 0,75 m. ✓

B4'



a = 34 cm.

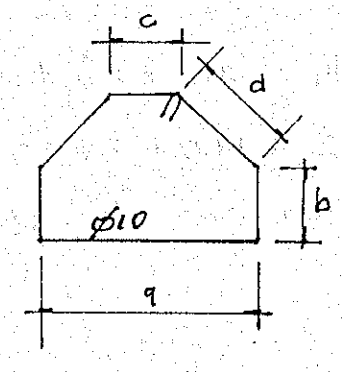
b = 74 cm

hook = 6 cm.

Total length : 34 * 2 + 74 * 2 * hook.

= 222 cm ↳ 2,226 cm. ✓

B5



a : 34.0 cm hook : 6.0 cm.

b : 24.0 cm.

c = 19.0 cm

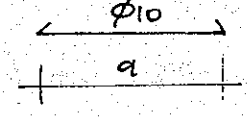
d = 14.0 cm

Total length : a + 2b + c + 2d + hook.

= 34 + 2 * 24 + 19 + 2 * 14 + 6

= 135 cm ↳ 1.35 m. ✓

B6



a = 34.00 cm.

hook : 6 cm.

Total length : a + hook.

= 34.0 + 6.0 = 40.00 cm.

↳ 0,40 m. ✓

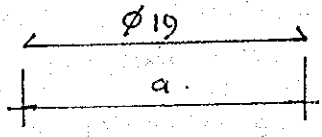
Name of Structure	SIMONGAN RC BRIDGE 9.00 m.	Category of calculation	REINFORCEMEN VOLUME.	Page	3.

(2) DIAPHRAGM :

a = 619 lm.

hook : 9.6 cm.

D1

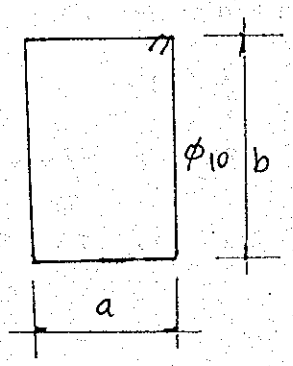


total length : a + hook.

= 619 + 9,6 = 628.6cm. ✓

m.

D2



a: 14.0 cm. hook: 6 cm.

b = 29.0 cm.

total length : 2a + 2b + hook.

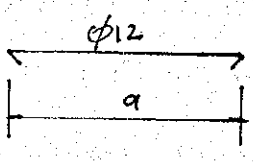
= 2 * 14.0 + 2 * 29 + 6

= 152 cm ↳ 1.52 cm. ✓

(3) SLAB

a: 678 cm.

Tua.



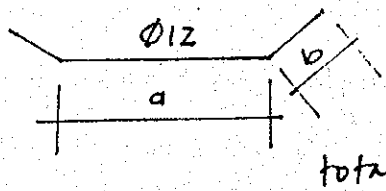
hook : 7.2

total length : a + hook

= 678 + 7.2 = 685.2 cm

↳ 6,852 m ✓

Tub



a: 634 hook: 7.2 cm.

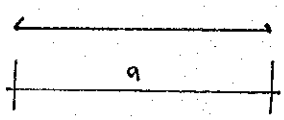
b: 24

total length : a + 2b + hook

= 634 + 24 * 2 + 7.2 = 6.892 m ✓

Name of Structure	SIMONGAN RC BRIDGE 9.00 m	Category of calculation	REINFORCEMENT VOLUME.	Page	4.

Tp



a : 894 cm.

hook : 7.2 cm.

total length : a + hook.

= 894 + 7.2 = 901,2 cm.

↳ 9.012 : m. ✓

④ LEFT CURB :

S1

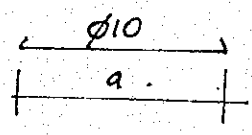
length a : 220 cm.

hook = 7.2 cm.

total length : 2272 cm.

↳ 2.272 m. ✓

S2

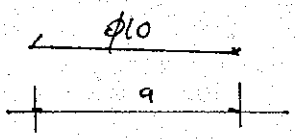


a : 16 cm. hook 6 cm.

total length : 22 cm

↳ 0.22 m. ✓

S3



a = 893 Cm.

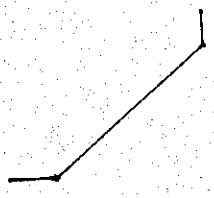
b : 0 hook : 9.6 Cm.

total length : a + b + hook.

= 893 + 9.60 = 902.6 cm

↳ : 9.026 cm. ✓

S4



Name of Structure	SIMONGAN RC BRIDGE 9.00m	Category of calculation	REINFORCEMENT VOLUME.	Page	5.

RIGHT CURB :

S_1' = a : 170 hook : 7.2

= 170 + 1.2 cm = 1.772 ↳ 1.772 m.

S_2' = a : 16 cm. hook : 6 cm.

= 16 + 6 : 22 cm ↳ 0,22 m.

S_3' = a : 894 hook : 9,6 cm.

= 894 + = 904.56 cm

↳ 9.045 km ✓

S_4' = a = 50 cm. hook : 7.5 → 57,5

↳ 5,75 m. ✓

REINFORCEMENT BAR OF SIMONGAN RC BRIDGE 9.00 m.

REINF NO	DIA Ø	TYPE	BENDING DIMENSION (cm) a	b	c	d	Hook	TOTAL WEIGHT LENGTH (m)	(kg/m)	NUMBER	NO OF BEAM	TOTAL WEIGHT (kg).	REMARK
	25	B_1	894				15	9.091	3.850	9	6	1890	
	25	B_2	120	25	37.5		15	1.975	3.850	4	6	182	
	10	B_3	894				6	9.00	0,888	4	6	192	
	10	B_3'	69				6	0.750	0.888	4	6	16	
BEAM	10	B_4	19	74			6	1.920	0,888	47	6	481	
	10	B_4'	34	74			6	2.220	0,888	22	6	260	
	10	B_5	34	24	19	14	6	1.220	0,888	47	6	306	
	10	B_6	34					0.40	0,888	16	6	34.	8361.
	19	D_1	619				9.6	6.286	2.230	6	3	252	
DIAF.	10	D_2	14	29			6	0.920	0.617	30	3	51	
													303.
	12	Tu_a	678				7.2	6.852	0.888	91	1	554	
SLAB	12	Tu_b	634	24.			7.2	6.892	0.888	91	1	557	
	12	T_P.	894				7.2	9.012	0.888	70	1	560	1671

Name of Structure

Category of calculation

CONCRETE REINFORCEMENT

Page 6

REINFORCEMENT BAR OF SIMONGAN RC BRIDGE 9.00 m.

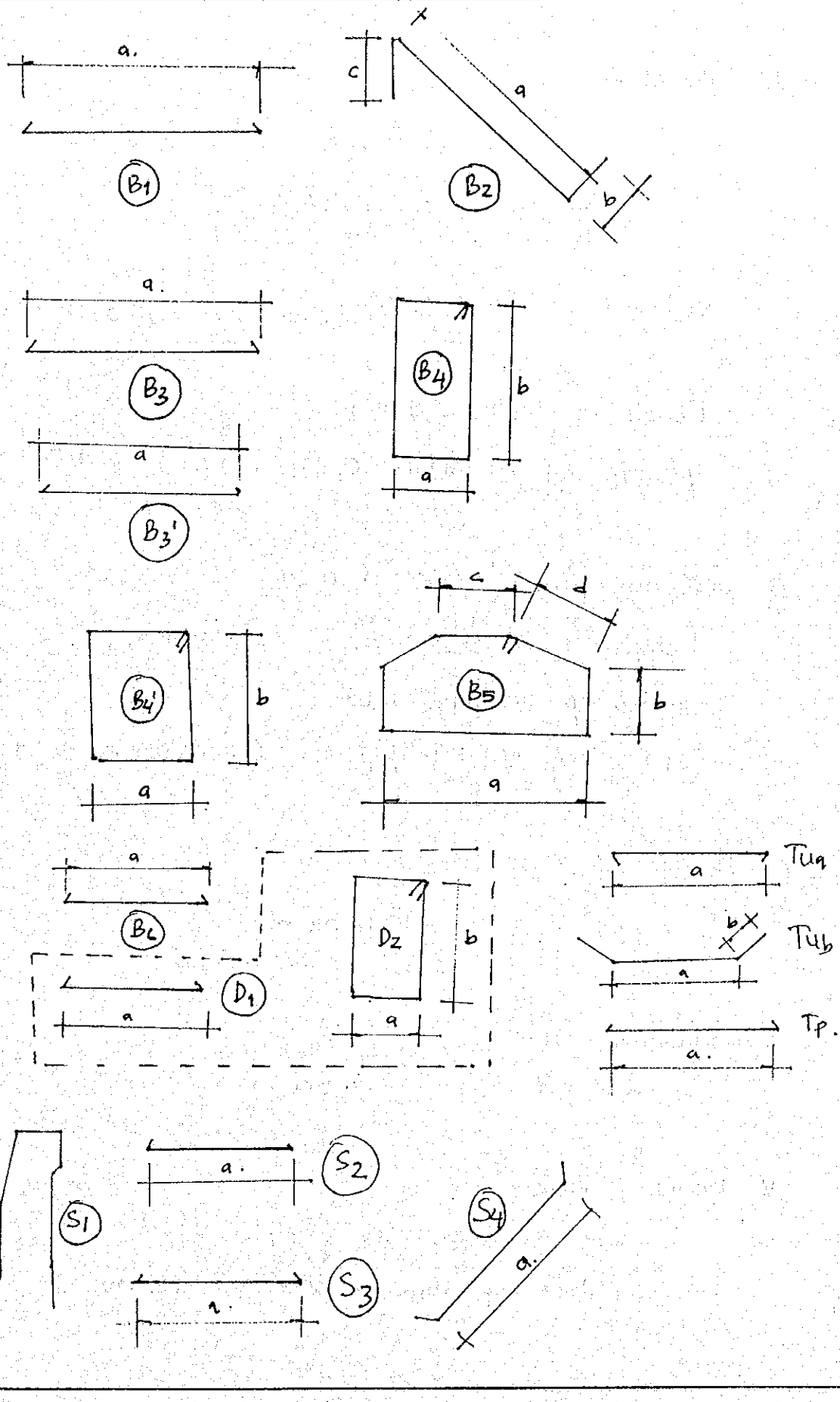
REINF NO	DIA	TYPE	BENDING DIMENSION (cm) a	b	c	d	Hook	TOTAL LENGTH (m)	WEIGHT (kg/m)	NUMBER	NO OF BEAM	TOTAL WEIGHT (kg).	REMARK
	12	S_1	220				7.2	2.272	0,888	46	1	93	
	10	S_2	16				6	0.220	0.617	138	1	19	
	10	S_3	894				9.6	9.026	0,617	9	1	50	
CURB	12	S_4	50				7.2	0.572	0.888	46	1	23	
	12	S_1'	170				7.2	1.772	0,888	46	1	72	
	10	S_2'	16				6	0,220	0.617	138	1	19	
	10	S_3'	894				9.6	9.036	0.617	7	1	39	
	12	S_4'	50				7.2	0,572	0.888	46	1	23	338
											TOTAL	5.673.	

Name of Structure:

Category of calculation: CONCRETE REINFORCEMENT

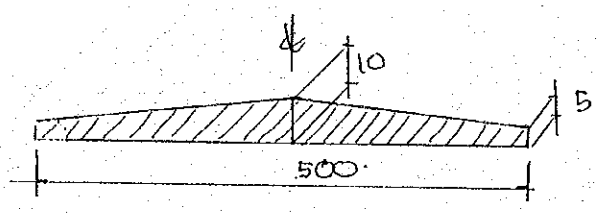
Page: 7

Name of Structure	SIMONGA BRIDGE R.C 9.00 m.	Category of calculation		Page	



Name of Structure	SIMONGAN RC BRIDGE 900	Category of calculation	PAVEMENT VOLUME.	Page	

4. PAVEMENT.



Volume : $\frac{0,10 + 0,05}{2} * 2.50 * 2 = 0,375\ m^2$

Length of Bridge : 9.01 m.

Volume of Pavement : $0.375 * 9.01 = 3.4\ m^3$.

5. Drainage pipe PVC ø 10 cm.

Length : 0,25 + 0.70 = 0,95 m.

number of drainage hole = 6.

total leng of PVC pipe = $6 * 0,95 = 5.70$ m.

6. Hand rail :

$9.01 * 2 = 18.02$ m.

7. Expansion joint

$2 * 6.4 = 12.80$ m.

8. Bearing Shoe

Size = 268 * 316 * 24

number of Shoe = $2 * 6 = 12$ nos.