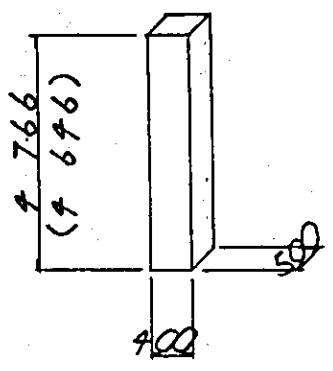


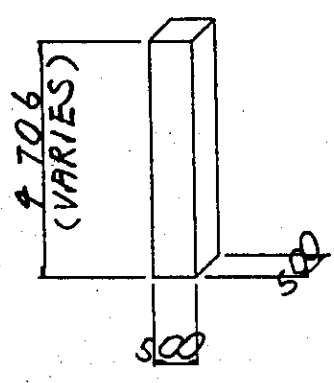
(3) COLUMN

1) AT END OF VIADUCT COLUMN



$$V_a = 0.40 \times 0.50 \times (4.766 + 4.646) = 1.882 \text{ m}^3$$

2) AT INTERMEDIATE OF VIADUCT COLUMN



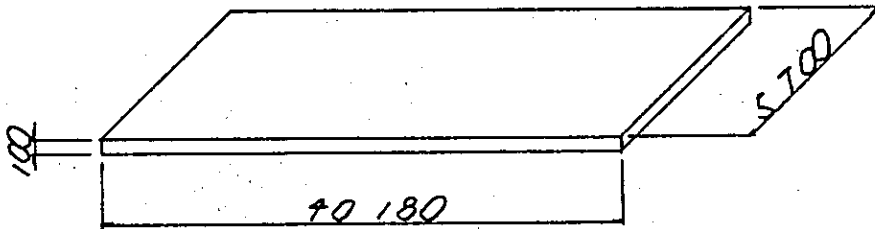
$n = 3$

$$V_a' = 0.50 \times 0.50 \times 4.706 = 1.177 \text{ m}^3$$

$$V_a = 1.177 \times 3 = 3.531 \text{ m}^3$$

COLUMN TOTAL 5.413 m³

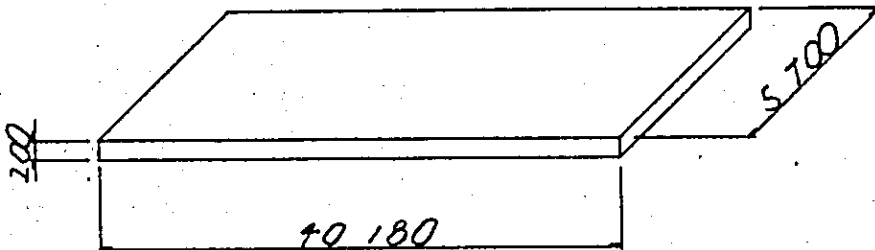
(5). LEVELING CONCRETE



$$V_a = 40.18 \times 5.70 \times 0.10 = 22.903 \text{ m}^3$$

LEVELING CONCRETE TOTAL 22.903 m³

(6) AGGREGATE SUB BASE



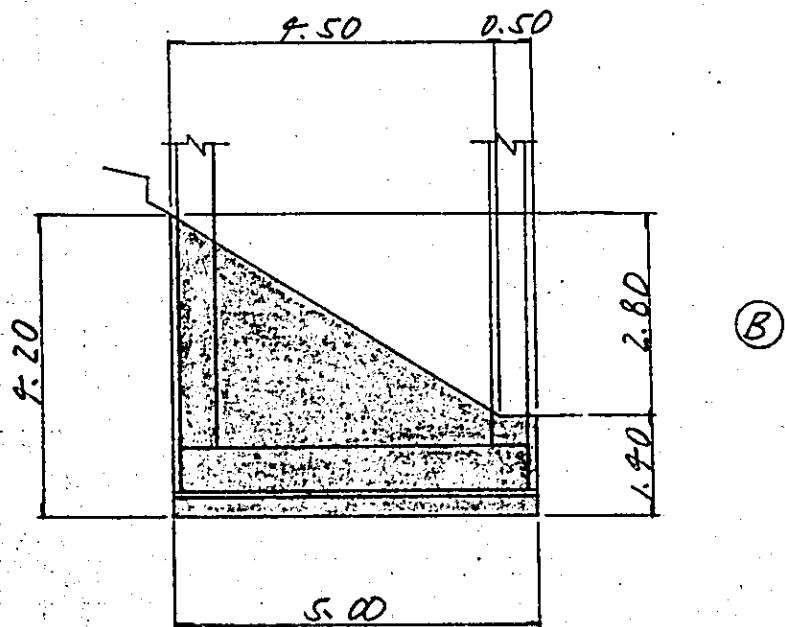
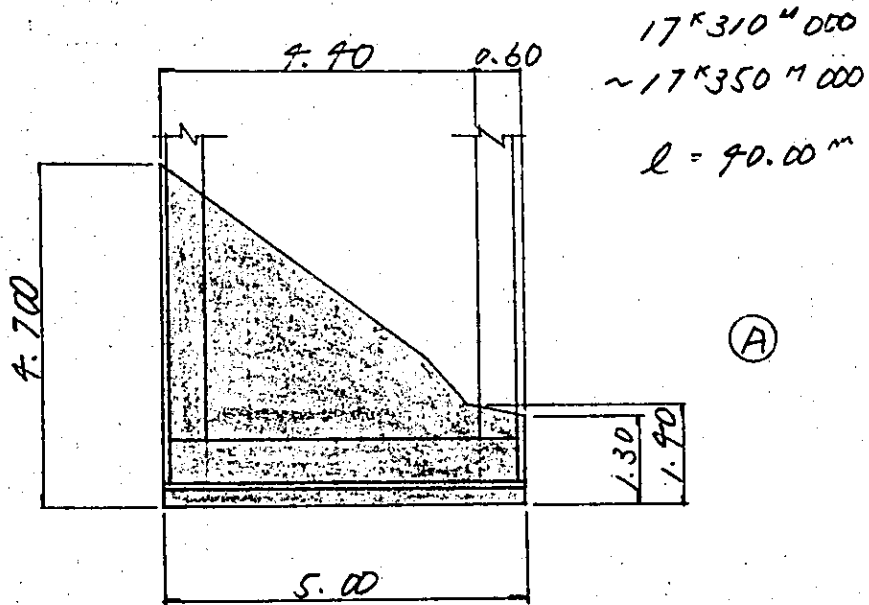
$$V_a = 40.18 \times 5.70 \times 0.20 = 45.805 \text{ m}^3$$

AGGREGATE SUB BASE TOTAL 45.805 m³

(7). PILE

$$\begin{aligned} \phi &= 500 \text{ mm} & l &= A - 19.0 \text{ m} \times 96 \\ & & l &= B - 8.0 \text{ m} \times 96 \end{aligned}$$

(B) EXCAVATION



$$\begin{aligned} A &= \frac{1}{2} \times (9.70 + 1.90) \times 9.70 + \frac{1}{2} \times (1.30 \\ &\quad + 1.90) \times 0.60 \\ &= 19.230 \text{ m}^2 \end{aligned}$$

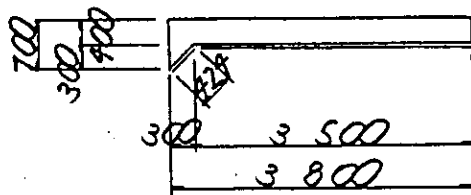
$$\begin{aligned} B &= \frac{1}{2} \times (9.20 + 1.40) \times 9.50 + 0.50 \times 1.90 \\ &= 13.300 \text{ m}^2 \end{aligned}$$

$$V = (19.230 + 13.300) \times \frac{1}{2} \times 90.00 = 550.600 \text{ m}^3$$

$$\text{EXCAVATION TOTAL} = 550.600 \text{ m}^3$$

FORM AREA

(1) SLAB

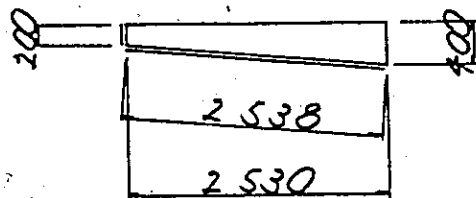


$$l = 39.98^m$$

$$A_a = 3.80 \times 0.40 \times 2 = 3.040^{m^2}$$

$$A_b = 0.30 \times 0.30 \times \frac{1}{2} \times 2 = 0.090^{"}$$

$$A_c = (0.425 + 3.50) \times 39.98 = 156.882^{"}$$



$$l = 39.98^m$$

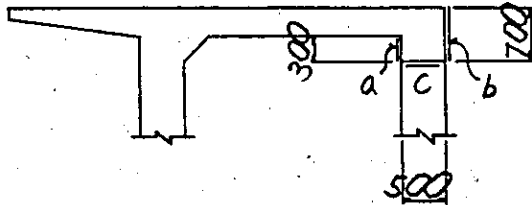
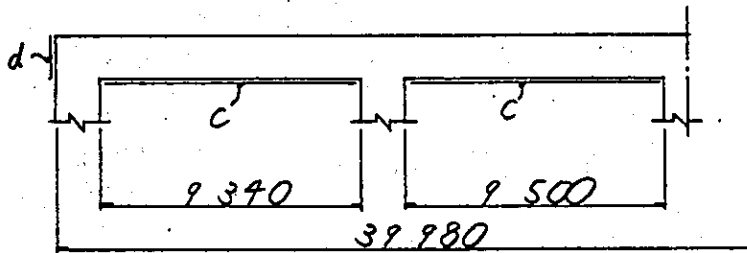
$$A_a = (0.20 + 0.40) \times \frac{1}{2} \times 2.53 \times 2 = 1.518^{m^2}$$

$$A_b = (0.20 + 2.538) \times 39.98 = 109.465^{"}$$

SLAB TOTAL	270.995 ^{m²}
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(2) BEAM

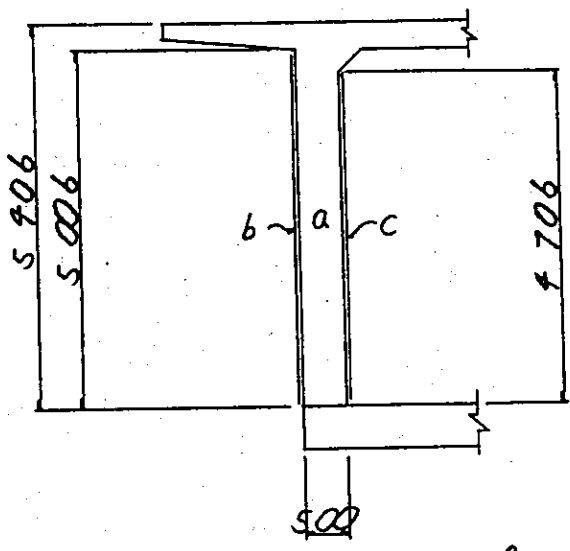
1) LONGITUDINAL BEAM



$A_a = 39.98 \times 0.30$	=	11.994 m^2
$A_b = 39.98 \times 0.70$	=	27.986 m^2
$A_c = (9.34 + 9.50) \times 2 \times 0.50$	=	18.840 m^2
$A_d = 0.50 \times 0.70 \times 2$	=	0.700 m^2

SUB TOTAL =	59.520 m^2
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2) WALL



$l = 39.98^m$

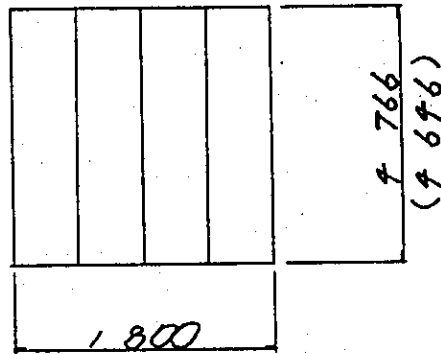
$A_a = 0.50 \times 5.906 \times 2$	=	5.906^{m^2}
$A_b = 5.006 \times 39.98$	=	$200.140^{"}$
$A_c = 4.706 \times 39.98$	=	$188.146^{"}$

SUB TOTAL	393.692^{m^2}
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BEAM TOTAL	453.212^{m^2}
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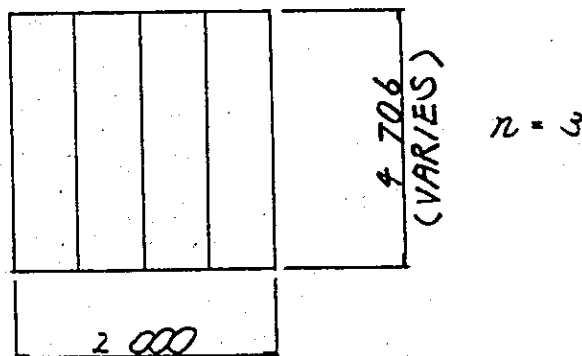
(3) COLUMN

1) AT END OF VIADUCT COLUMN



$$A_a = 1.80 \times (4.766 + 4.696) = 16.992 \text{ m}^2$$

2) AT INTERMEDIATE OF VIADUCT COLUMN

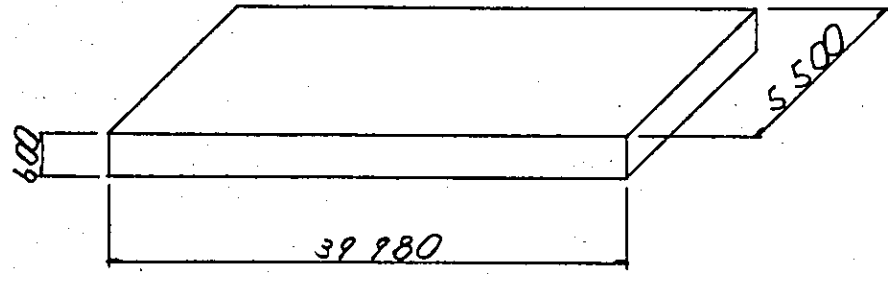


$$A_d = 2.00 \times 4.706 = 9.412 \text{ m}^2$$

$$A_a = 9.412 \times 3 = 28.236 \text{ m}^2$$

COLUMN TOTAL	45.178 m ²
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(4) FOOTING



$$A_0 = (39.98 + 5.50) \times 2 \times 0.60 = 54.576 \text{ m}^2$$

FOOTING TOTAL	54.576 ^{m²}
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VIADUCT (VPB)

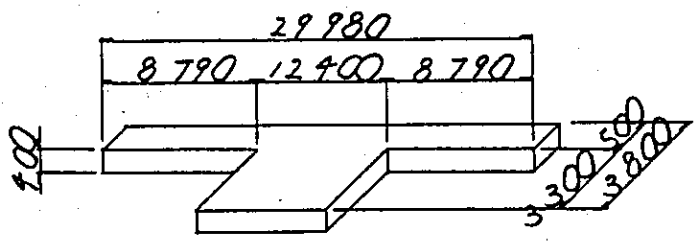
	CONCRETE VOLUME (m ³)	FORM AREA (m ²)	REINFORCING BAR (kg)	RATIO (kg/m ³)
SLAB	46.5	153.2	4 289.9	92.3
B.EAM	82.0	298.2	9 299.1	113.4
COLUMN	4.1	35.0	1 358.3	331.3
CURB	—	—	—	—
STAIRWAY	58.8	313.7	6 647.0	113.0
TOTAL	191.4	800.1	21 594.3	112.8
FOOTING	98.9	42.6	8 592.7	86.9
BRACING BEAM	—	—	—	—
TOTAL	98.9	42.6	8 592.7	86.9

	UNIT	QUANTITY	REMARKS
LEVELING CONCRETE	m ³	17.2	CLASS F
AGGREGATE SUB BASE	m ³	34.4	A.S.B. - 3
EXCAVATION	m ³	458.6	
FOUNDATION MORTAR	—	—	$\Delta_{ck} = 400 \text{ kg/m}^2$
PILE	EACH	$\phi = 500$ N = A - 72 N = B - 72	$\phi 500 \quad L = A - 19.0 \text{ m}$ " $L = B - 8.0 \text{ m}$

VPB

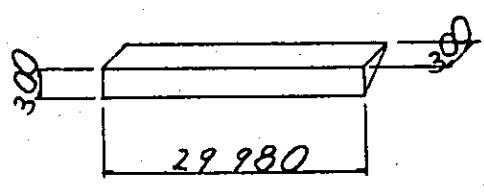
CONCRETE VOLUME

(1) SLAB

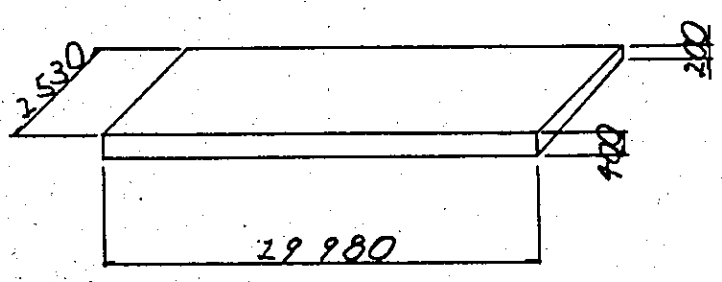


$$V_a = 29.98 \times 0.50 \times 0.10 = 5.996 \text{ m}^3$$

$$V_b = 12.40 \times 3.30 \times 0.10 = 16.368 \text{ m}^3$$



$$V_c = 0.30 \times 0.30 \times \frac{1}{2} \times 29.98 = 1.349 \text{ m}^3$$

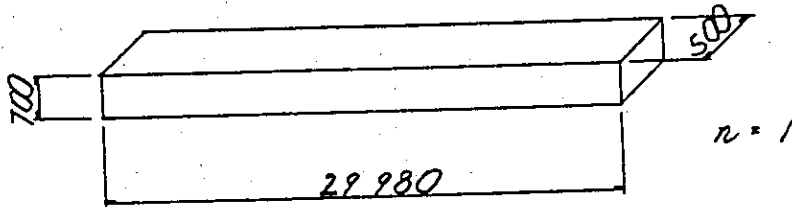


$$V_d = (0.40 + 2.53) \times \frac{1}{2} \times 0.20 \times 29.98 = 22.755 \text{ m}^3$$

SLAB TOTAL 46.468 m³

(2) BEAM

1) LONGITUDINAL BEAM

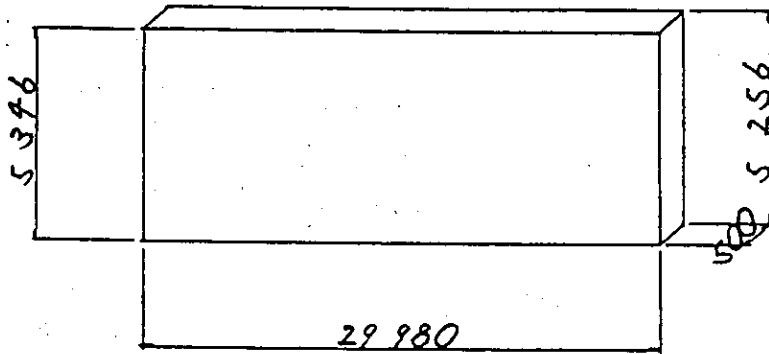


$$V_a = 29.98 \times 0.50 \times 0.70$$

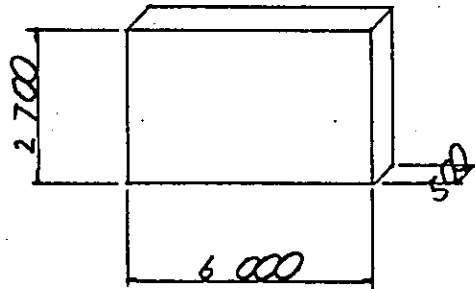
$$= 10.493 \text{ m}^3$$

$$\text{SUB TOTAL} = 10.493 \text{ m}^3$$

2) WALL



$$V_a = 29.98 \times 0.50 \times (5.376 + 5.256) \times \frac{1}{2} = 79.462 \text{ m}^3$$



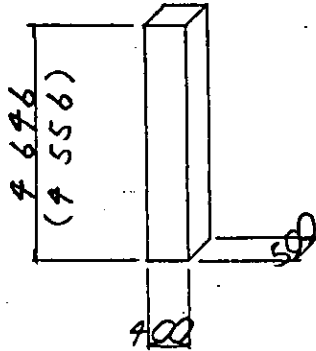
$$-V_b = 6.00 \times 2.70 \times 0.50 = -8.100 \text{ m}^3$$

$$\text{SUB TOTAL} = 71.462 \text{ m}^3$$

$$\text{BEAM TOTAL} = 81.955 \text{ m}^3$$

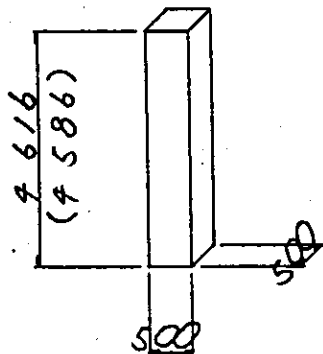
(3). COLUMN

1) AT END OF VIADUCT COLUMN



$$V_a = 0.40 \times 0.50 \times (4.646 + 4.556) = 1.840 \text{ m}^3$$

2) AT INTERMEDIATE OF VIADUCT COLUMN

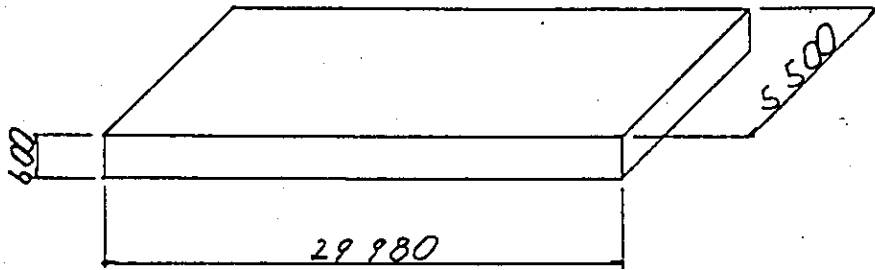


$$V_a = 0.50 \times 0.50 \times (4.616 + 4.586) = 2.301 \text{ m}^3$$

COLUMN TOTAL

4.141 m³

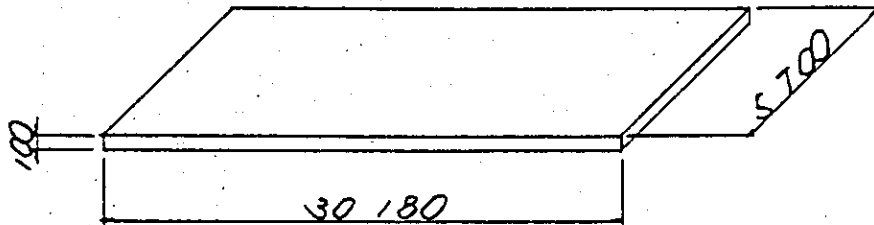
(F). FOOTING



$$V_a = 29.98 \times 5.50 \times 0.60 = 98.934 \text{ m}^3$$

FOOTING TOTAL	98.934 m ³
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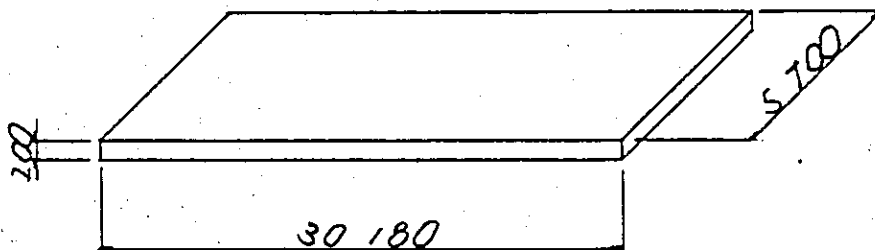
(5). LEVELING CONCRETE



$$V_a = 30.18 \times 5.70 \times 0.10 = 17.203 \text{ m}^3$$

LEVELING CONCRETE TOTAL 17.203 m³

(6) AGGREGATE SUB BASE



$$V_a = 30.18 \times 5.70 \times 0.20 = 34.405 \text{ m}^3$$

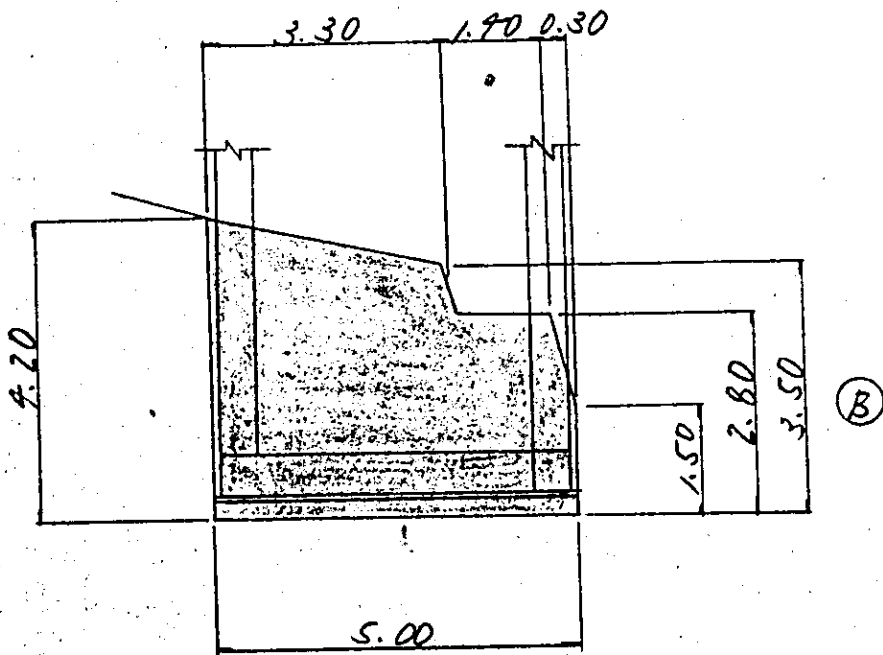
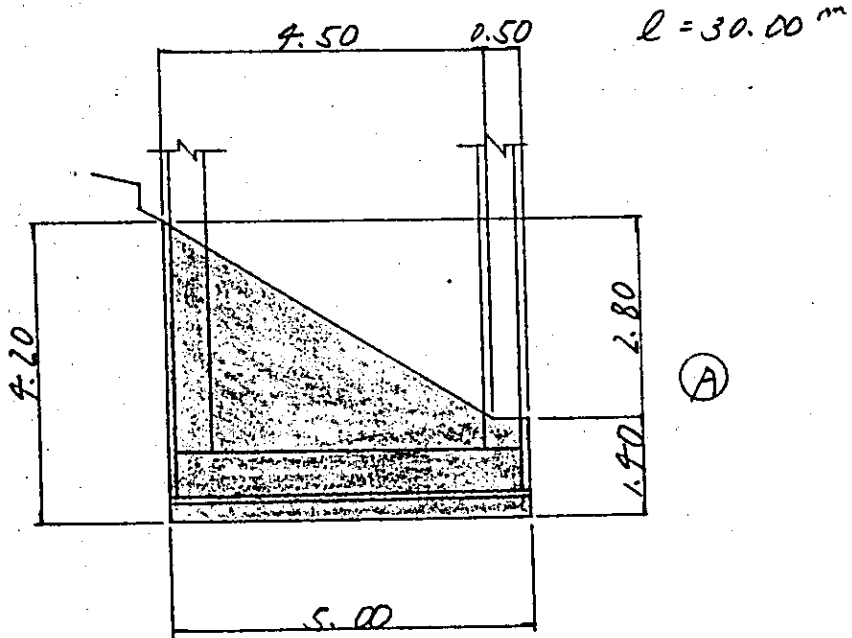
AGGREGATE SUB BASE TOTAL 34.405 m³

(7). PILE

$$\begin{aligned} \phi &= 500 \text{ mm} & l &= A - 19.0 \text{ m} \times 72 \\ & & l &= B - 8.0 \text{ m} \times 72 \end{aligned}$$

(B) EXCAVATION

17K350^m 000 ~ 17K380^m 000



$$A = \frac{1}{2} \times (4.20 + 1.90) \times 7.50 + 0.50 \times 1.90$$
$$= 13.300 \text{ m}^2$$

$$B = \frac{1}{2} \times (4.20 + 3.50) \times 3.30 + 1.90 \times 2.80$$
$$+ \frac{1}{2} \times (1.50 + 2.80) \times 0.30$$
$$= 17.270 \text{ m}^2$$

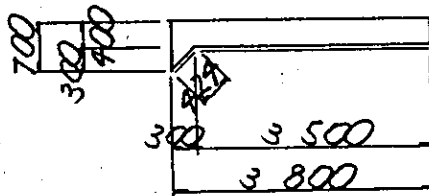
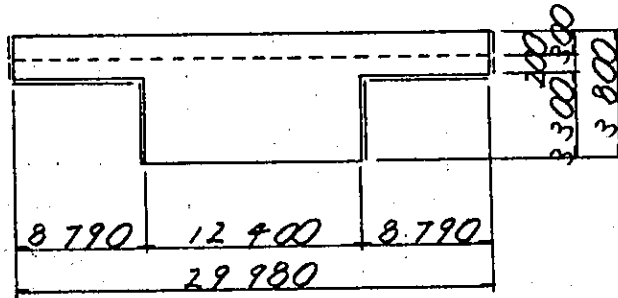
$$V = (13.300 + 17.270) \times \frac{1}{2} \times 30.00 = 458.550 \text{ m}^3$$

EXCAVATION TOTAL

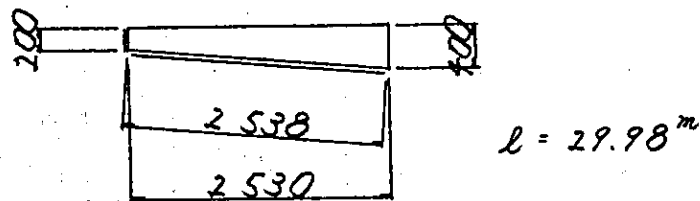
458.550 ^m3

FORM AREA

(1) SLAB



$$\begin{aligned}
 A_a &= 0.30 \times 0.30 \times \frac{1}{2} \times 2 & = 0.090 \text{ m}^2 \\
 A_b &= (0.20 + 8.79 + 3.30) \times 2 \times 0.40 & = 9.832 \text{ m}^2 \\
 A_c &= (0.424 + 0.20) \times 29.98 & = 18.708 \text{ m}^2 \\
 A_d &= 3.30 \times 12.40 & = 40.920 \text{ m}^2
 \end{aligned}$$

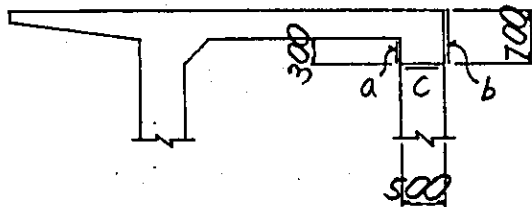
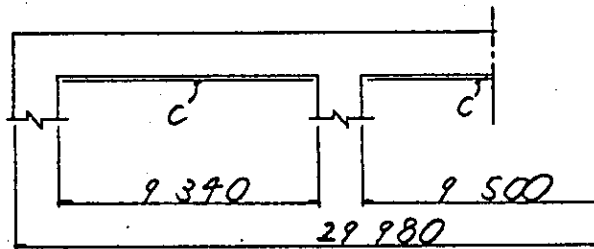


$$\begin{aligned}
 A_a &= (0.20 + 0.40) \times \frac{1}{2} \times 2.53 \times 2 & = 1.518 \text{ m}^2 \\
 A_b &= (0.20 + 2.538) \times 29.98 & = 82.085 \text{ m}^2
 \end{aligned}$$

SLAB TOTAL 153.153 m²

(2) BEAM

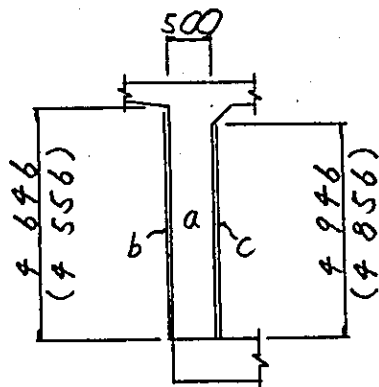
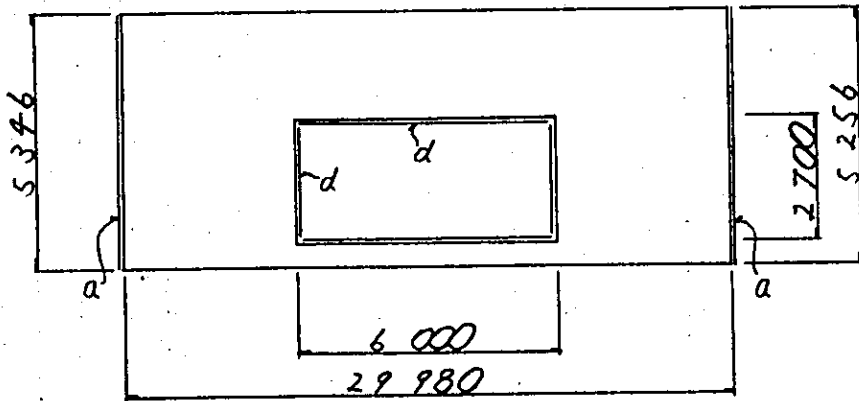
1) LONGITUDINAL BEAM



$A_a = 29.98 \times 0.30$	=	8.994 m^2
$A_b = 29.98 \times 0.70$	=	20.986 m^2
$A_c = (9.34 \times 2 + 9.50) \times 0.50$	=	14.090 m^2
$A_d = 0.50 \times 0.70 \times 2$	=	0.700 m^2

SUB TOTAL =	31.770 m^2
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2) WALL



$$A_a = (5.346 + 5.256) \times 0.50 = 5.301 \text{ m}^2$$

$$A_b = (4.646 + 4.556) \times \frac{1}{2} \times 29.98 - 6.00 \times 2.70 = 121.738 \text{ m}^2$$

$$A_c = (4.946 + 4.856) \times \frac{1}{2} \times 29.98 - 6.00 \times 2.70 = 130.732 \text{ m}^2$$

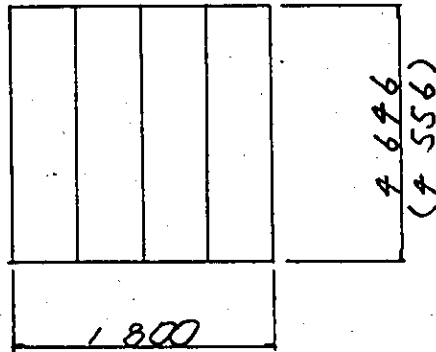
$$A_d = (6.00 + 2.70) \times 2 \times 0.50 = 8.700 \text{ m}^2$$

$$\text{SUB TOTAL} = 266.471 \text{ m}^2$$

$$\text{BEAM TOTAL} = 298.241 \text{ m}^2$$

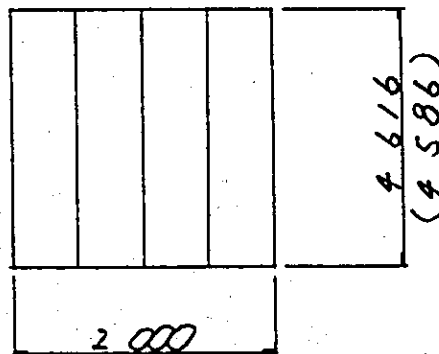
(3) COLUMN

1) AT END OF VIADUCT COLUMN



$$Aa = 1.80 \times (4.646 + 4.556) = 16.564 \text{ m}^2$$

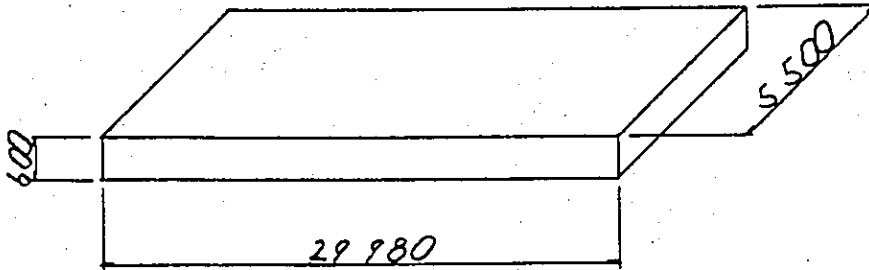
2) AT INTERMEDIATE OF VIADUCT COLUMN



$$Aa = 2.00 \times (4.616 + 4.586) = 18.404 \text{ m}^2$$

COLUMN TOTAL	34.968 ^{m²}
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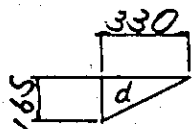
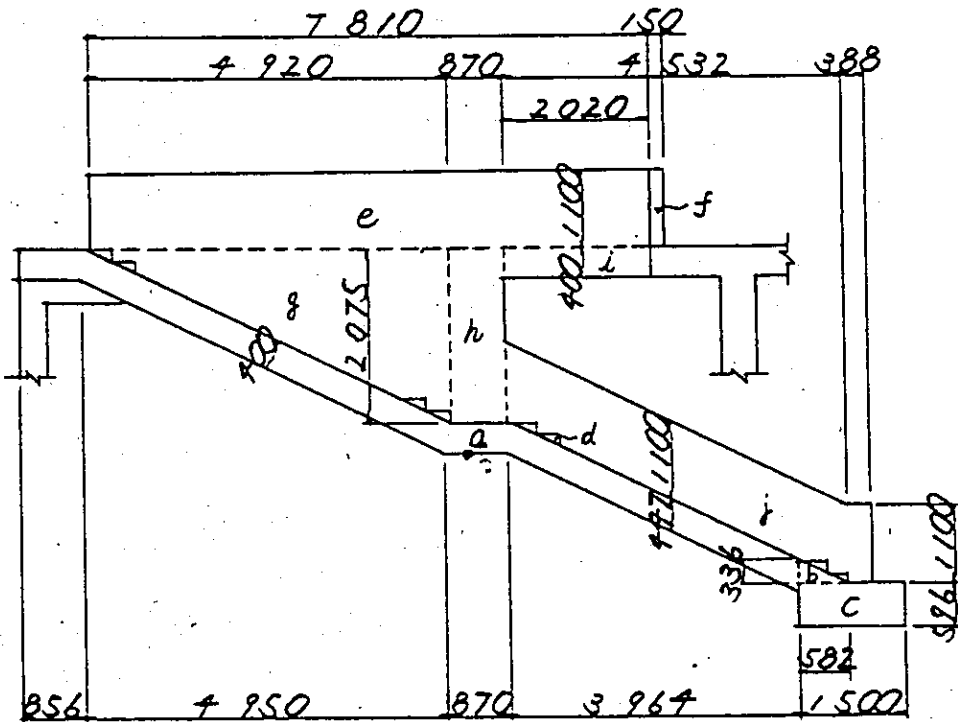
(4) FOOTING



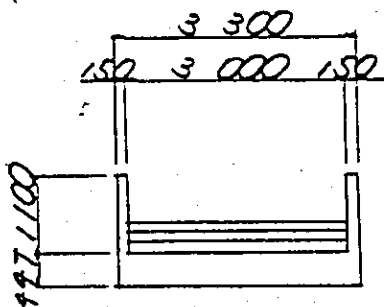
$$A_a = (29.98 + 5.50) \times 0.60 \times 2 = 42.576 \text{ m}^2$$

FOOTING TOTAL	42.576 m ²
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(5) STAIR WAY ①
CONCRETE VOLUME

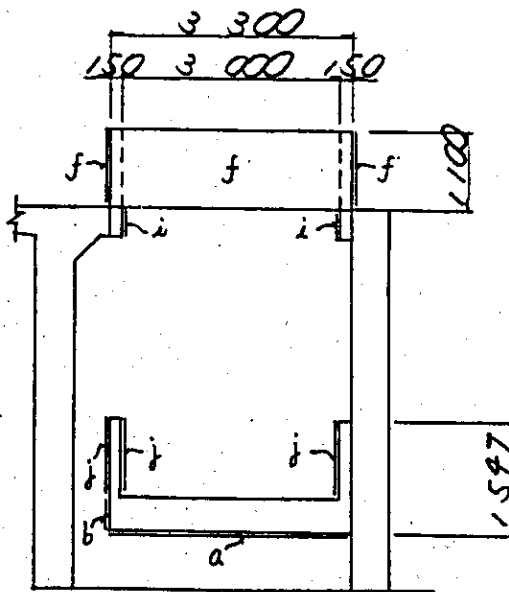
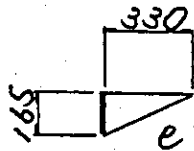
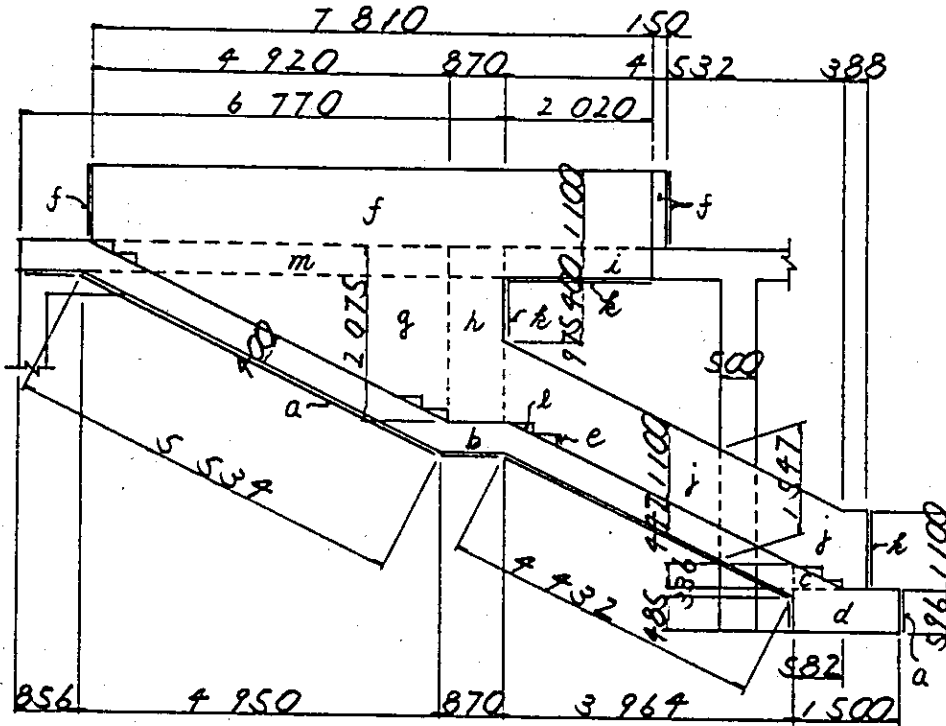


$n = 29$



$V_a = (0.856 + 4.95 + 0.87 + 3.964) \times 0.477$	
$\quad \times 3.30$	$= 16.748 \text{ m}^3$
$V_b = 0.582 \times 0.336 \times \frac{1}{2} \times 3.30$	$= 0.323 \text{ "}$
$V_c = 1.50 \times 0.596 \times 3.30$	$= 2.950 \text{ "}$
$V_d = 0.33 \times 0.165 \times \frac{1}{2} \times 3.00 \times 29$	$= 2.369 \text{ "}$
$V_e = 7.81 \times 1.10 \times 0.15 \times 2$	$= 2.577 \text{ "}$
$V_f = 0.15 \times 1.10 \times 3.30$	$= 0.545 \text{ "}$
$V_g = 4.92 \times 2.075 \times \frac{1}{2} \times 0.15 \times 2$	$= 1.531 \text{ "}$
$V_h = 0.87 \times 2.075 \times 0.15 \times 2$	$= 0.542 \text{ "}$
$V_i = 2.02 \times 0.40 \times 0.15 \times 2$	$= 0.242 \text{ "}$
$V_j = (4.532 + 0.388) \times 1.10 \times 0.15 \times 2$	$= 1.624 \text{ "}$
	<hr/>
TOTAL =	29.951 ^m³

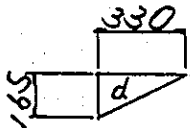
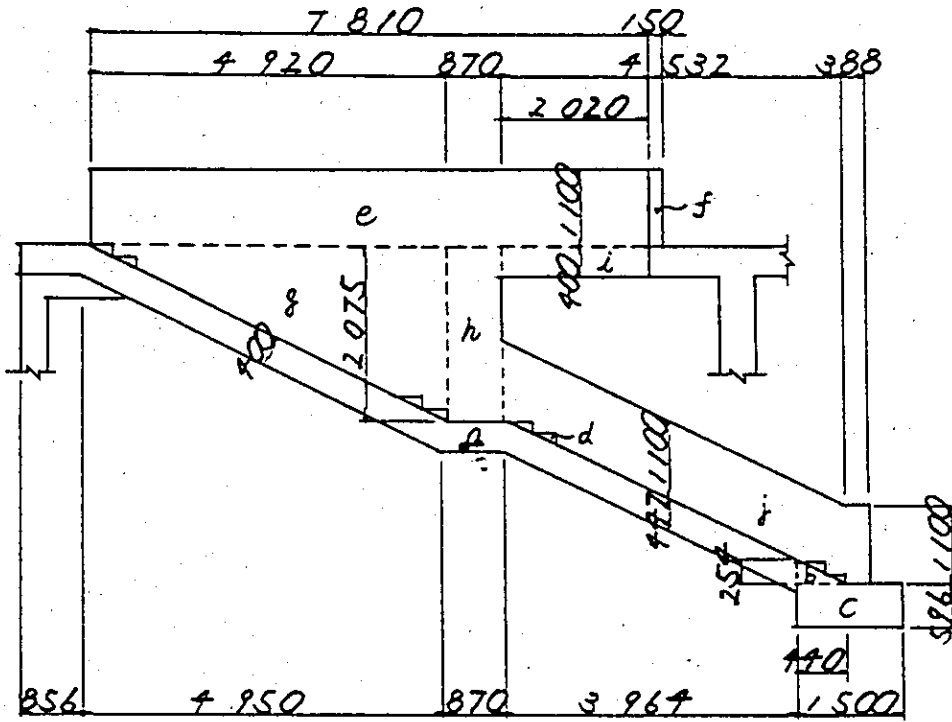
FORM AREA



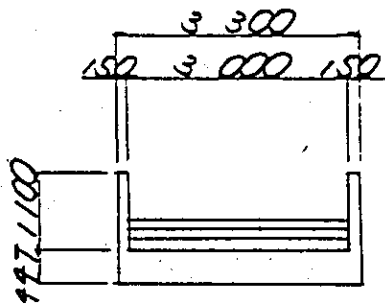
$Aa = (0.856 + 5.534 + 0.87 + 4.432 + 0.485 + 0.596) \times 3.30$	= 42.151 ^{m²}
$Ab = (0.856 + 4.95 + 0.87 + 3.964) \times 0.447 \times 2 - 0.50 \times 0.447$	= 9.289"
$Ac = 0.582 \times 0.336 \times \frac{1}{2} \times 2$	= 0.196"
$Ad = 1.50 \times 0.596 \times 2$	= 1.788"
$Ae = 0.165 \times 3.00 \times 29$	= 14.355"
$Af = \{(7.81 + 0.15) \times 4 + 3.00 + 3.30\} \times 1.10$	= 41.954"
$Ag = 4.92 \times 2.075 \times \frac{1}{2} \times 2 \times 2$	= 20.418"
$Ah = 0.87 \times 2.075 \times 2 \times 2$	= 7.221"
$Ai = 2.02 \times 0.40 \times 2$	= 1.616"
$Aj = \{(4.532 + 0.388) \times 2 \times 2 - 0.50\} \times 1.10$	= 21.098"
$Ak = (2.02 + 0.975 + 1.10) \times 0.15 \times 2$	= 1.229"
$-Al = 3.30 \times 0.165 \times \frac{1}{2} \times 29 \times 2$	= -1.579"
$-Am = 6.77 \times 0.40$	= -2.708"
TOTAL =	157.028^{m²}

(6) STAIR WAY ②

CONCRETE VOLUME

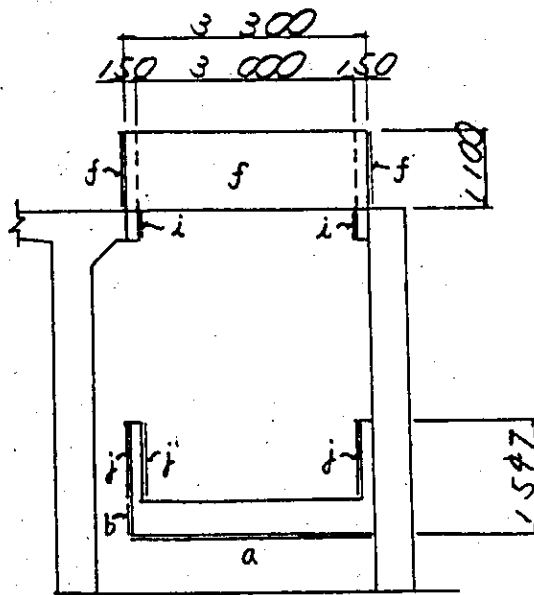
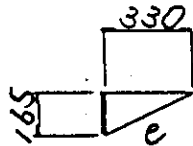
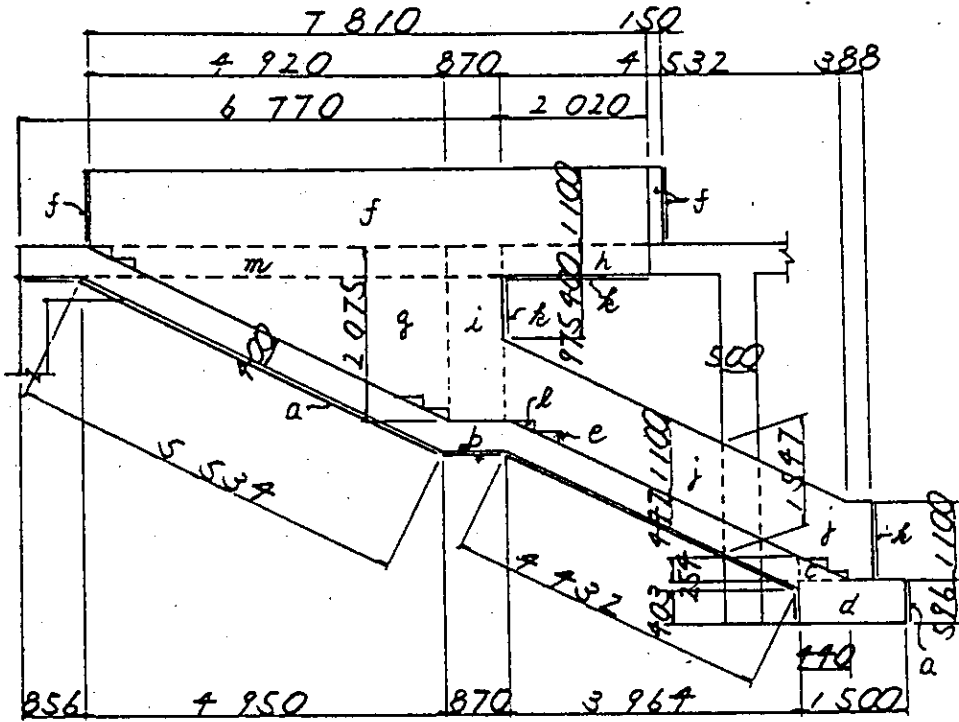


$n = 29$



$V_a = (0.856 + 4.95 + 0.87 + 3.964) \times 0.477$	
$\times 3.30$	$= 16.748 \text{ m}^2$
$V_b = 0.440 \times 0.254 \times \frac{1}{2} \times 3.30$	$= 0.184 \text{ "}$
$V_c = 1.50 \times 0.596 \times 3.30$	$= 2.950 \text{ "}$
$V_d = 0.33 \times 0.165 \times \frac{1}{2} \times 3.00 \times 29$	$= 2.369 \text{ "}$
$V_e = 7.81 \times 1.10 \times 0.15 \times 2$	$= 2.577 \text{ "}$
$V_f = 0.15 \times 1.10 \times 3.30$	$= 0.545 \text{ "}$
$V_g = 4.92 \times 2.075 \times \frac{1}{2} \times 0.15 \times 2$	$= 1.531 \text{ "}$
$V_h = 0.87 \times 2.075 \times 0.15 \times 2$	$= 0.542 \text{ "}$
$V_i = 2.02 \times 0.40 \times 0.15 \times 2$	$= 0.242 \text{ "}$
$V_j = (4.532 + 0.388) \times 1.10 \times 0.15 \times 2$	$= 1.624 \text{ "}$
<hr/>	
TOTAL =	29.312 m²

FORM AREA



$$\begin{aligned}
 A_a &= (0.856 + 5.534 + 0.87 + 4.432 + 0.403 \\
 &\quad + 0.596) \times 3.30 = 41.880 \text{ m}^2 \\
 A_b &= (0.856 + 4.95 + 0.87 + 3.964) \times 0.447 \\
 &\quad \times 2 - 0.50 \times 0.447 = 9.289 \text{ " } \\
 A_c &= 0.440 \times 0.254 \times \frac{1}{2} \times 2 = 0.112 \text{ " } \\
 A_d &= 1.50 \times 0.596 \times 2 = 1.788 \text{ " } \\
 A_e &= 0.165 \times 3.00 \times 29 = 14.355 \text{ " } \\
 A_f &= \{(7.81 + 0.15) \times 4 + 3.00 + 3.30\} \times 1.10 = 41.954 \text{ " } \\
 A_g &= 4.92 \times 2.075 \times \frac{1}{2} \times 2 \times 2 = 20.418 \text{ " } \\
 A_h &= 0.87 \times 2.075 \times 2 \times 2 = 7.221 \text{ " } \\
 A_i &= 2.02 \times 0.40 \times 2 = 1.616 \text{ " } \\
 A_j &= \{(4.532 + 0.388) \times 2 \times 2 - 0.50\} \times 1.10 = 21.098 \text{ " } \\
 A_k &= (2.02 + 0.975 + 1.10) \times 0.15 \times 2 = 1.229 \text{ " } \\
 -A_l &= 3.30 \times 0.165 \times \frac{1}{2} \times 29 \times 2 = -1.579 \text{ " } \\
 -A_m &= 6.77 \times 0.40 = -2.708 \text{ " }
 \end{aligned}$$

$$\text{TOTAL} = 156.673 \text{ m}^2$$

VIADUCT (VP9)

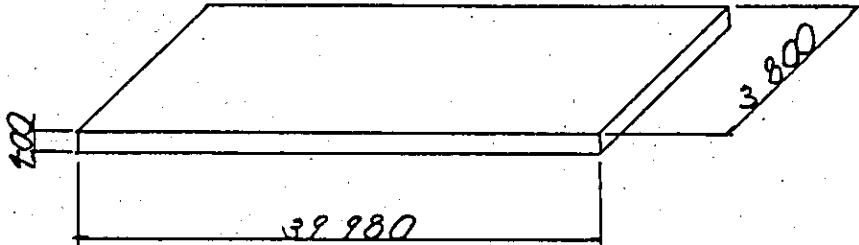
	CONCRETE VOLUME (m ³)	FORM AREA (m ²)	REINFORCING BAR (kg)	RATIO (kg/m ³)
SLAB	92.9	271.0	8 579.7	92.3
BEAM	117.9	436.2	13 369.9	113.4
COLUMN	5.2	43.2	1 722.8	331.3
CURB	—	—	—	—
STAIRWAY	—	—	—	—
TOTAL	216.0	750.4	23 667.4	109.6
FOOTING	131.9	54.6	11 962.1	86.9
BRACING BEAM	—	—	—	—
TOTAL	131.9	54.6	11 962.1	86.9

	UNIT	QUANTITY	REMARKS
LEVELING CONCRETE	m ³	22.9	CLASS F
AGGREGATE SUB BASE	m ³	45.8	A.S.B. -3
EXCAVATION	m ³	690.8	
FOUNDATION MORTAR	—	—	$f_{ck} = 400 \text{ kg/cm}^2$
PILE	EACH	$\phi = 500$ $N = A - 96$ $N = B - 96$	$\phi 500 \quad L = A - 19.0 \text{ m}$ " $L = B - 8.0 \text{ m}$

VP9

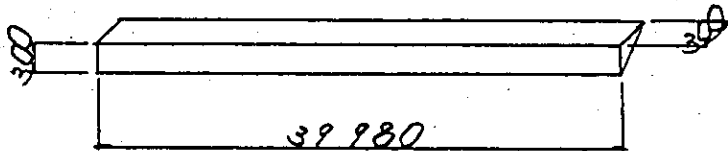
CONCRETE VOLUME

(1) SLAB



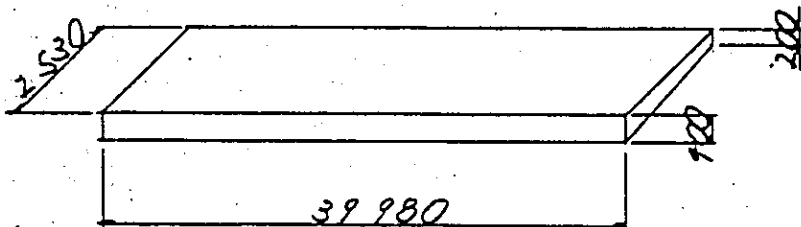
$$V_a = 39.98 \times 3.80 \times 0.40$$

$$= 60.770 \text{ m}^3$$



$$V_b = 0.30 \times 0.30 \times \frac{1}{2} \times 39.98$$

$$= 1.799 \text{ m}^3$$



$$V_c = \frac{1}{2} \times (0.40 + 0.20) \times 2.53 \times 39.98$$

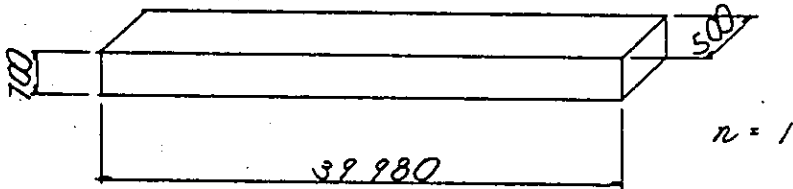
$$= 30.345 \text{ m}^3$$

SLAB TOTAL

$$92.914 \text{ m}^3$$

(2) BEAM

1) LONGITUDINAL BEAM

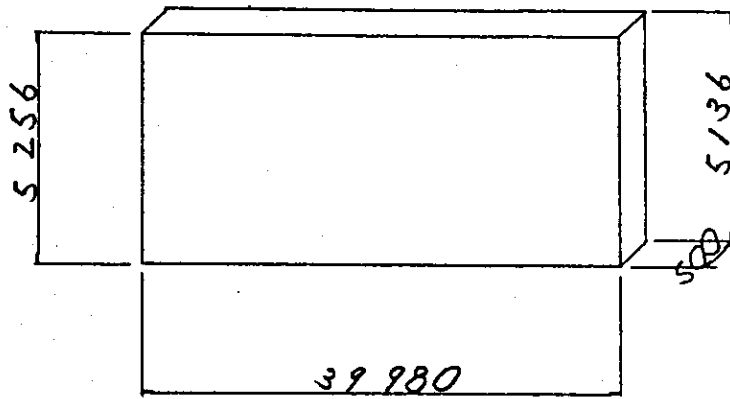


$$V_a = 39.98 \times 0.50 \times 0.70$$

$$= 13.993 \text{ m}^3$$

$$13.993 \text{ m}^3$$

2) WALL



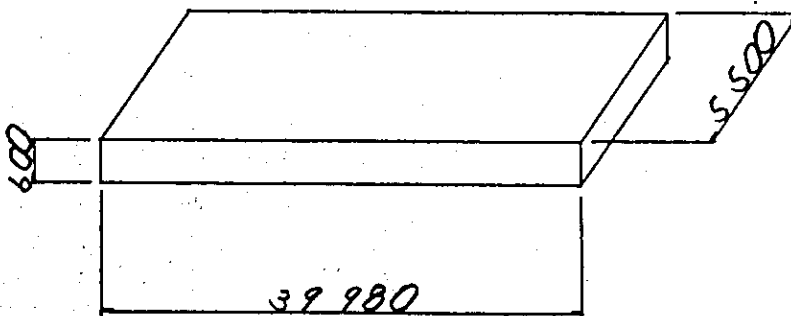
$$V_a = 39.98 \times 0.50 \times (5.256 + 5.136) \times \frac{1}{2} = 103.868 \text{ m}^3$$

103.868 m³

BEAM TOTAL

117.861 m³

(5) FOOTING



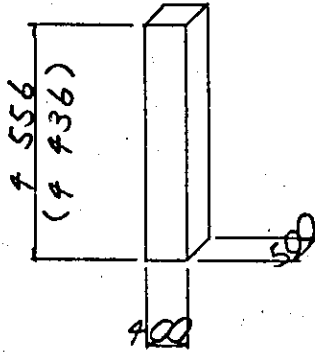
$$V_a = 39.98 \times 5.50 \times 0.60 = 131.939 \text{ m}^3$$

FOOTING TOTAL

131.939 m³

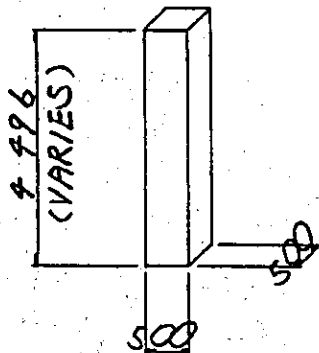
(3) COLUMN

1) AT END OF VIADUCT COLUMN



$$V_a = 0.40 \times 0.50 \times (4.556 + 4.436) = 1.798 \text{ m}^3$$

2) AT INTERMEDIATE OF VIADUCT COLUMN



$$n = 3$$

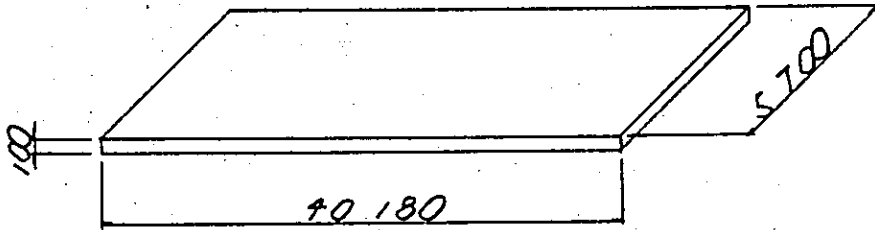
$$V_a' = 0.50 \times 0.50 \times 4.496 = 1.124 \text{ m}^3$$

$$V_a = 1.124 \times 3 = 3.372 \text{ m}^3$$

COLUMN TOTAL

$$5.170 \text{ m}^3$$

(4) LEVELING CONCRETE



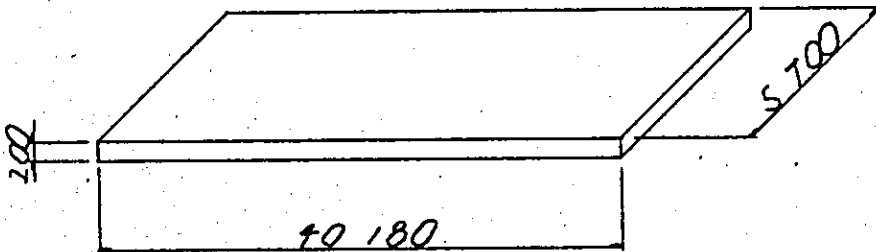
$$V_a = 40.18 \times 5.70 \times 0.10$$

$$= 22.903 \text{ m}^3$$

LEVELING CONCRETE TOTAL

$$22.903 \text{ m}^3$$

(5) AGGREGATE SUB BASE



$$V_a = 40.18 \times 5.70 \times 0.20$$

$$= 45.805 \text{ m}^3$$

AGGREGATE SUB BASE TOTAL

$$45.805 \text{ m}^3$$

(6) PILE

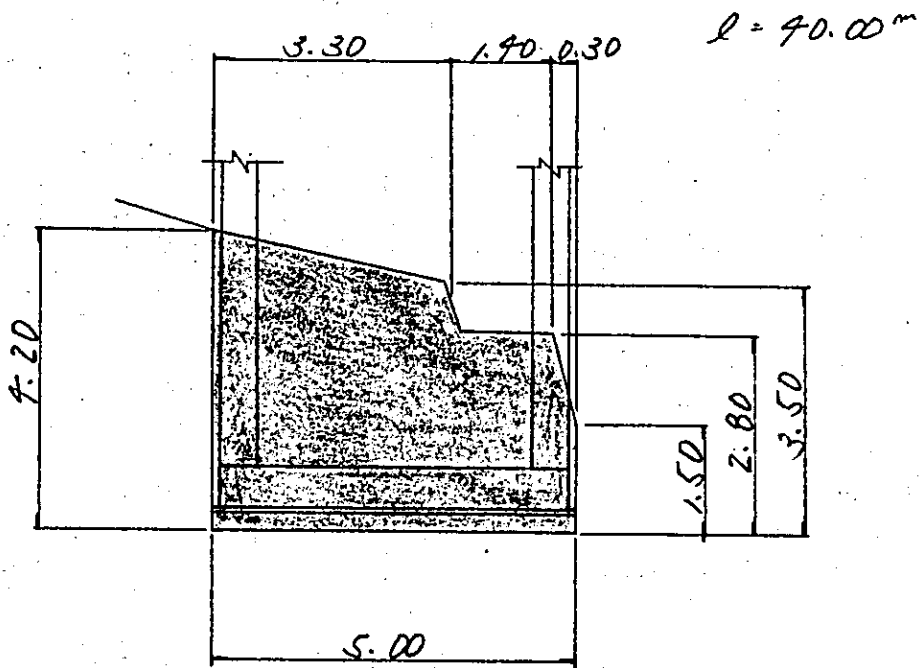
$$\phi = 500 \text{ mm}$$

$$L = A - 14.0 \text{ m} \times 96$$

$$L = B - 8.0 \text{ m} \times 96$$

(7) EXCAVATION

17° 380' 000 ~ 17° 420' 000

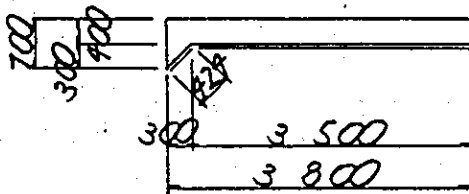


$$V = \left\{ \frac{1}{2} \times (7.20 + 3.50) \times 3.30 + 1.90 \times 2.80 + \frac{1}{2} \times (1.50 + 2.80) \times 0.30 \right\} \times 40.00 = 690.800^3$$

EXCAVATION TOTAL = 690.800³

FORM AREA

(1) SLAB

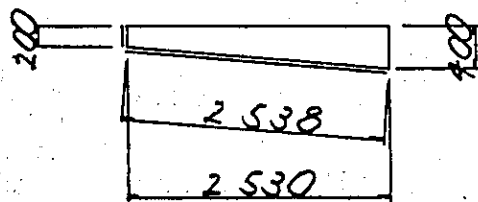


$$l = 39.98^m$$

$$A_a = 3.80 \times 0.40 \times 2 = 3.040^{m^2}$$

$$A_b = 0.30 \times 0.30 \times \frac{1}{2} \times 2 = 0.090''$$

$$A_c = (0.424 + 3.50) \times 39.98 = 156.882''$$



$$l = 39.98^m$$

$$A_a = (0.20 + 0.40) \times \frac{1}{2} \times 2.53 \times 2 = 1.518^{m^2}$$

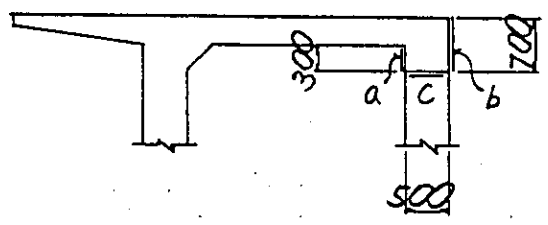
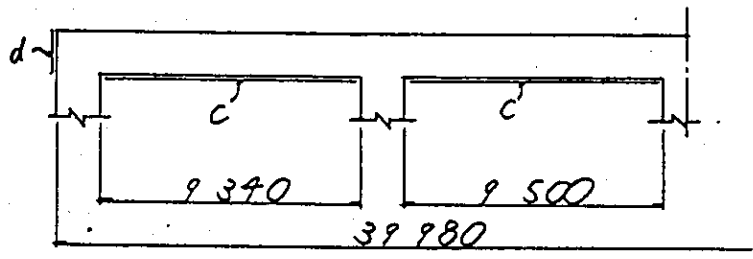
$$A_b = (0.20 + 2.538) \times 39.98 = 109.465''$$

SLAB TOTAL

270.995^{m²}

(2) BEAM

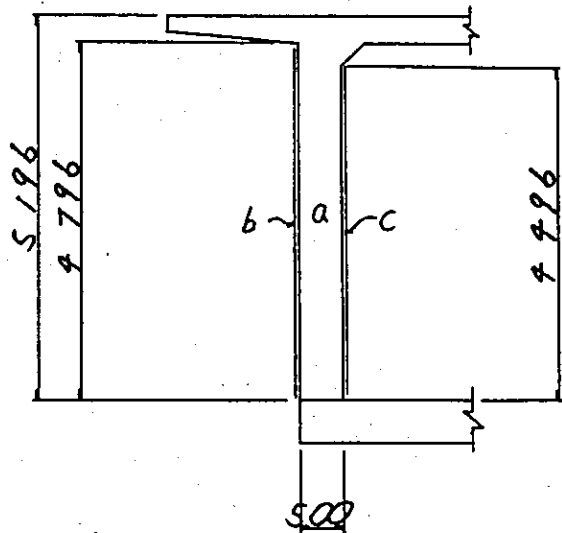
1) LONGITUDINAL BEAM



$A_a = 39.98 \times 0.30$	=	11.994 m^2
$A_b = 39.98 \times 0.70$	=	27.986 m^2
$A_c = (9.34 + 9.50) \times 2 \times 0.50$	=	18.840 m^2
$A_d = 0.50 \times 0.70 \times 2$	=	0.700 m^2

SUB TOTAL =	59.520 m^2
--------------------	--

2) WALL



$$L = 39.98^m$$

$$A_a = 0.50 \times 5.196 \times 2 = 5.196^{m^2}$$

$$A_b = 4.796 \times 39.98 = 191.744^m$$

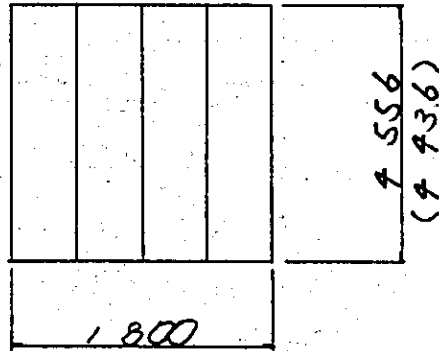
$$A_c = 4.496 \times 39.98 = 179.750^m$$

$$SUB\ TOTAL = 376.690^{m^2}$$

$$BEAM\ TOTAL = 436.210^{m^2}$$

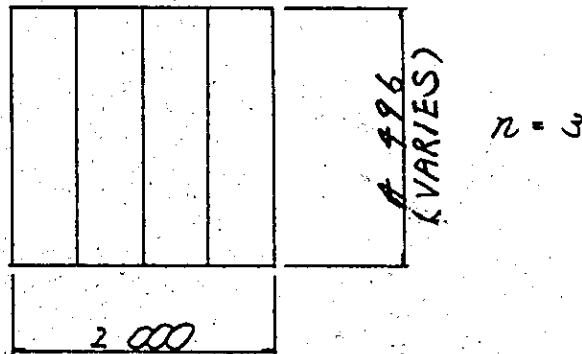
(3) COLUMN

1) AT END OF VIADUCT COLUMN



$$A_a = 1.80 \times (4.556 + 4.436) = 16.186 \text{ m}^2$$

2) AT INTERMEDIATE OF VIADUCT COLUMN



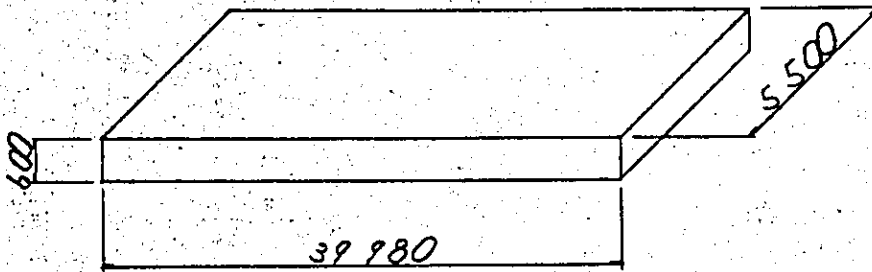
$$A_d = 2.00 \times 4.496 = 8.992 \text{ m}^2$$

$$A_a = 8.992 \times 3 = 26.976 \text{ m}^2$$

COLUMN TOTAL

$$43.162 \text{ m}^2$$

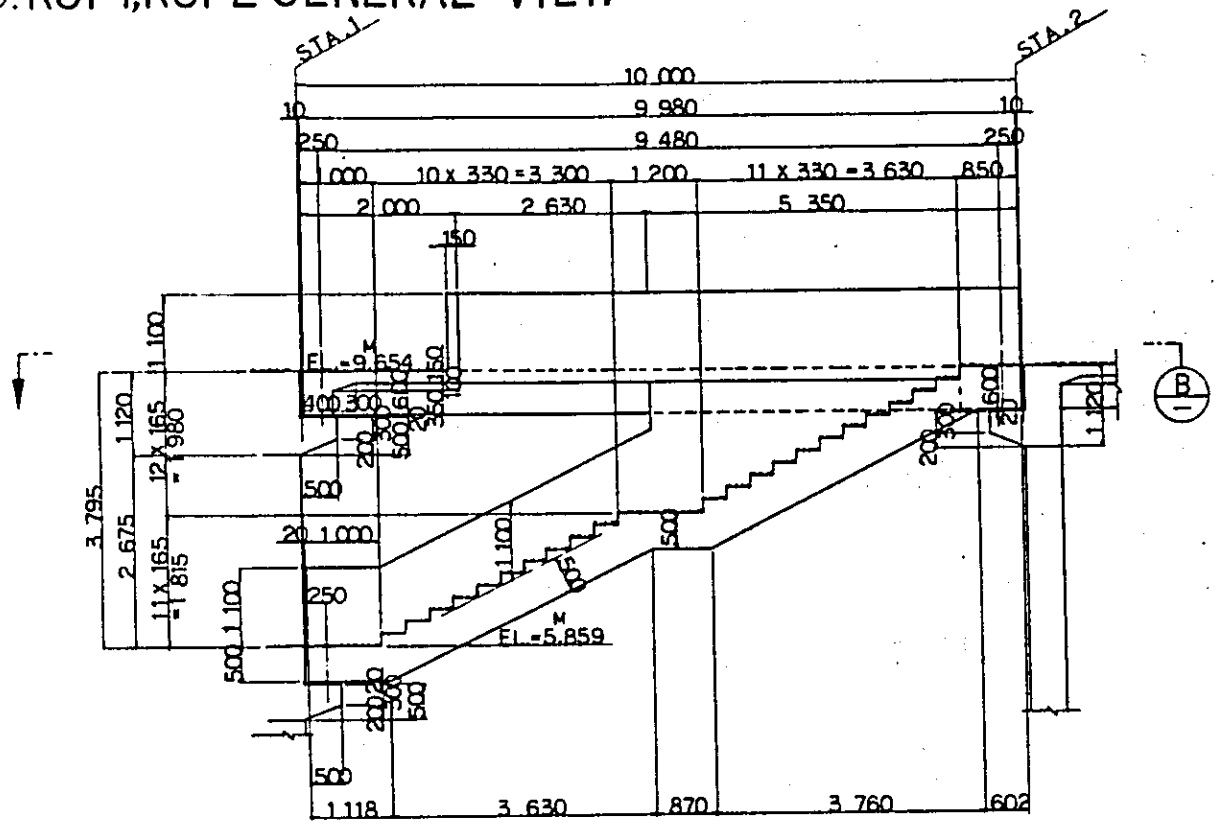
(4) FOOTING



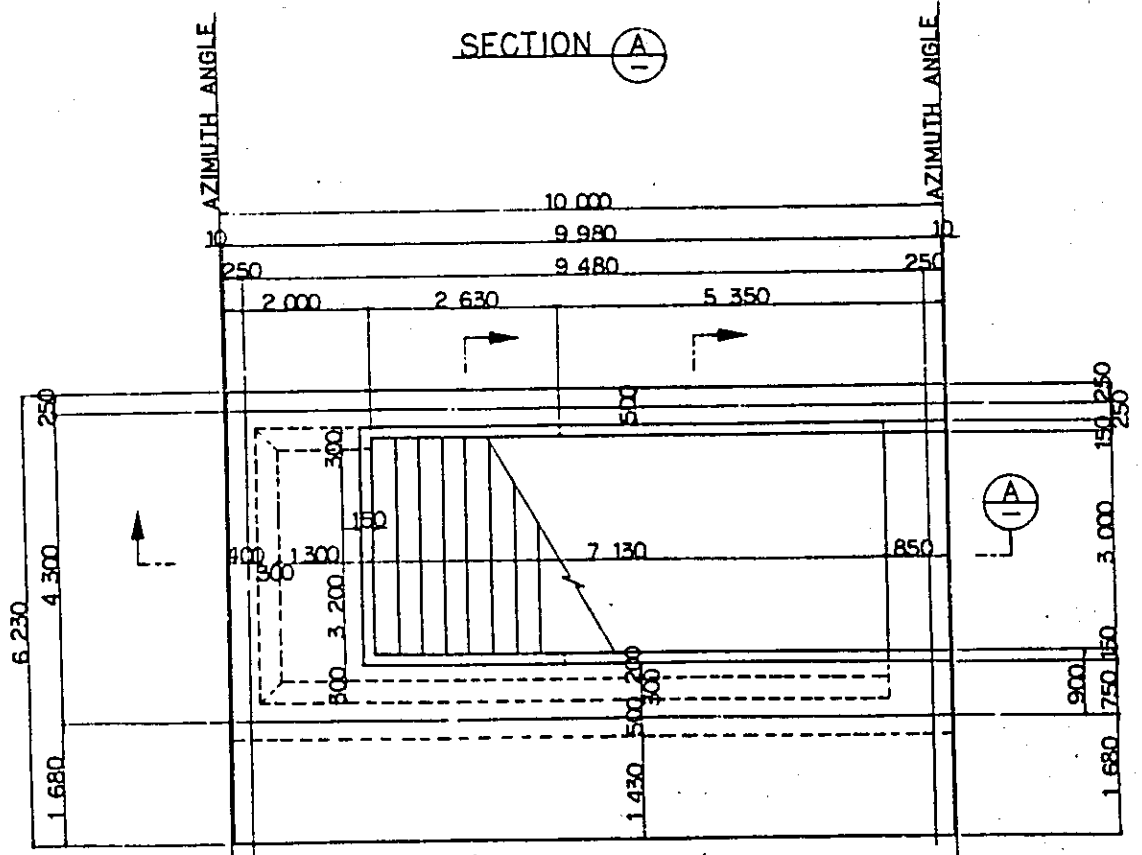
$$A_0 = (39.98 + 5.50) \times 2 \times 0.60 = 59.576 \text{ m}^2$$

FOOTING TOTAL 59.576 m²

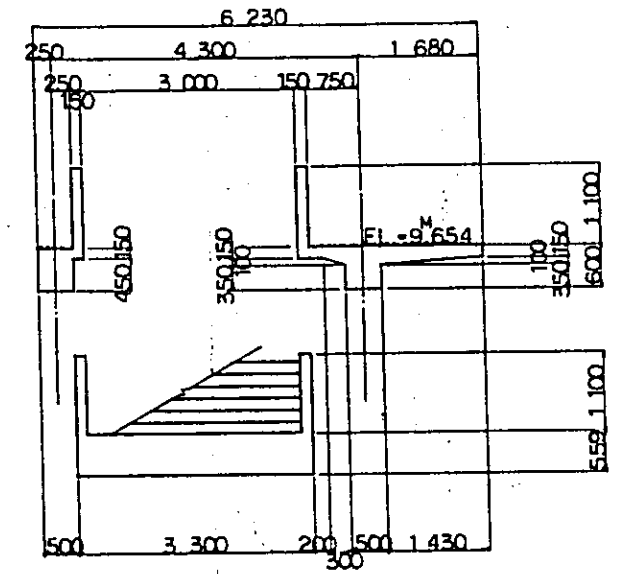
9.RCP1,RCP2 GENERAL VIEW



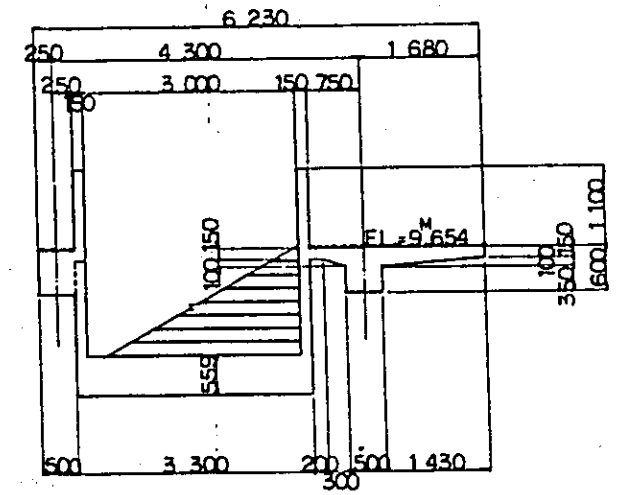
SECTION (A)



SECTION (B)



SECTION (C)



SECTION (D)

- NOTES :
- 1 ALL DIMENSIONS ARE SHOWN IN MILLIMETERS UNLESS OTHERWISE INDICATED
 - 2 REFERENCE DRAWING FOR BAR ARRANGEMENT : CS-248 ~250

DIMENSION SCHEDULE

	STATION	AZIMUTH ANGLE
⊖	STA. 2 17 ^K 340 ^M 000	345° 30' 45"
⊖	STA. 1 17 ^K 350 ^M 000	'
⊙	STA. 1 17 ^K 380 ^M 000	345° 30' 45"
⊙	STA. 2 17 ^K 390 ^M 000	'

R.C.P. (RCP1), (RCP2)

	CONCRETE VOLUME (m ³)	FORM AREA (m ²)	REINFORCING BAR (kg)	RATIO (kg/m ³)
SLAB	6.6	26.2	369.6	55.2
BEAM	6.7	39.6	1676.8	250.3
CURB	—	—	—	—
STAIR WAY	25.3	144.9	3300.2	130.9
TOTAL	38.6	210.7	5391.6	130.9

	UNIT	QUANTITY	REMARKS
ANCHOR BAR	Kg	25.2	φ32 × 500
BEARING PAT	EACH	8	200 × 150 × 8
		8	150 × 150 × 10

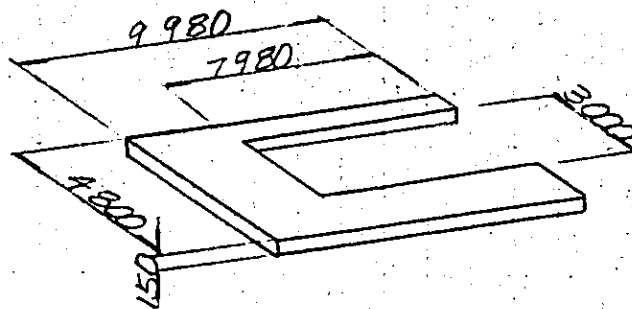
(RCP1) (RCP2) WEIGHT OF BARS BY DIAMETER

	D 32	D 29	D 25	D 22	D 19	D 16	D 13	D 10	TOTAL
SLAB	—	—	—	—	—	—	—	369.6	369.6
BEAM	—	—	1070.6	—	—	296.9	351.3	—	1676.8
STAIR WAY	—	—	1955.7	—	—	792.5	1052.0	—	3900.2
TOTAL	—	—	2539.3	—	—	1039.9	1703.3	369.6	5391.6

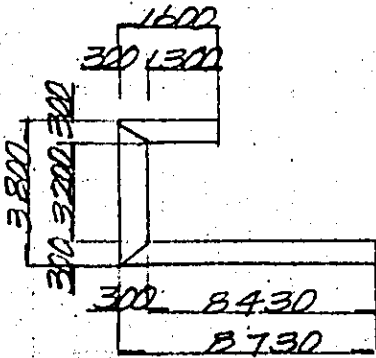
(RCP1), (RCP2)

CONCRETE VOLUME

(1) SLAB



$$V_a = (9.980 \times 4.800 - 7.980 \times 3.000) \times 0.150 = 3.595$$



$$V_b = (1.30 + 8.73 + 3.20) \times 0.30 \times 0.10 \times \frac{1}{2} + 0.30 \times 0.30 \times 0.10 \times \frac{1}{2} \times \frac{1}{3} \times 4 = 0.200$$

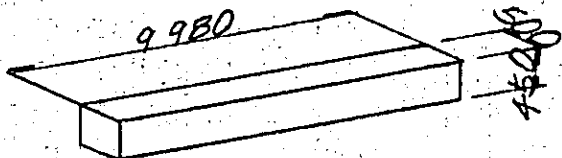


$$V_c = \frac{1}{2} \times (0.250 + 0.150) \times 1.430 \times 9.980 = 2.854 \text{ m}^3$$

SLAB TOTAL 6.699 ^{m³}

(2) BEAM

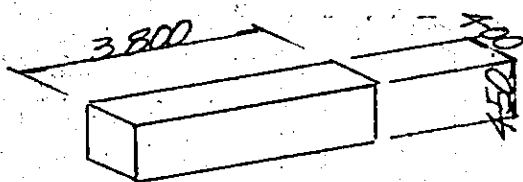
1) LONGITUDINAL BEAM



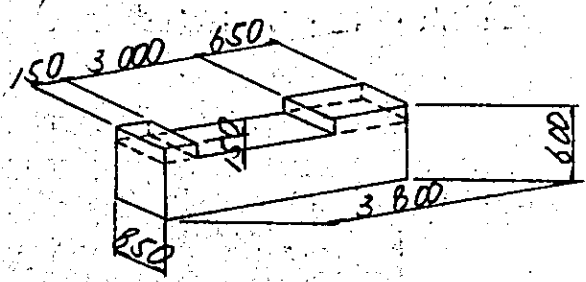
$$V_a = 9.980 \times 0.500 \times 0.450 \times 2 = 4.491 \text{ m}^3$$

SUB TOTAL = 4.491

2) VIADUCT TRANSVERSE BEAM



$$V_a = 3.800 \times 0.400 \times 0.450 = 0.684 \text{ m}^3$$



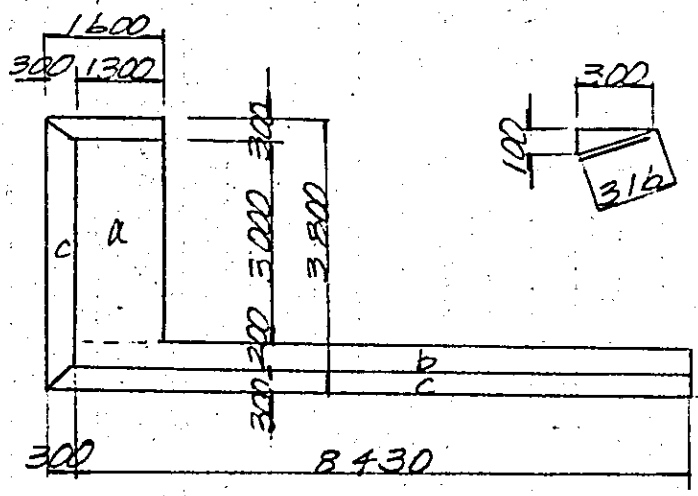
$$V_b = 3.80 \times 0.60 \times 0.850 - 3.000 \times 0.850 \times 0.150 = 1.556 \text{ m}^3$$

SUB TOTAL = 2.240

BEAM TOTAL 6.731

FORM AREA

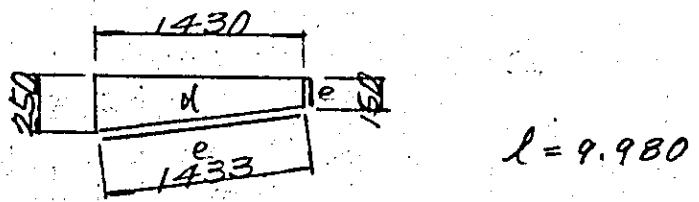
(1) SLAB



$$A_a = 1.300 \times 3.000 = 3.900 \text{ m}^2$$

$$A_b = 0.200 \times 8.430 = 1.686 \text{ m}^2$$

$$A_c = (1.450 + 3.500 + 8.580) \times 0.316 = 4.275 \text{ m}^2$$



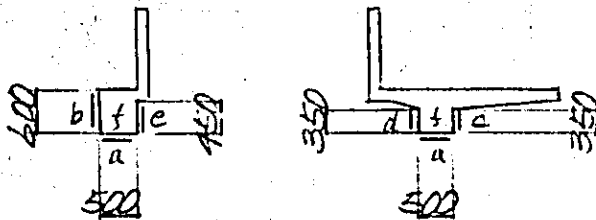
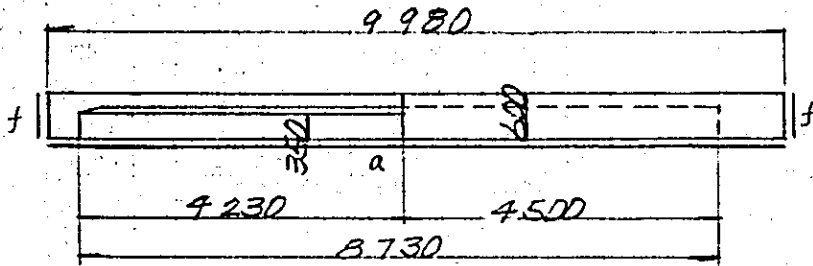
$$A_d = (0.250 + 0.150) \times \frac{1}{2} \times 1.430 \times 2 = 0.572 \text{ m}^2$$

$$A_e = (0.150 + 1.433) \times 9.980 = 15.798 \text{ m}^2$$

SLAB TOTAL = 26.231 m²
JICA

(2) BEAM

1) LONGITUDINAL BEAM



$$A_a = 9.980 \times 0.500 \times 2 = 9.980 \text{ m}^2$$

$$A_b = 9.980 \times 0.600 = 5.988 \text{ m}^2$$

$$A_c = 9.980 \times 0.350 = 3.493 \text{ m}^2$$

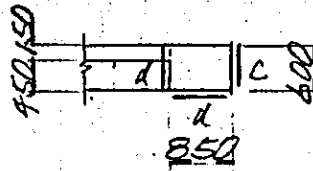
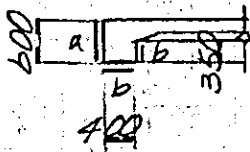
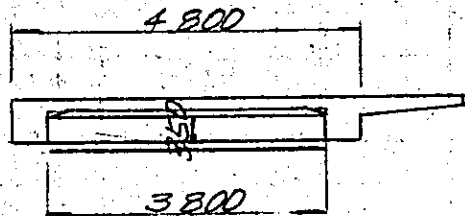
$$A_d = 8.730 \times 0.350 = 3.056 \text{ m}^2$$

$$A_e = 4.230 \times 0.950 = 1.904 \text{ m}^2$$

$$A_f = 0.500 \times 0.600 \times 2 \times 2 = 1.200 \text{ m}^2$$

$$\text{SUB TOTAL} = 25.621 \text{ m}^2$$

2) VIADUCT TRANSVERSE BEAM



$$A_a = 0,600 \times 4,800$$

$$= 2,880 \text{ m}^2$$

$$A_b = (0,400 + 0,350) \times 3,800$$

$$= 2,850 \text{ m}^2$$

$$A_c = 0,600 \times 4,800$$

$$= 2,880 \text{ m}^2$$

$$A_d = (0,850 + 0,600) \times 3,800 - 0,150 \times 0,650 =$$

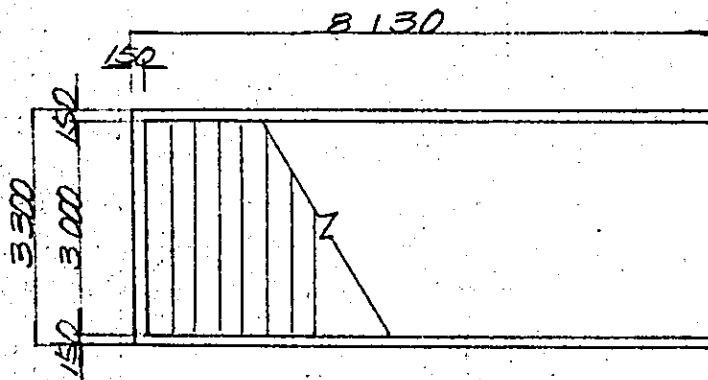
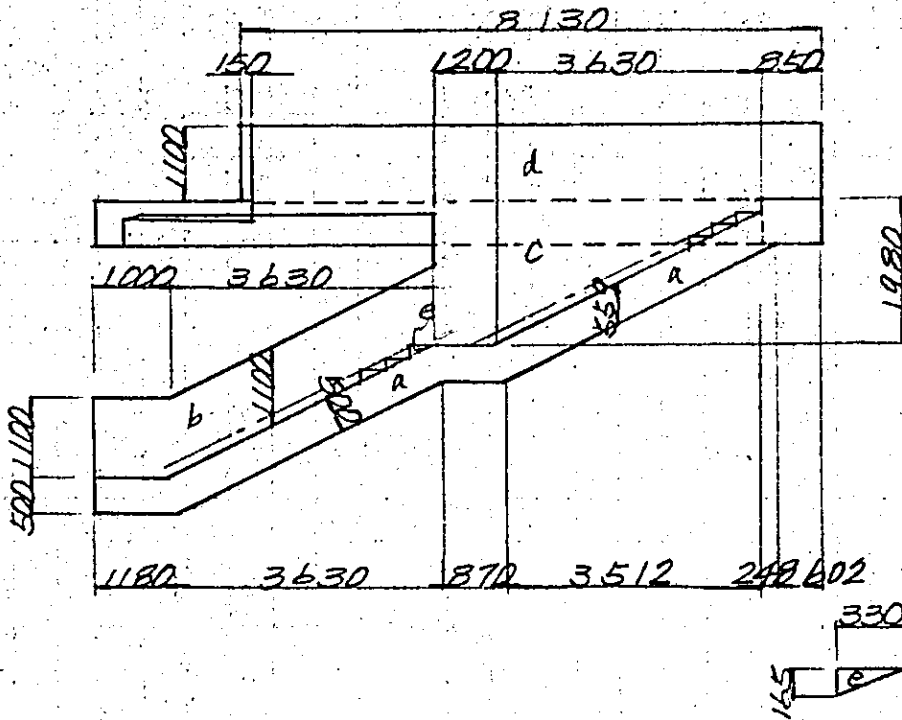
$$5,413 \text{ m}^2$$

$$\text{SUB TOTAL} = 14,023 \text{ m}^2$$

$$\text{BEAM TOTAL}$$

$$39,699 \text{ m}^2$$

(3) STAIRWAY
CONCRETE VOLUME



$$V_a = (1.180 + 3.630 + 0.870 + 3.512) \times 0.559$$

$$\times 3.300$$

$$= 16.956$$

³_m

$$V_b = (1,000 + 3,630) \times 1,100 \times 0,150 \times 2 = 1,528 \text{ m}^3$$

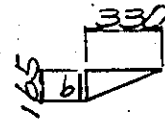
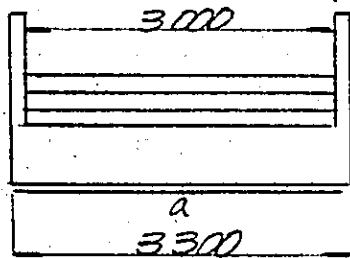
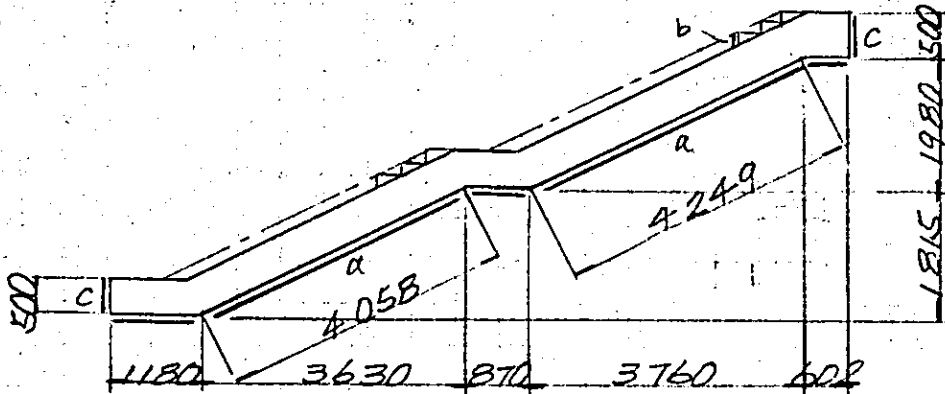
$$V_c = (1,200 \times 1,980 + 3,630 \times 1,980 \times \frac{1}{2}) \times 0,15 \times 2 = 1,791 \text{ m}^3$$

$$V_d = (8,130 \times 2 + 3,000) \times 0,150 \times 1,100 = 3,178 \text{ m}^3$$

$$V_e = 0,165 \times 0,330 \times \frac{1}{2} \times 3,000 \times 22 = 1,797 \text{ m}^3$$

	TOTAL	25,250 ^{m³}
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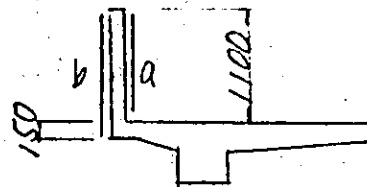
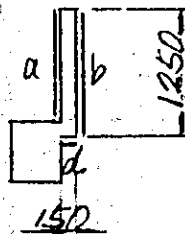
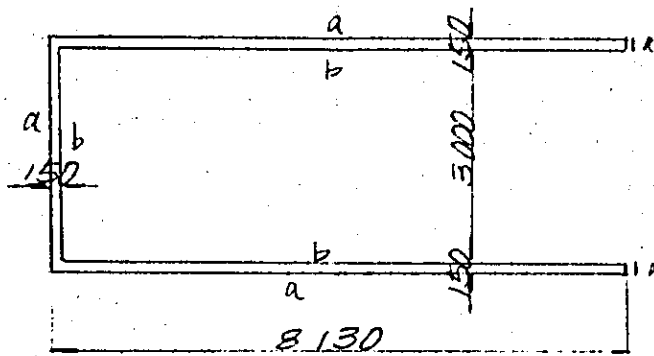
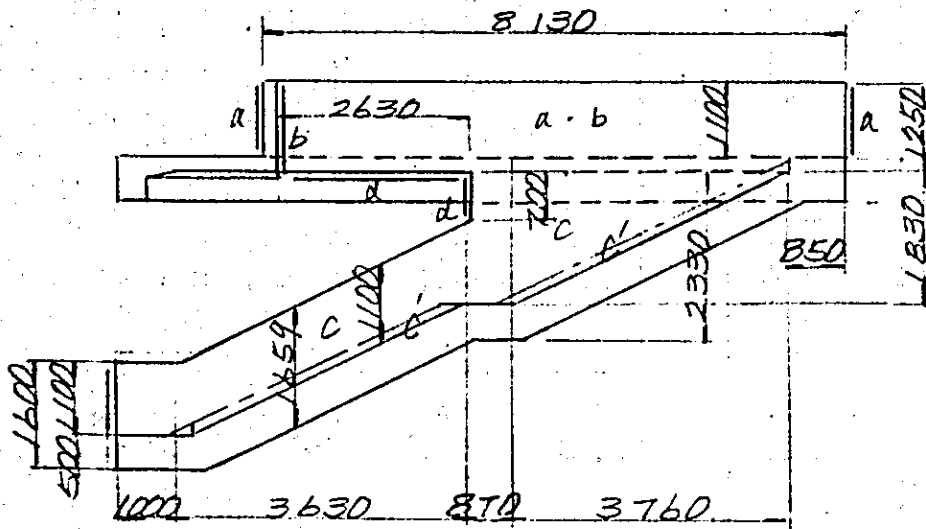
FORM AREA



$$\begin{aligned}
 A_a &= (1.180 + 4.058 + 0.870 + 4.249 + 0.602) && \text{m}^2 \\
 &\times 3.300 && = 36.165 \\
 A_b &= 0.165 \times 3.000 \times 23 && = 11.385 \\
 A_c &= 0.500 \times 3.300 \times 2 && = 3.300
 \end{aligned}$$

$$\text{TOTAL} = 50.850 \text{ m}^2$$

WALL



$$\begin{aligned}
 A_a &= (8.130 \times 2 + 3.300 + 0.150 \times 2) \times 1.100 = 21.846 \text{ m}^2 \\
 A_b &= (7.980 \times 2 + 3.000) \times 1.250 - 0.150 \times 0.850 \times 2 = 23.445 \text{ m}^2 \\
 A_c &= \{(1.000 + 3.630) \times 1.100 + 0.870 \times 1.830 \\
 &\quad + 3.760 \times 1.830 \times \frac{1}{2}\} \times 2 = 20.251 \text{ m}^2 \\
 A_c' &= (1.100 \times 1.600 + 3.630 \times 1.659 + 0.870 \\
 &\quad \times 2.330 + 3.760 \times 2.330 \times \frac{1}{2}) \times 2 = 28.379 \text{ m}^2 \\
 A_d &= (1.100 + 0.700 + 2.630) \times 0.150 \times 2 = 1.329 \text{ m}^2 \\
 -A_e &= 0.165 \times 0.330 \times \frac{1}{2} \times 22 \times 2 = -1.198 \text{ m}^2
 \end{aligned}$$

$$99.052 \text{ m}^2$$

$$\text{TOTAL} = 199.902 \text{ m}^2$$

REINFORCING BAR

No. 218

REINF. NO.	DIA. (mm)	U. WEIGHT (kg/m)	LENGTH (mm)	NUMBER	WEIGHT (kg)	REMARKS
	(RCP) 1	(RCP) 2				
	SLAB					
S 1	D10	0.56	6 800	9	34.3	
2	"	"	6 080	4	13.6	
3	"	"	6 160	2	6.9	
4	"	"	6 160	2	6.9	
5	"	"	4 670	6	15.7	
6	"	"	1 020	24	13.7	
7	"	"	2 650	26	38.6	
8	"	"	1 930	26	28.1	
9	"	"	2 560	30	43.0	
10	"	"	1 800	5	5.0	
11	"	"	1 090	29	19.6	
21	D10	0.56	10 920	4	24.5	
22	"	"	2 990	8	10.9	
23	"	"	2 970	7	9.7	
24	"	"	1 990	7	7.6	
25	"	"	9 920	14	77.8	
26	"	"	8 200	2	9.2	
27	"	"	1 000	8	4.5	
				D10	364.6 ^{kg}	
	SLAB TOTAL WEIGHT				364.6 ^{kg}	

REINF. NO.	DIA. (mm)	U. WEIGHT (kg/m)	LENGTH (mm)	NUMBER	WEIGHT (kg)	REMARKS
LONGITUDINAL BEAM						
B 1	Ø25	3.98	8 010	2	63.8	
2	"	"	10 960	4	179.5	
3	"	"	10 390	14	578.9	
4	Ø16	1.56	10 200	10	159.1	
B ^o 1	Ø13	0.995	1 800	78	139.7	
2	"	"	1 350	78	109.8	
				Ø25	817.2 ^{kg}	
				Ø16	159.1 ["]	
				Ø13	299.5 ["]	
				SUB TOTAL WEIGHT		1 220.8 ^{kg}

REINF. NO.	DIA. (mm)	U. WEIGHT (kg/m)	LENGTH (mm)	NUMBER	WEIGHT (kg)	REMARKS
ATEND. OF VIADUCT TRANSVERSE BEAM (1)						
B 11	D16	1.56	4 690	4	29.3	
12	"	"	4 690	4	29.3	
13	"	"	4 690	2	19.6	
B' 11	D13	0.995	1 660	16	26.9	
12	"	"	1 250	16	19.9	
				D16	73.2 kg	
				D13	96.3 "	
				SUB TOTAL WEIGHT		119.5 kg

REINF. NO.	DIA. (mm)	U. WEIGHT (kg/m)	LENGTH (mm)	NUMBER	WEIGHT (kg)	REMARKS
ATEND OF VIADUCT TRANSVERSE BEAM (2)						
B 21	D25	3.98	4 690	7	130.7	
22	"	"	4 690	7	130.7	
23	D16	1.56	4 690	2	19.6	
B° 21	D13	0.995	2 100	16	33.9	
22	"	"	1 700	16	27.1	
				D25	261.4 ^{kg}	
				D16	19.6 ["]	
				D13	60.5 ["]	
SUB TOTAL WEIGHT					336.5 ^{kg}	
				D25	1 078.6 ^{kg}	
				D16	296.9 ["]	
				D13	351.3 ["]	
BEAM TOTAL WEIGHT					1 676.8 ^{kg}	

REINF. NO.	DIA. (mm)	U. WEIGHT (kg/m)	LENGTH (mm)	NUMBER	WEIGHT (kg)	REMARKS
STAIR WAY						
S 1	D13	0.995	6 450	13	83.4	
2	"	"	5 950	13	77.0	
3	"	"	3 200	23	73.2	
S 11	D16	1.56	2 330	13	97.3	
12	"	"	6 800	13	137.9	
13	D25	3.98	6 000	25	597.0	
14	D16	1.56	5 700	13	115.6	
15	D25	3.98	6 700	25	666.7	
16	"	"	1 930	25	192.0	
17	D16	1.56	3 990	80	991.7	
S° 11	D13	0.995	1 480	66	97.2	
12	"	"	1 600	174	277.0	
WALL						
W 1	D13	0.995	1 700	46	77.8	
2	"	"	1 300	35	45.3	
3	"	"	3 600	8	28.7	
4	"	"	2 700	28	75.2	(VARIES)
5	"	"	1 800	2	3.6	
6	"	"	8 030	10	79.9	
7	"	"	5 000	10	99.8	
8	"	"	1 900	10	13.9	
9	"	"	3 400	16	54.1	(VARIES)
10	"	"	3 200	5	15.9	

REINF. NO.	DIA. (mm)	U. WEIGHT (kg/m)	LENGTH (mm)	NUMBER	WEIGHT (kg)	REMARKS
				025	1 955.78	
				016	792.5	
				013	1 052.0	
STAIR WAY AND WALL TOTAL						
				WEIGHT	3 800.28	
				025	2 539.38	
				016	1 039.9	
				013	1 903.3	
				010	369.6	
TOTAL WEIGHT					5 852.168	

