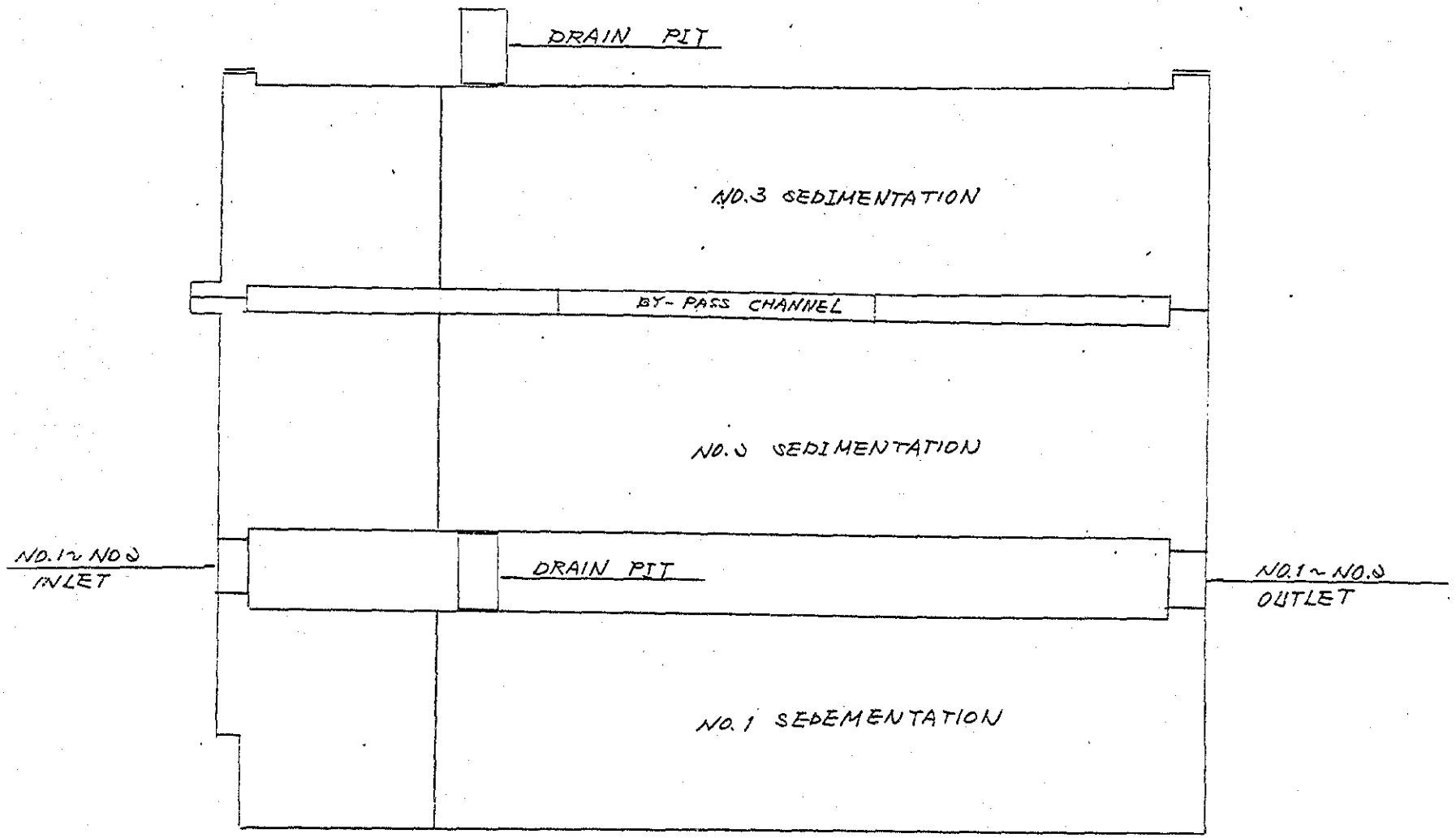
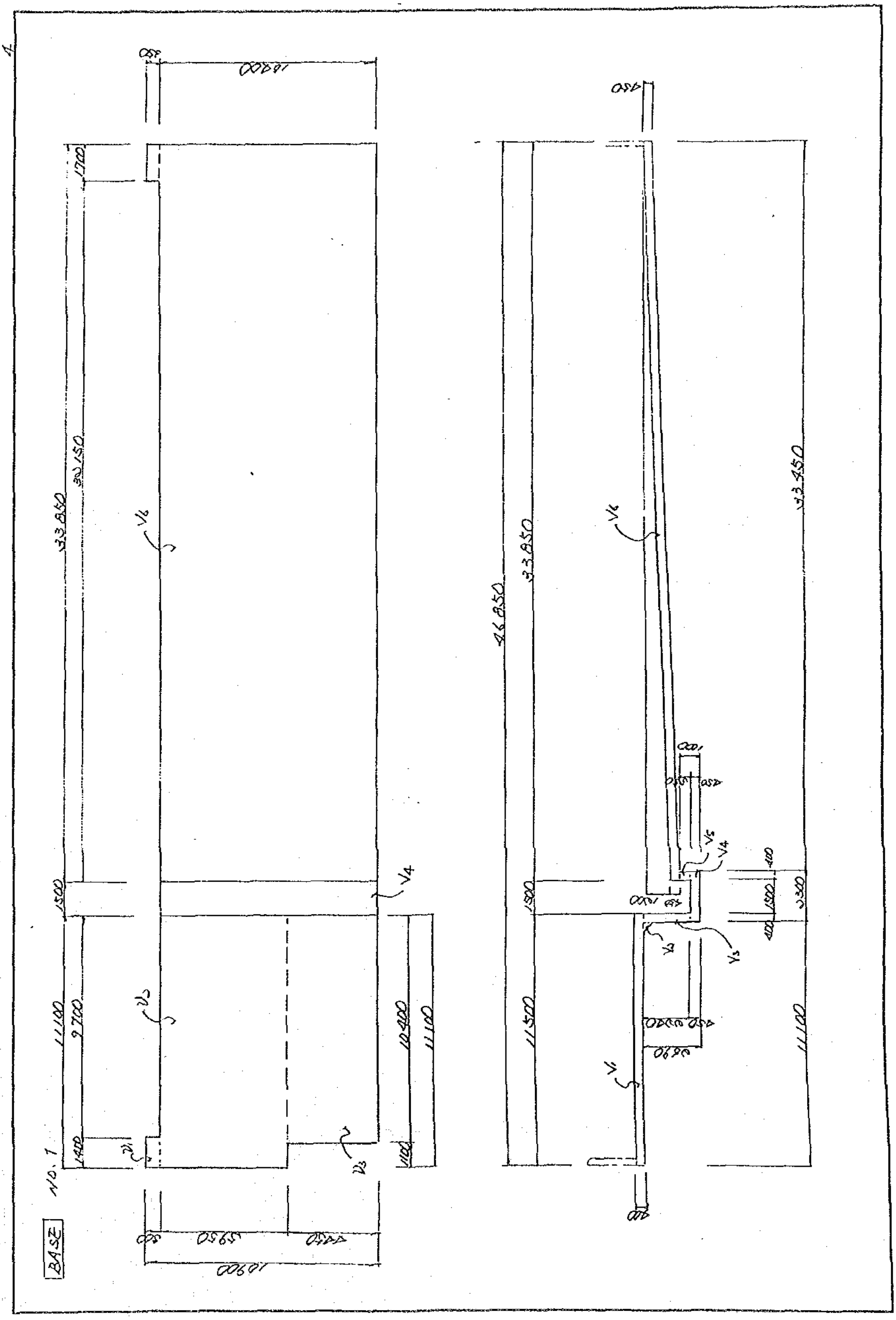
4. FLOCCULATION AND SEDIMENTATION TANK

KEY — PLAN


DRAIN PIT
NO.3 SEDIMENTATION
BY-PASS CHANNEL
NO.2 SEDIMENTATION
NO.1~NO.3
INLET
DRAIN PIT
NO.1~NO.3
OUTLET
NO.1 SEDEMENTATION

CONCRETE CLASS A VOLUME CALCULATION

	NO. 1	NO. 2	NO. 3	NO.1 ~ NO.2 INLET	NO.1 ~ NO.2 OUTLET	BY-PASS CHANNEL	DRAIN PIT N=2	TOTAL
BASE	249.81	231.48	231.48	1.43	1.96	9.83	4.08	730.07
WALL	244.21	249.59	251.86	5.84	4.89	12.39	28.80	797.60
SLAB	20.53	16.96	16.96	0.41	0.46	—	1.03	56.35
STEP	2.55	—	—	—	—	—	—	2.55
INTERMEDIATE SLAB	2.50	2.76	2.76	—	0.61	—	—	8.65
TOTAL	519.60	500.79	503.06	7.68	7.90	22.22	33.93	1595.20 m³


BASE
No. 1
33,850
11,100
1500
1700
1400
9700
10,400
1100
46,850
11,500
33,450
V1
V2
V3
V4
V5
V6

5

BASE

$V_1 = 0.50 \times 1.40 \times 0.40$ = 0.28

$V_2 = 11.10 \times 5.95 \times 0.40$ = 26.40

$V_3 = 10.40 \times 10.40 \times 0.40$ = 43.26

V_1 = 69.96

$V_2 = \frac{1}{2} \times 0.40 \times 0.40 \times 10.40$ = 0.83

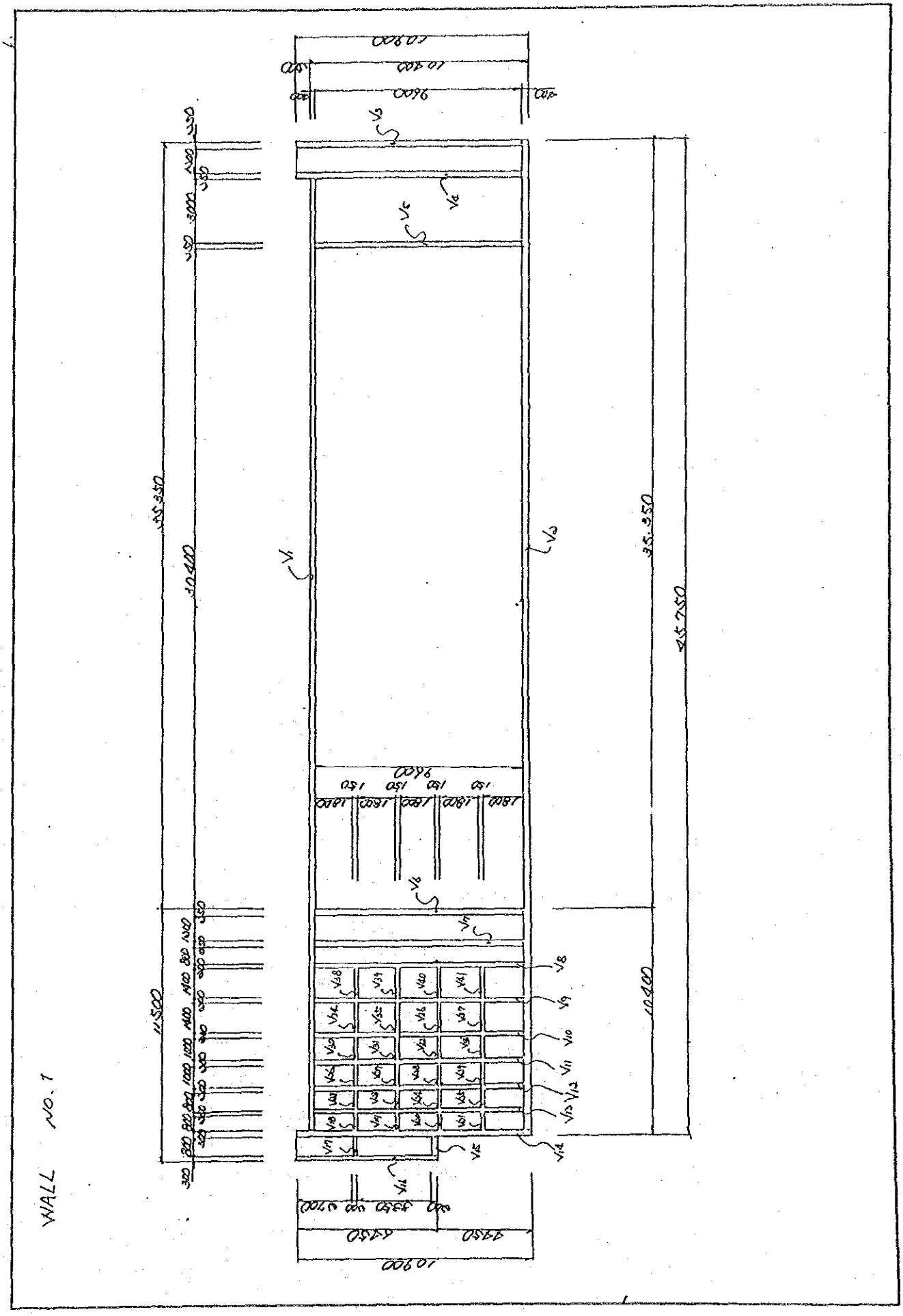
$V_3 = 0.40 \times 0.04 \times 10.40$ = 2.30

$V_4 = 0.30 \times 0.45 \times 10.40$ = 10.76

$V_5 = 0.40 \times 0.55 \times 10.40$ = 2.29

$V_6 = \sqrt{1.00^2 + 33.45^2} \times 0.45 \times 10.40$ = 156.65

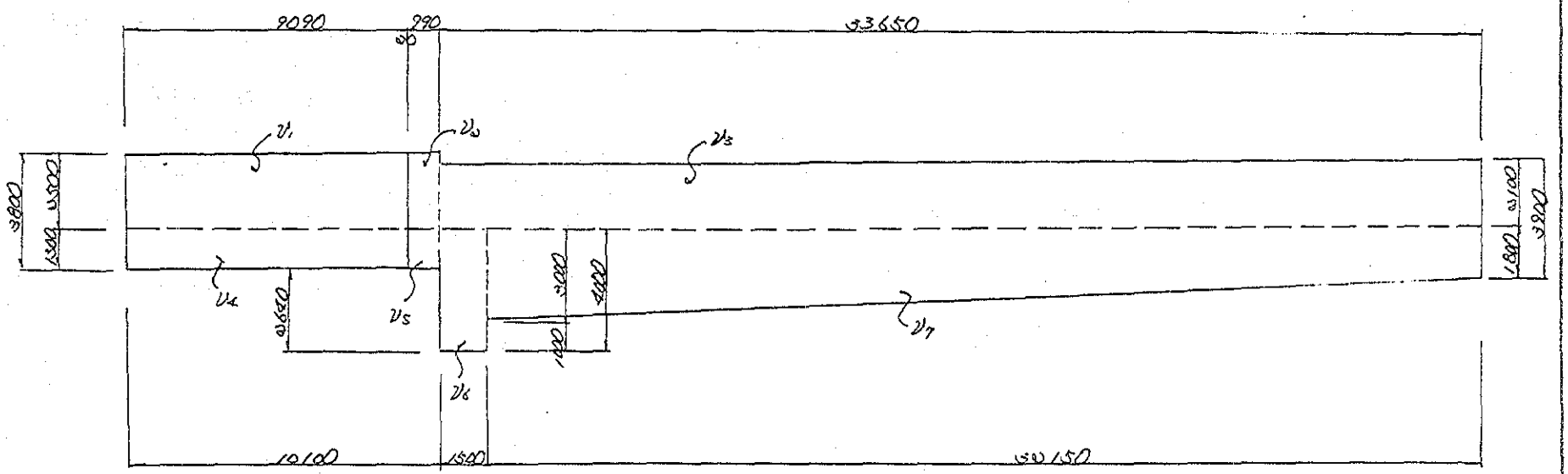
V_1	69.96
V_2	0.83
V_3	2.30
V_4	10.76
V_5	2.29
V_6	156.65
BASE TOTAL	249.81 m^3


WALL NO. 1
V1
V2
V3
V4
V5
V6
V7
V8
V9
V10
V11
V12
V13
V14
35.350
45.750
10.400

WALL CONCRETE

V_1	60.47	V_{30}	0.07
V_2	64.58	V_{33}	0.38
V_3	10.08	V_{34}	1.86
V_4	9.38	V_{35}	0.38
V_5	8.08	V_{36}	0.33
V_6	8.56	V_{37}	0.47
V_7	5.80	V_{38}	0.32
V_8	7.07	V_{39}	0.47
V_9	6.83	V_{30}	0.30
V_{10}	7.00	V_{31}	0.47
V_{11}	7.01	V_{32}	0.30
V_{12}	7.03	V_{33}	0.47
V_{13}	7.11	V_{34}	0.39
V_{14}	10.04	V_{25}	0.59
V_{15}	0.09	V_{36}	0.39
V_{16}	7.35	V_{37}	0.59
V_{17}	0.61	V_{38}	0.39
V_{18}	0.09	V_{39}	0.59
V_{19}	0.38	V_{40}	0.39
V_{20}	0.09	V_{41}	0.59
V_{21}	0.38	TOTAL	344.01 m^3

(V1)



$V_1 = 9.09 \times 0.50 \times 0.05 = 0.68$

$V_2 = 0.99 \times 0.50 \times 0.05 = 0.02$

$V_3 = 33.65 \times 0.10 \times 0.05 = 17.67$

$V_4 = 9.09 \times 1.30 \times 0.40 = 4.73$

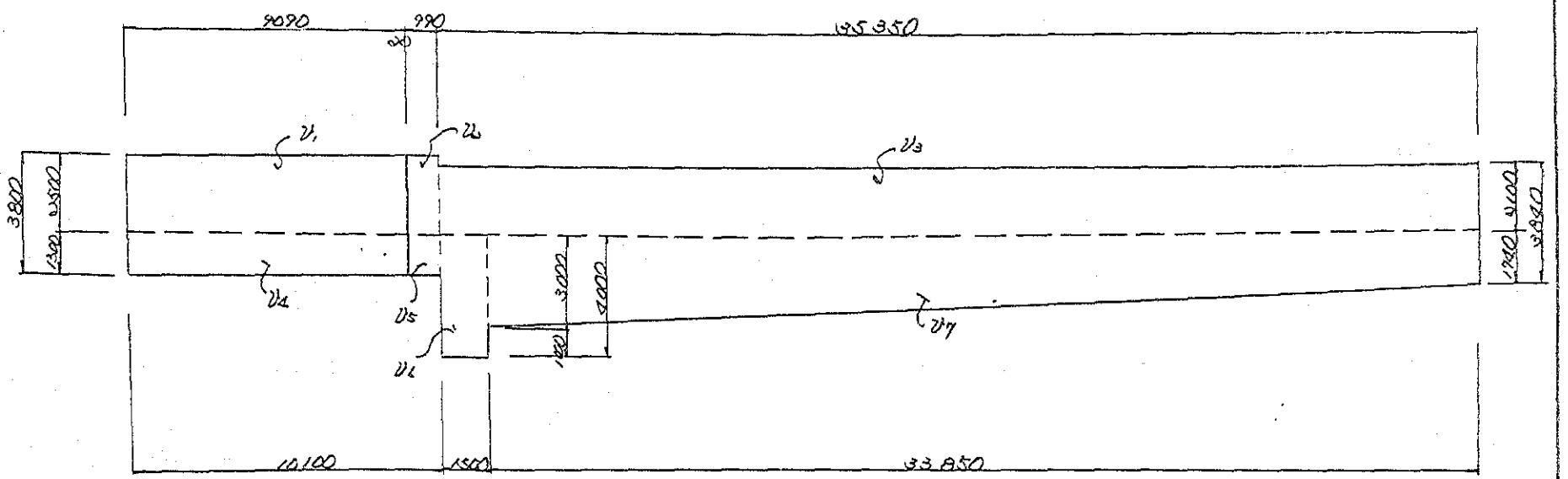
$V_5 = 0.99 \times 1.30 \times 0.40 = 0.51$

$V_6 = 1.50 \times 4.00 \times 0.40 = 0.40$

$V_7 = 1/2 \times (3.00 + 1.80) \times 30.15 \times 0.40 = 30.86$

$V_1 = 50.47$

(V)



$V_1 = 9.09 \times 0.50 \times 0.05 = 0.68$

$V_2 = 0.99 \times 0.50 \times 0.05 = 0.02$

$V_3 = 35.35 \times 0.10 \times 0.05 = 18.05$

$V_4 = 9.09 \times 1.30 \times 0.40 = 4.73$

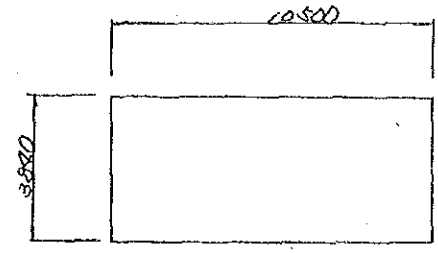
$V_5 = 0.99 \times 1.30 \times 0.40 = 0.51$

$V_6 = 4.00 \times 1.50 \times 4.00 = 0.20$

$V_7 = 1/3 \times (3.00 + 1.74) \times 33.85 \times 0.40 = 30.09$

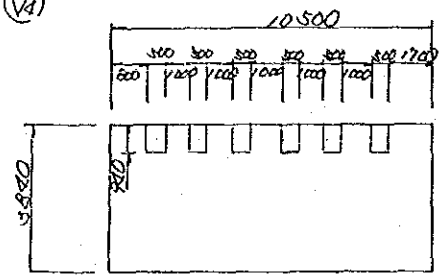
$V_0 = 64.58$

(V3)



$V_3 = 10.50 \times 3.84 \times 0.05 = 10.08$

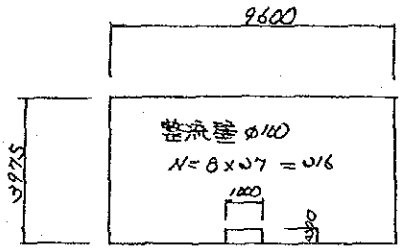
(V4)



$V_4 = 10.50 \times 3.84 \times 0.05$

$- 0.50 \times 0.94 \times 0.05 \times 6 = 9.38$

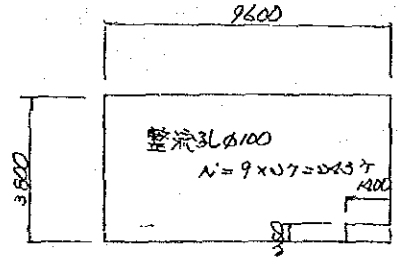
V_5



$V_5 = \{9.60 \times 3.98 - (1.00 \times 0.90$

$+ \pi/4 \times 0.10^2 \times 016)\} \times 0.05 = 9.08$

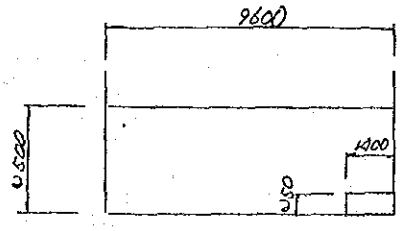
V_6



$V_6 = \{9.60 \times 3.80 - (1.40 \times 0.05$

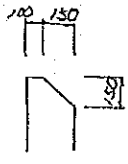
$+ \pi/4 \times 0.10^2 \times 043)\} \times 0.05 = 9.56$

V_7

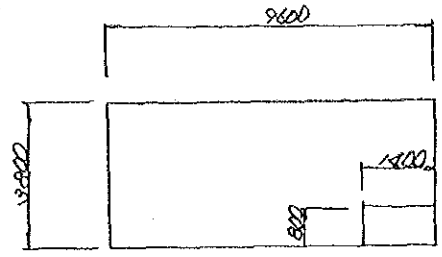


$V_7 = (9.60 \times 0.50 - 1.40 \times 0.05) \times 0.05$

$- 1/2 \times 0.15 \times 0.15 \times 9.60 = 5.80$

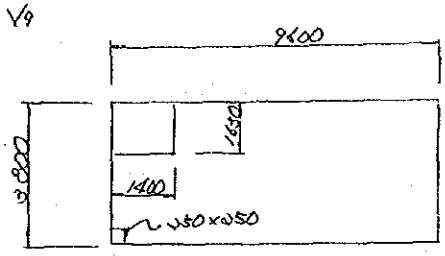


V_8



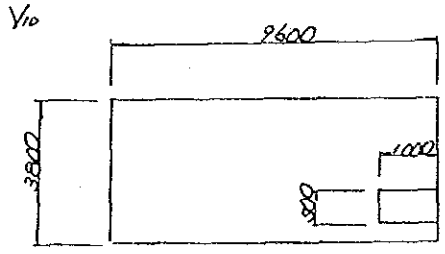
$V_8 = (9.60 \times 3.80 - 1.40 \times 0.80) \times 0.30 = 1.07$

V_9



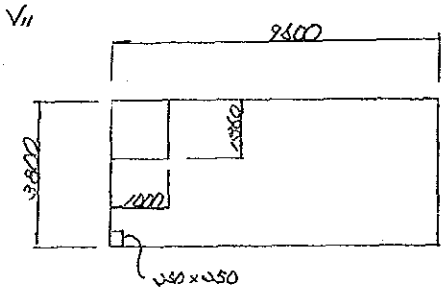
$V_9 = \{9.60 \times 3.80 - (1.40 \times 1.63 + 0.35 \times 0.35)\} \times 0.30 = 0.83$

V_{10}



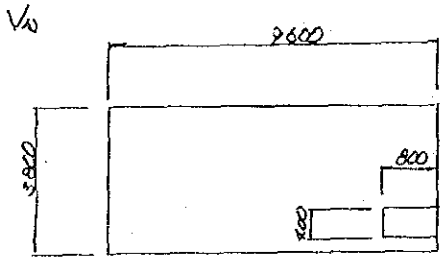
$V_{10} = (9.60 \times 3.80 - 1.00 \times 0.50) \times 0.30 = 1.00$

V_{11}



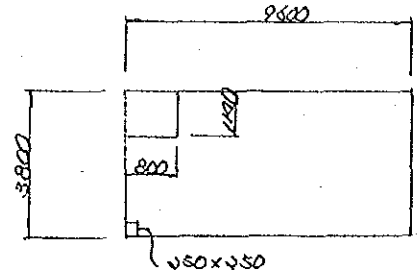
$V_{11} = \{9.60 \times 3.80 - (1.00 \times 1.36 + 0.35 \times 0.35)\} \times 0.30 = 1.01$

V_{12}



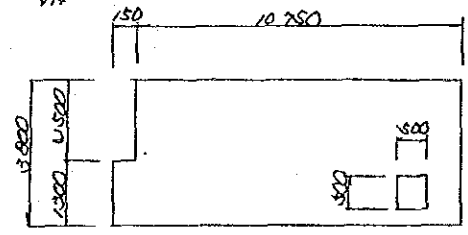
$V_{12} = (9.60 \times 3.80 - 0.80 \times 0.40) \times 0.30 = 1.03$

V13



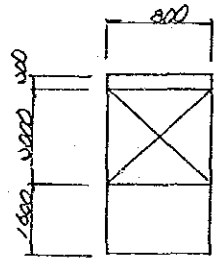
$V_{13} = (9.60 \times 3.80 - 0.80 \times 1.14) \times 0.30 = 2.11$

V14



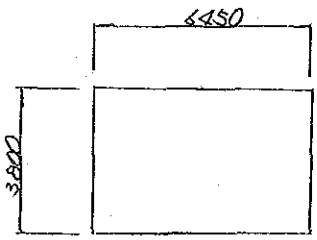
$V_{14} = (1.30 \times 0.15 + 10.75 \times 3.80 - 0.50 \times 0.50) \times 0.30 = 10.09$

V15



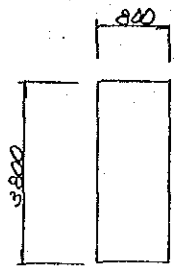
$V_{15} = (0.80 \times 1.60 + 0.80 \times 0.30) \times 0.30 = 0.09$

V16



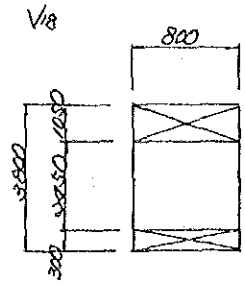
$V_{16} = 6.45 \times 3.80 \times 0.30 = 7.35$

V17



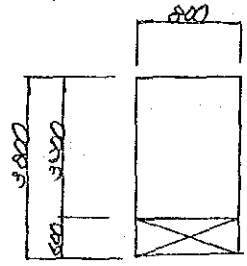
$V_{17} = 0.80 \times 3.80 \times 0.30 = 0.61$

V18



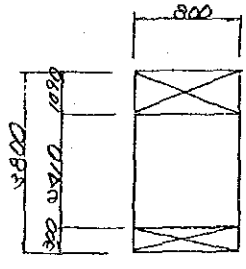
$V_{18} = 0.80 \times 0.45 \times 0.15 = 0.09$

V19



$V_{19} = 0.80 \times 3.00 \times 0.15 = 0.36$

V20

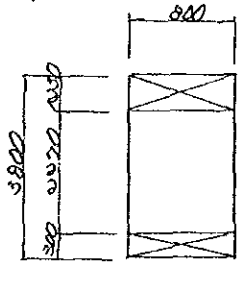


$V_{20} = 0.80 \times 0.41 \times 0.15 = 0.09$

V21

$V_{21} =$ V19に同じ $= 0.36$

V22

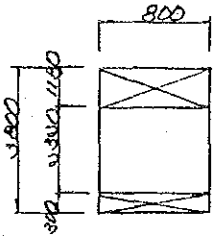


$V_{22} = 0.80 \times 0.07 \times 0.15 = 0.07$

V03

V03 = V19 に同じ　　= 0.38

V04

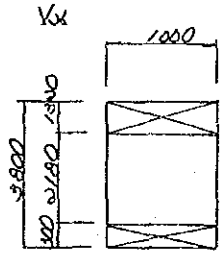


V04 = 0.80 × 3.30 × 0.15　　= 1.86

V05

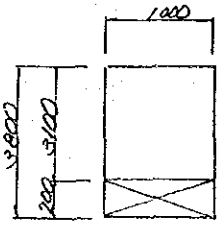
V05 = V19 に同じ　　= 0.38

V06



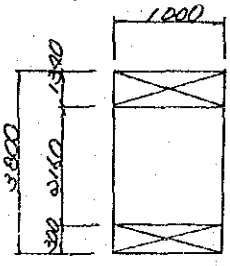
V06 = 1.00 × 3.18 × 0.15　　= 0.33

V07



V07 = 1.00 × 3.10 × 0.15　　= 0.47

V08

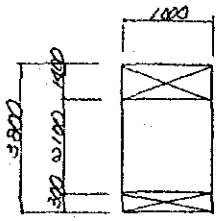


V08 = 1.00 × 3.16 × 0.15　　= 0.32

V09

V09 = V07 SAME = 0.47

V30

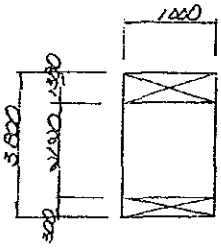


V30 = 1.00 x 0.10 x 0.15 = 0.30

V31

V31 = V07 SAME = 0.47

V32

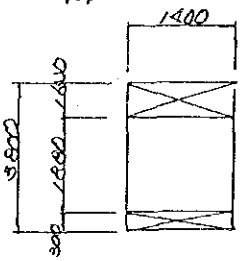


V32 = 1.00 x 0.10 x 0.15 = 0.30

V33

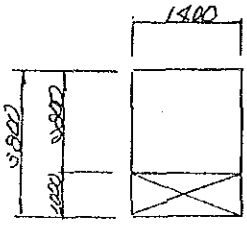
V33 = V07 SAME = 0.47

V34



V34 = 1.40 x 1.88 x 0.15 = 0.39

V35



V35 = 1.40 x 0.80 x 0.15 = 0.59

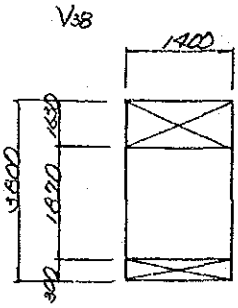
V_{36}

$V_{36} = V_{34}$ SAME = 0.39

V_{37}

$V_{37} = V_{35}$ SAME = 0.59

V_{38}



$V_{38} = 1.40 \times 1.87 \times 0.15$ = 0.39

V_{39}

$V_{39} = V_{35}$ SAME = 0.59

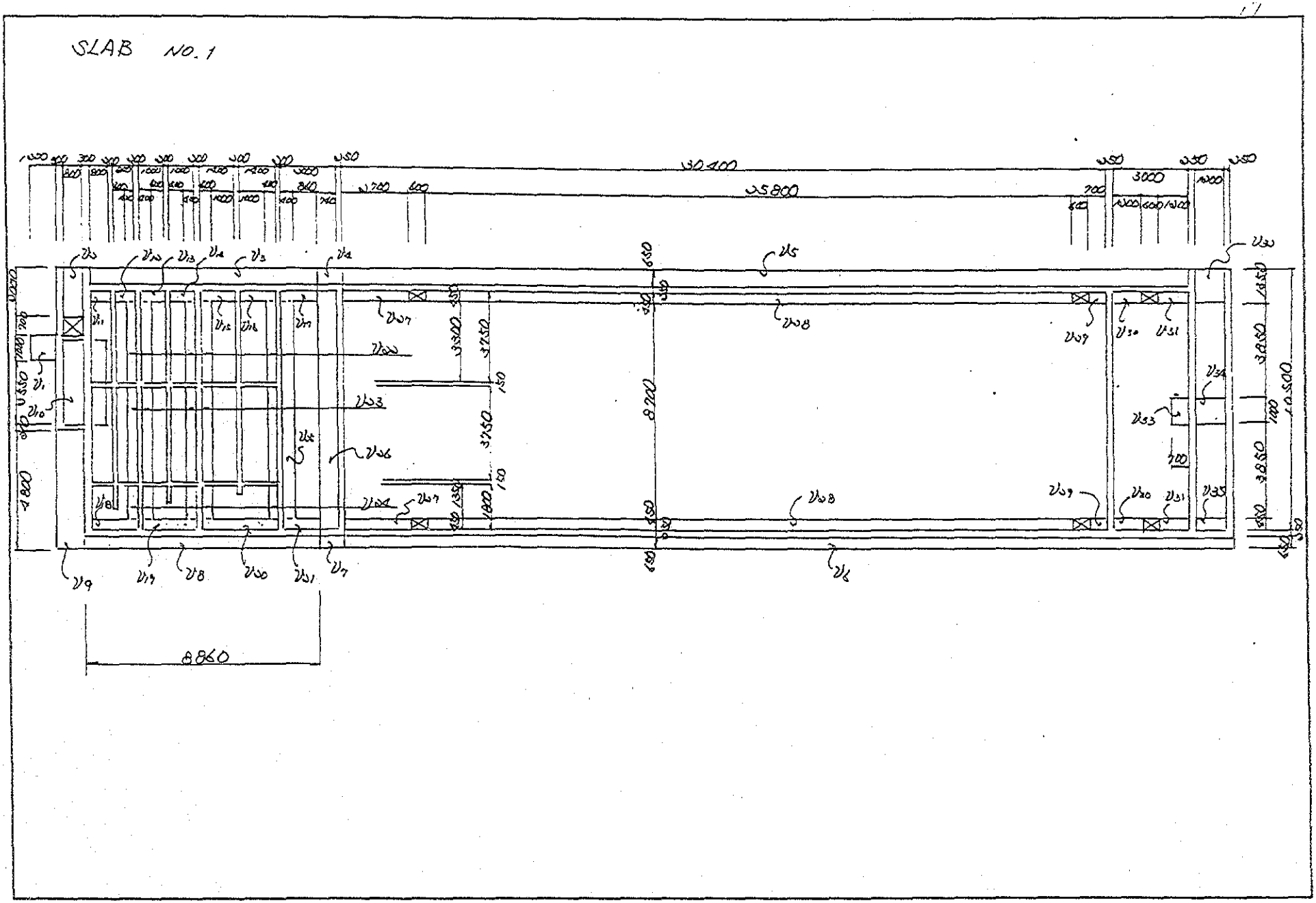
V_{40}

$V_{40} = V_{38}$ SAME = 0.39

V_{41}

$V_{41} = V_{35}$ SAME = 0.59

SLAB NO. 1

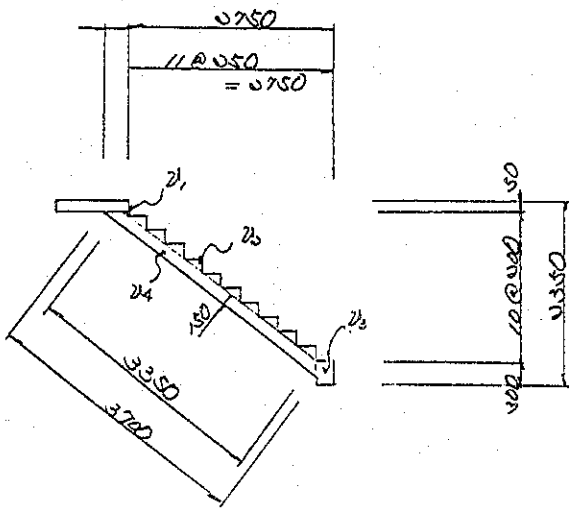


SLAB NO 1.

V_1	= 1.00 x 1.00 x 0.00	=	0.04
V_2	= 0.80 x 0.00 x 0.00	=	0.00
V_3	= 8.86 x 0.65 x 0.15	=	0.86
V_4	= 0.74 x 0.65 x 0.15	=	0.07
V_5	= 33.65 x 0.65 x 0.15	=	3.28
V_6	= 35.35 x 0.65 x 0.15	=	3.45
V_7	= 0.74 x 0.65 x 0.15	=	0.07
V_8	= 8.86 x 0.65 x 0.15	=	0.86
V_9	= 1.10 x 4.80 x 0.15	=	0.79
V_{10}	= 0.80 x 3.35 x 0.00	=	0.04
V_{11}	= 0.80 x 0.45 x 0.15	=	0.05
V_{12}	= 0.80 x 0.45 x 0.15	=	0.05
V_{13}	= 1.00 x 0.45 x 0.15	=	0.07
V_{14}	= 1.00 x 0.45 x 0.15	=	0.07
V_{15}	= 1.40 x 0.45 x 0.15	=	0.09
V_{16}	= 1.40 x 0.45 x 0.15	=	0.09
V_{17}	= 1.06 x 0.45 x 0.15	=	0.09
V_{18}	= 1.80 x 0.45 x 0.15	=	0.12
V_{19}	= 0.00 x 0.45 x 0.15	=	0.15
V_{20}	= 3.00 x 0.45 x 0.15	=	0.00
V_{21}	= 1.06 x 0.45 x 0.15	=	0.09
V_{22}	= 0.40 x 3.30 x 0.15 x 5	=	0.99
V_{23}	= 0.40 x 3.75 x 0.15 x 5	=	1.13

V_{04}	=	0.40 x 1.35 x 0.15 x 5	=	0.41
V_{05}	=	0.40 x 8.70 x 0.15	=	0.50
V_{06}	=	0.74 x 9.60 x 0.15	=	1.07
V_{07}	=	0.45 x 0.70 x 0.15 x 2	=	0.36
V_{08}	=	25.80 x 0.45 x 0.15 x 2	=	3.48
V_{09}	=	0.70 x 0.45 x 0.15 x 2	=	0.09
V_{30}	=	1.00 x 0.45 x 0.15 x 2	=	0.16
V_{31}	=	1.00 x 0.45 x 0.15 x 2	=	0.16
V_{32}	=	1.00 x 1.35 x 0.15	=	0.20
V_{33}	=	1.00 x 0.70 x 0.15	=	0.11
V_{34}	=	1.00 x 1.00 x 0.15	=	0.18
V_{35}	=	1.00 x 0.45 x 0.15	=	0.08
			SLAB TOTAL =	20.53

STEP B = 1000



v_1 = 1/3 × 0.05 × 0.06 × 1.00 = —

v_3 = 1/3 × 0.00 × 0.05 × 10 × 1.00 = 0.30

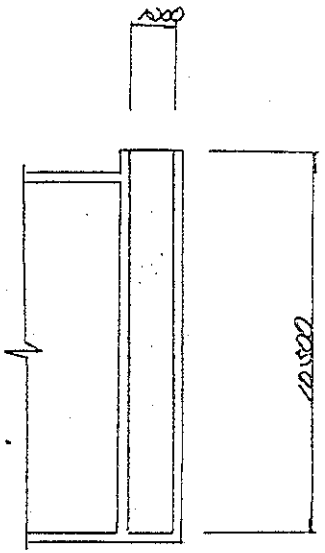
v_3 = 0.05 × 0.30 × 1.00 = 0.09

v_4 = 1/3 × (3.35 + 3.70) × 0.50 × 1.00 = 0.16

STEP TOTAL = 0.55 m³

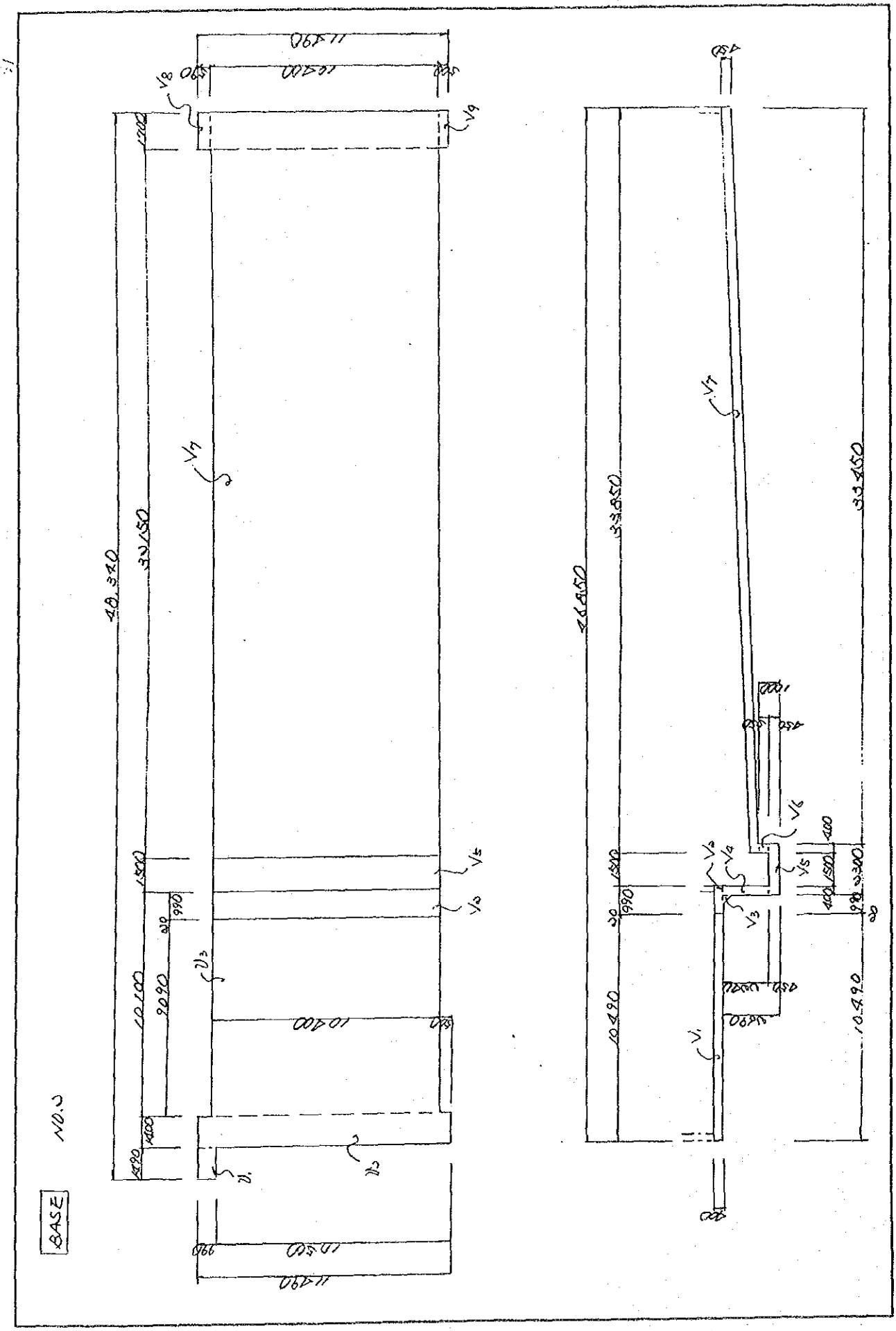
~~INTERMEDIATE SLAB~~

INTERMEDIATE SLAB No.1



V = 1.00 × 10.50 × 0.00 = 0.00

INTERMEDIATE SLAB ~~TOTAL~~ TOTAL = 0.00 m³


BASE
NO.3

BASE NO.2 , NO.3

V_1

$V_1 = 1.49 \times 0.99 \times 0.40 = 0.59$

$V_2 = 1.40 \times 11.49 \times 0.40 = 6.45$

$V_3 = 9.09 \times 10.40 \times 0.40 = 37.81$

$V_1 = 44.81$

$V_6 = 0.99 \times 10.40 \times 0.40 = 4.12$

$V_3 = \frac{1}{2} \times 0.40 \times 0.40 \times 10.40 = 0.83$

$V_4 = 0.40 \times 0.04 \times 10.40 = 9.30$

$V_5 = 0.30 \times 0.45 \times 10.40 = 10.76$

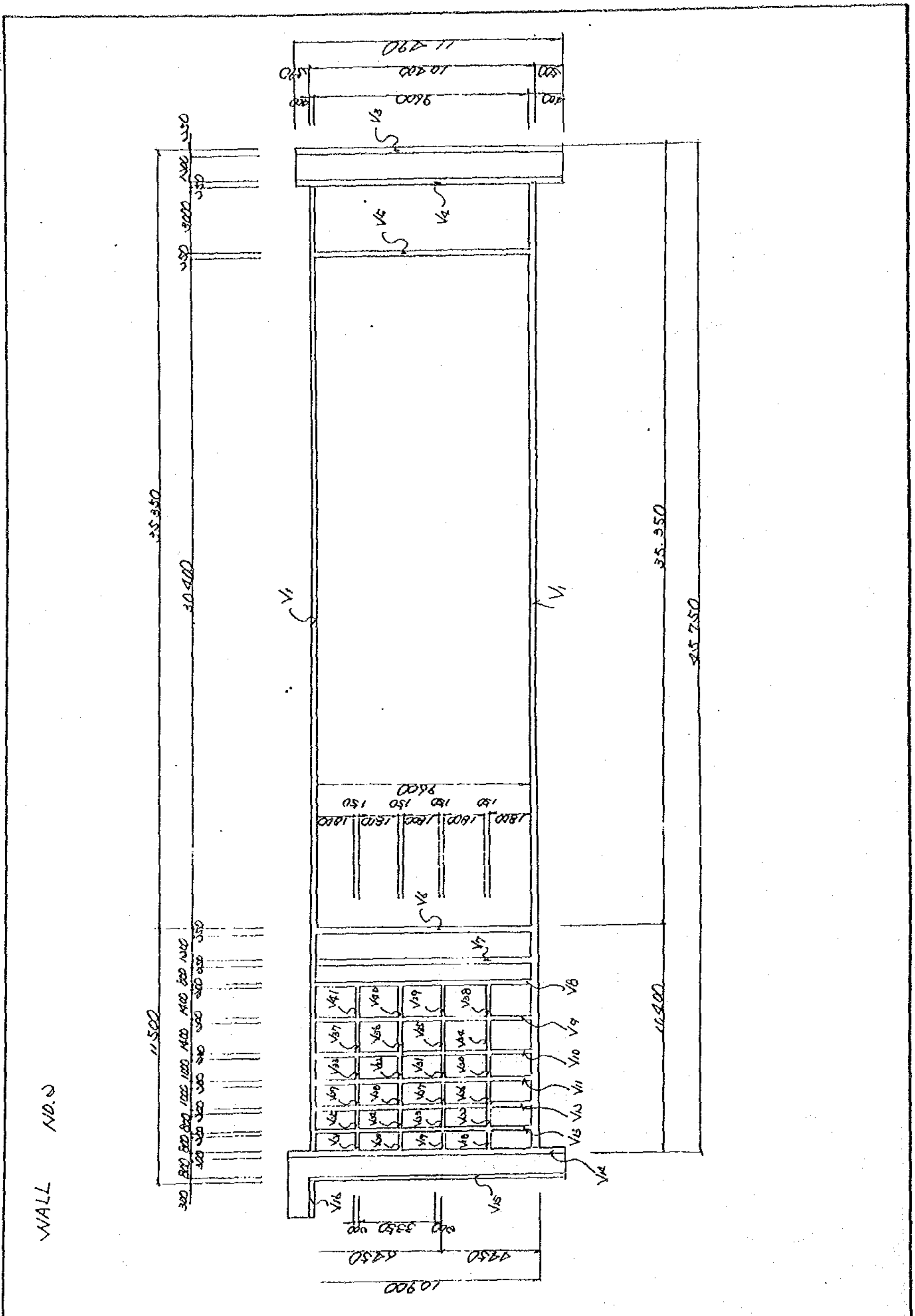
$V_6 = 0.40 \times 0.55 \times 10.40 = 2.29$

$V_7 = \sqrt{1.20^2 + 33.85^2} \times 0.45 \times 10.40 = 158.52$

$V_8 = 1.70 \times 0.59 \times 0.45 = 0.45$

$V_9 = 1.70 \times 0.50 \times 0.45 = 0.38$

V_1	44.81	V_7	158.52
V_2	4.12	V_8	0.45
V_3	0.83	V_9	0.38
V_4	9.30		
V_5	10.76		
V_6	2.29	TOTAL	231.48 m³

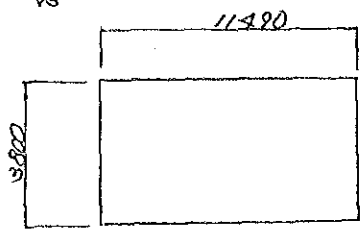

WALL NO.2
35 350
30 400
11 500
11 400
35 750

WALL CONCRETE NO.3

V1	60.47 *	V30	0.07 *
V2	60.47 (V1)	V33	0.38 *
V3	11.03	V34	1.86 *
V4	10.33	V35	0.38 *
V5	9.08 *	V36	0.33 *
V6	8.56 *	V37	0.47 *
V7	5.80 *	V38	0.30 *
V8	7.07 *	V39	0.47 *
V9	6.83 *	V40	0.30 *
V10	7.00 *	V31	0.47 *
V11	7.01 *	V32	0.30 *
V12	7.03 *	V33	0.47 *
V13	7.11 *	V34	0.39 *
V14	13.00	V35	0.59 *
V15	10.43	V36	0.39 *
V16	0.66	V37	0.59 *
V17	--	V38	0.39 *
V18	0.09 *	V39	0.59 *
V19	0.38 *	V40	0.39 *
V30	0.09 *	V41	0.59 *
V31	0.38 *	TOTAL	349.59 m³

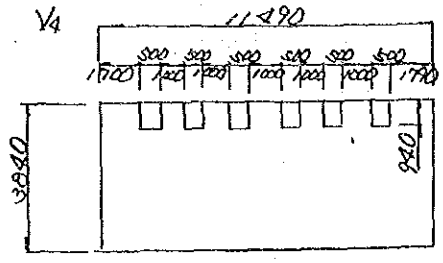
* SEE NO.1 WALL CONCRETE

V3



$V_3 = 11.49 \times 3.80 \times 0.05 = 10.90$

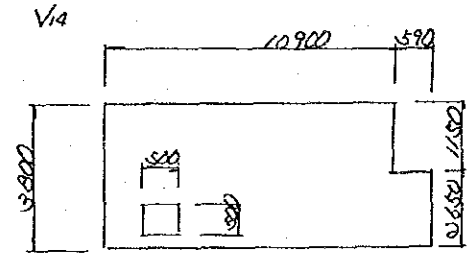
V4



$V_4 = (11.49 \times 3.84 - 0.50 \times 0.94 \times 6) \times 0.05 = 10.38$

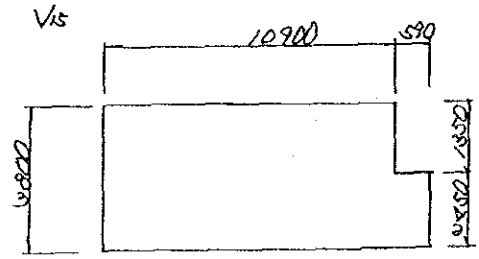
$V_5 \sim V_{13}$ SEE NO1. WALL CONCRETE

V14



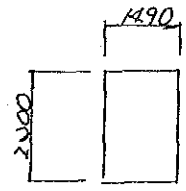
$V_{14} = (10.90 \times 3.80 - 0.50 \times 0.50 + 0.59 \times 0.65) \times 0.30 = 10.80$

V15



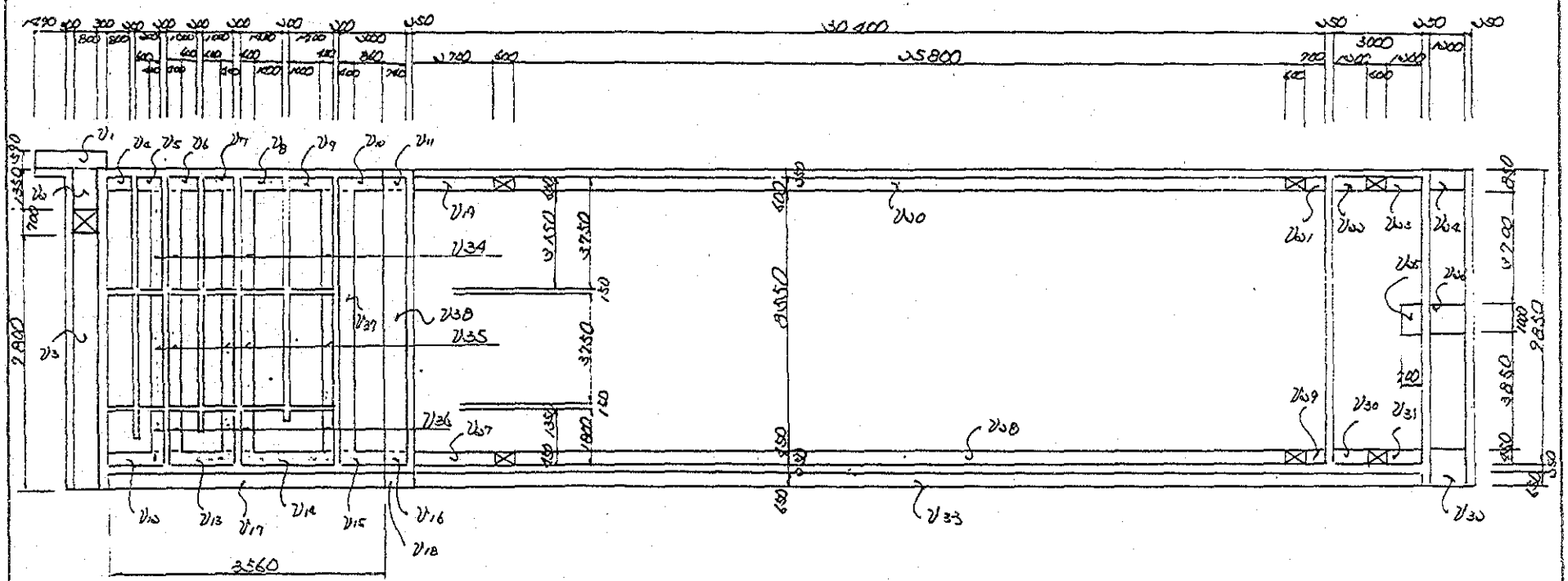
$V_{15} = (10.90 \times 3.80 - 0.59 \times 0.45) \times 0.30 = 11.99$

V16



$V_{16} = 1.49 \times 0.80 \times 0.30 = 0.64$

SLAB NO. J

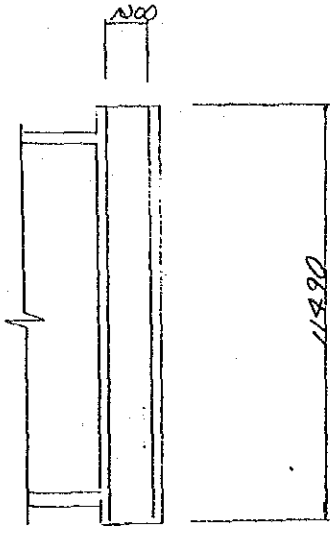

V1
V2
V3
V4
V5
V6
V7
V8
V9
V10
V11
V12
V13
V14
V15
V16
V17
V18
V19
V20
V21
V22
V23
V24
V25
V26
V27
V28
V29
V30
V31
V32
V33
V34
V35
V36
V37
V38
3560
2800
3250
3000
5800
3000
9850

SLAB NO.2

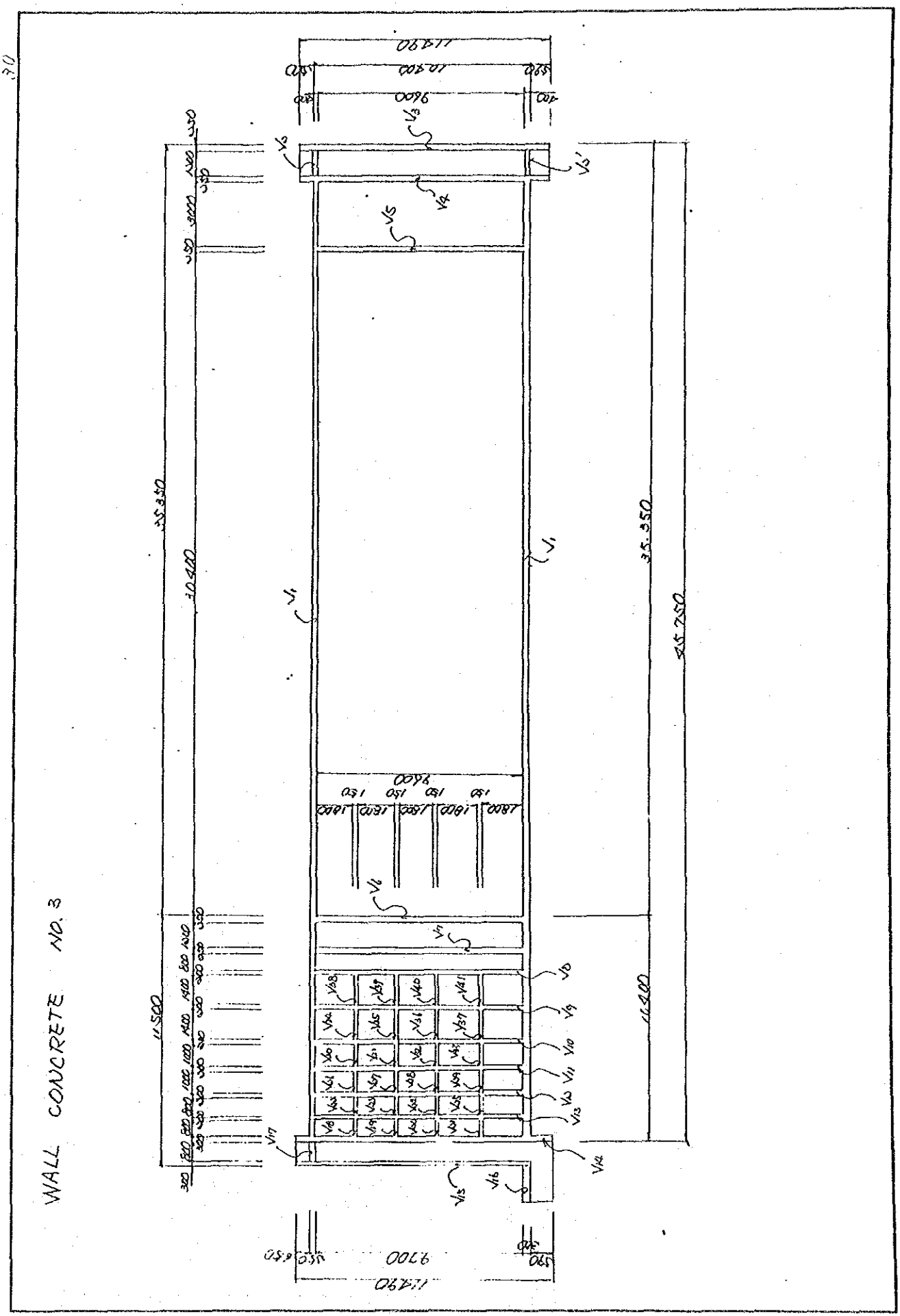
V_1	=	2.89 x 0.59 x 0.20	=	0.34
V_2	=	0.80 x 1.35 x 0.20	=	0.22
V_3	=	0.80 x 7.80 x 0.20	=	1.25
V_4	=	0.80 x 0.60 x 0.15	=	0.07
V_5	=	0.80 x 0.60 x 0.15	=	0.07
V_6	=	1.00 x 0.60 x 0.15	=	0.09
V_7	=	1.00 x 0.60 x 0.15	=	0.09
V_8	=	1.40 x 0.60 x 0.15	=	0.13
V_9	=	1.40 x 0.60 x 0.15	=	0.13
V_{10}	=	1.26 x 0.60 x 0.15	=	0.11
V_{11}	=	0.74 x 0.60 x 0.15	=	0.07
V_{12}	=	1.80 x 0.45 x 0.15	=	0.12
V_{13}	=	2.20 x 0.45 x 0.15	=	0.15
V_{14}	=	3.00 x 0.45 x 0.15	=	0.20
V_{15}	=	1.26 x 0.45 x 0.15	=	0.09
V_{16}	=	0.74 x 0.45 x 0.15	=	0.05
V_{17}	=	8.56 x 0.65 x 0.15	=	0.83
V_{18}	=	0.74 x 0.65 x 0.15	=	0.07
V_{19}	=	2.70 x 0.60 x 0.15	=	0.24
V_{20}	=	35.80 x 0.60 x 0.15	=	3.30
V_{21}	=	0.70 x 0.60 x 0.15	=	0.06
V_{22}	=	1.20 x 0.60 x 0.15	=	0.11
V_{23}	=	1.20 x 0.60 x 0.15	=	0.11

V_{24}	=	1.00 x 0.85 x 0.15	=	0.15
V_{25}	=	1.00 x 0.70 x 0.15	=	0.11
V_{26}	=	1.00 x 1.00 x 0.15	=	0.15
V_{27}	=	0.70 x 0.45 x 0.15	=	0.15
V_{28}	=	25.80 x 0.45 x 0.15	=	1.74
V_{29}	=	0.70 x 0.45 x 0.15	=	0.05
V_{30}	=	1.00 x 0.45 x 0.15	=	0.03
V_{31}	=	1.00 x 0.45 x 0.15	=	0.08
V_{32}	=	1.35 x 1.00 x 0.15	=	0.04
V_{33}	=	33.65 x 0.65 x 0.15	=	3.08
V_{34}	=	3.15 x 0.40 x 0.15 x 5	=	0.95
V_{35}	=	3.75 x 0.40 x 0.15 x 5	=	1.13
V_{36}	=	1.35 x 0.40 x 0.15 x 5	=	0.41
V_{37}	=	0.40 x 8.55 x 0.15	=	0.51
V_{38}	=	0.74 x 8.55 x 0.15	=	0.95
			SLAB TOTAL =	16.96

步床版　　NO.2 , NO.3



$V = 1.00 \times 11.49 \times 0.00 = 0.76$


WALL CONCRETE NO. 3

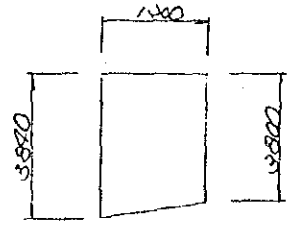
WALL CONCRETE NO.13

V_1	60.47 × 0 = 142.94 ※	V_{30}	0.07 ※
V_2	1.15	V_{33}	0.38 ※
V_3	0.37	V_{34}	1.86 ※
V_4	11.03 ※	V_{35}	0.38 ※
V_5	10.33 ※	V_{36}	0.33 ※
V_6	2.08 ※	V_{37}	0.47 ※
V_8	0.56 ※	V_{38}	0.30 ※
V_9	5.80 ※	V_{39}	0.47 ※
V_{10}	2.07 ※	V_{40}	0.30 ※
V_{11}	6.83 ※	V_{41}	0.47 ※
V_{12}	2.00 ※	V_{42}	0.30 ※
V_{13}	7.01 ※	V_{43}	0.47 ※
V_{14}	7.03 ※	V_{44}	0.39 ※
V_{15}	7.11 ※	V_{45}	0.59 ※
V_{16}	13.00 ※	V_{46}	0.39 ※
V_{17}	10.43 ※	V_{47}	0.59 ※
V_{18}	0.66 ※	V_{48}	0.39 ※
V_{19}	0.70	V_{49}	0.59 ※
V_{20}	0.09 ※	V_{40}	0.39 ※
V_{21}	0.38 ※	V_{41}	0.59 ※
V_{31}	0.38 ※		
		TOTAL	351.86 m^3

※ SEE NO.3 WALL CONCRETE

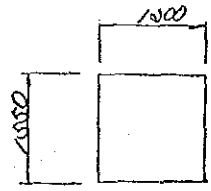
WALL - NO. 3

V_5



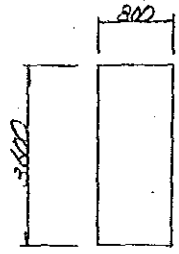
$V_5 = \frac{1}{2} \times (3.84 + 3.80) \times 1.00 \times 0.05 = 1.15$

V_5'



$V_5' = 1.00 \times 1.55 \times 0.00 = 0.37$

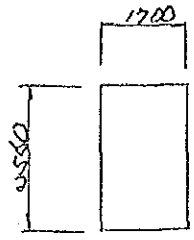
V_7



$V_7 = 0.80 \times 3.60 \times 0.05 = 0.72$

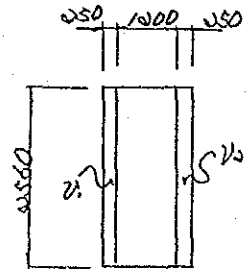
NO1 ~ NO3 PIT
〔OUTLET〕

BASE



$V = 1.70 \times 0.56 \times 0.95 = 1.96$

WALL

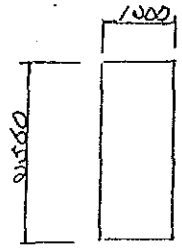


$V_1 = 0.35 \times 0.56 \times 3.84 = 0.46$

$V_3 = 0.35 \times 0.56 \times 3.80 = 2.43$

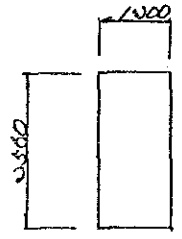
$V = 2.89$

SLAB



$V = 1.00 \times 0.56 \times 0.15 = 0.26$

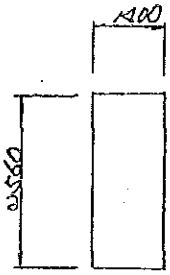
中床版



$V = 1.00 \times 0.56 \times 0.00 = 0.61$

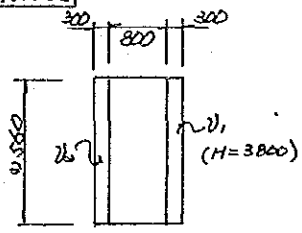
NO.1 ~ NO.3 PIT
(INLET)

BASE



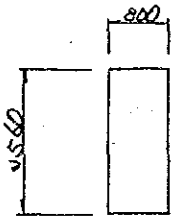
$V = 1.40 \times 0.56 \times 0.40 = 1.73$

WALL



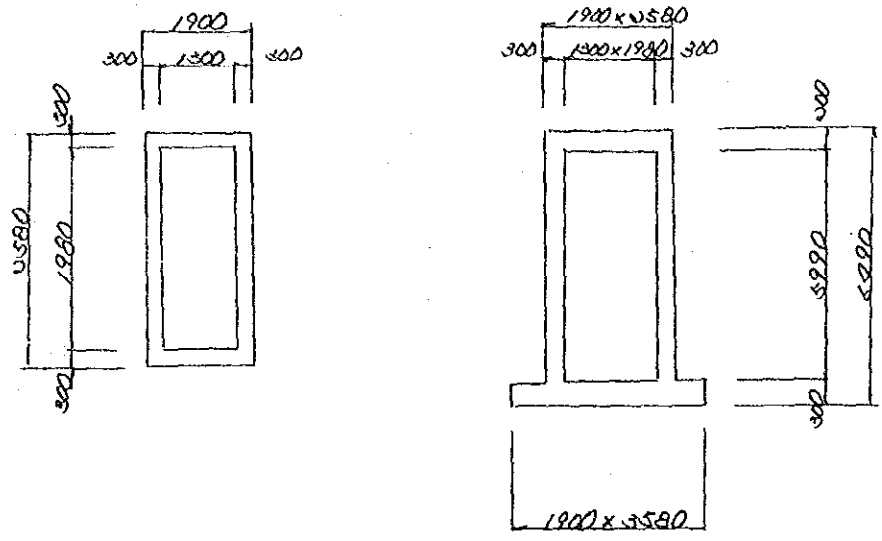
$V = 0.30 \times 3.80 \times 0.56 \times 3 = 5.84$

SLAB



$V = 0.80 \times 0.56 \times 0.10 = 0.41$

DRAIN PIT N=3



BASE

$V = 1.90 \times 3.58 \times 0.30 \times 3 = 6.08$

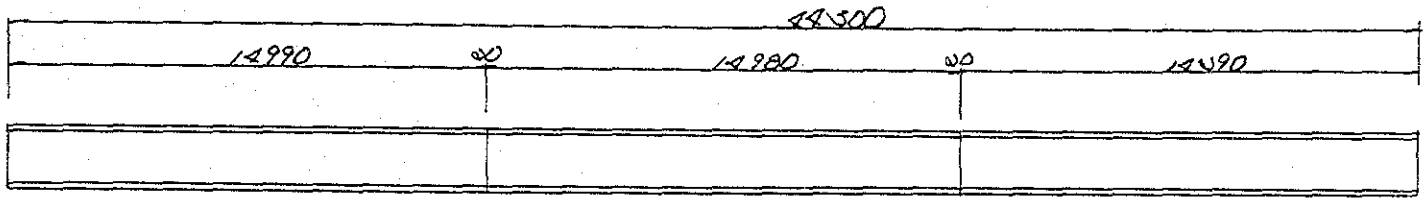
WALL

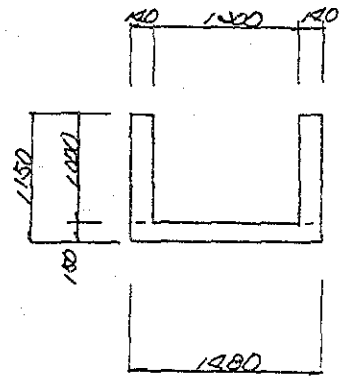
$V = (1.90 \times 3.58 - 1.30 \times 1.98) \times 6.19 \times 3 = 38.83$

SLAB

$V = 1.30 \times 1.98 \times 0.20 \times 3 = 1.03$

BY - PASS CHANNEL CONCRETE





BASE

V = 1.48 x 0.15 x 44.06 = 9.83

WALL

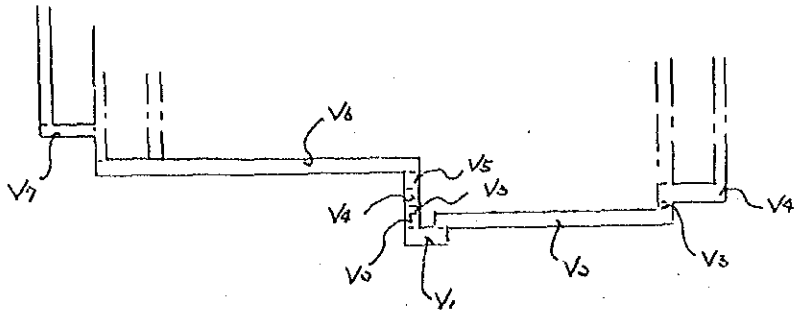
V = 0.14 x 1.00 x 44.06 x 2 = 12.39

5. RAPID SAND FILTER

CONCRETE CLASS A VOLUME CALCULATION

BASE	300.68
WALL	600.03
INTERMEDIATE SLAB	60.06
STEP A	0.56
" B	0.64
" C	1.46
" D	0.79
" E	0.78
SLAB	72.15
STAIRCASE ROOM	10.50
TOTAL	1,093.85 m^3

BASE CONCRETE

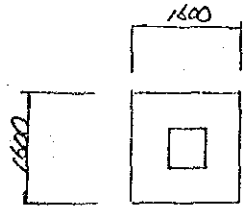


V_1	1.00
V_2	23.78
V_3	2.76
V_4	181.35
V_5	0.00
V_6	40.64
V_7	16.11
TOTAL	300.68

CONCRETE CLASS A

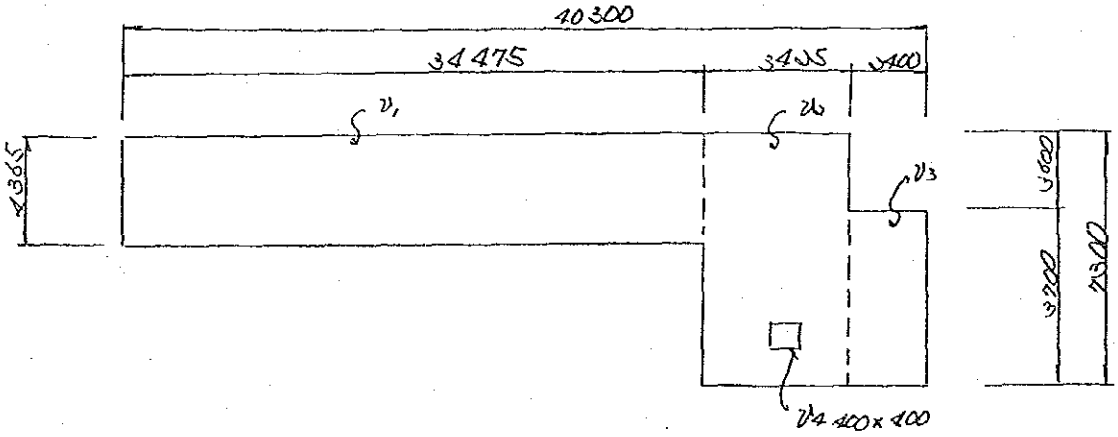
BASE

V_1 (+ 60.70 ~ 63.10) $h = 400$



$V_1 = 1.60 \times 1.60 \times 0.40 = 1.02$

V_2 (+ 63.10 ~ 63.50) $h = 400$



$v_1 = 34.48 \times 4.37 \times 0.40 = 60.37$

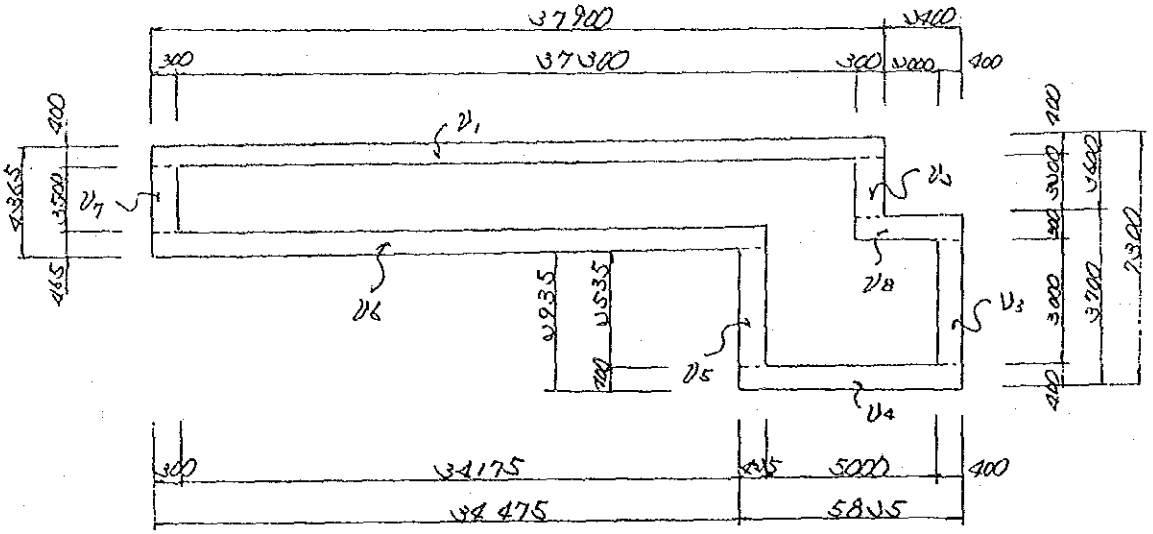
$v_2 = 3.43 \times 7.30 \times 0.40 = 10.00$

$v_3 = 2.40 \times 3.70 \times 0.40 = 3.55$

$v_4 = 0.40 \times 0.40 \times 0.40 = \ominus 0.06$

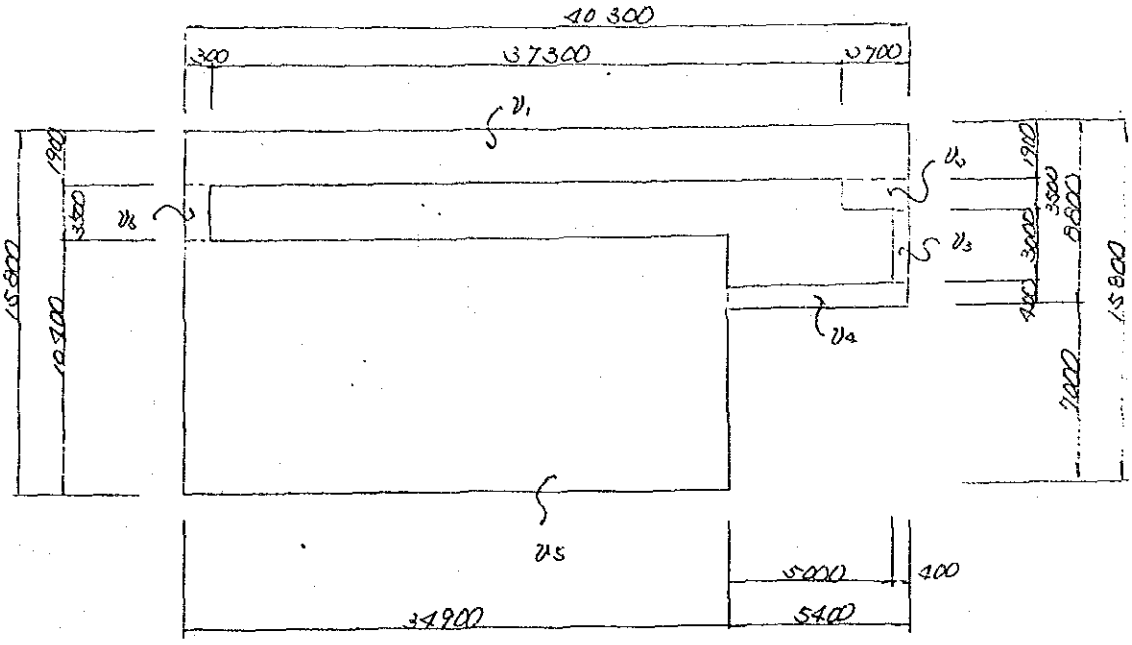
$V_2 = 73.78$

V_3 (+63.50 ~ 63.70) $h = 0.00$



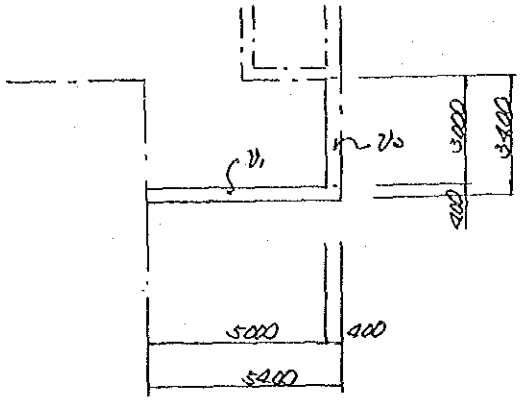
v_1 =	37.90 x 0.40 x 0.00	=	3.03
v_2 =	3.00 x 0.30 x 0.00	=	0.19
v_3 =	3.00 x 0.40 x 0.00	=	0.04
v_4 =	5.83 x 0.40 x 0.00	=	0.47
v_5 =	0.54 x 0.43 x 0.00	=	0.00
v_6 =	34.48 x 0.47 x 0.00	=	3.04
v_7 =	3.50 x 0.30 x 0.00	=	0.01
v_8 =	0.70 x 0.30 x 0.00	=	0.16
		V_3 =	7.76

V4 (+63.70 ~ 64.10) h = 400



V_1	=	40.30 × 1.90 × 0.40	=	30.63
V_2	=	2.70 × 3.50 × 0.40	=	3.78
V_3	=	3.00 × 0.40 × 0.40	=	0.48
V_4	=	5.40 × 0.40 × 0.40	=	0.86
V_5	=	34.90 × 10.40 × 0.40	=	145.18
V_6	=	3.50 × 0.30 × 0.40	=	0.42
			V_4 =	181.35

V5 (+64.10 ~ 64.70) h = 600

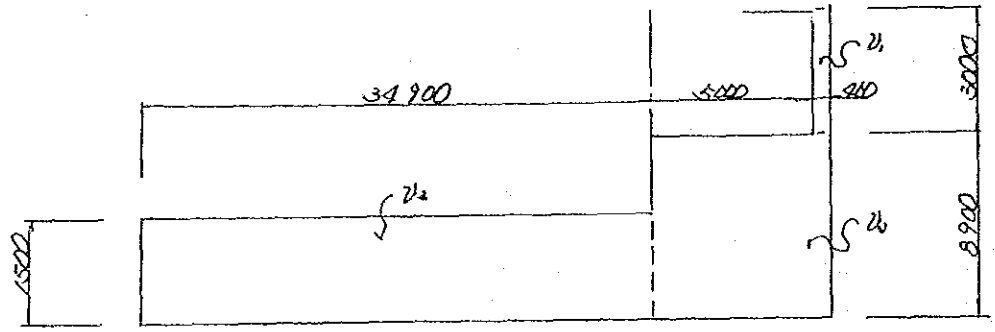


V1 = 5.40 × 0.40 × 0.60 = 1.30

V3 = 3.00 × 0.40 × 0.60 = 0.72

V5 = 2.02

V6 (+64.70 ~ 65.10) h = 400



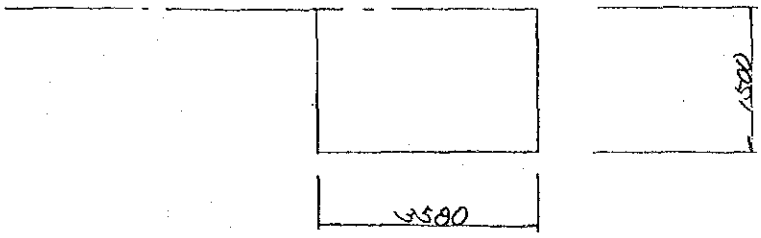
V1 = 0.40 × 3.00 × 0.40 = 0.48

V3 = 5.40 × 8.90 × 0.40 = 19.22

V2 = 1.50 × 34.90 × 0.40 = 20.94

V6 = 40.64

V7 (+65.80 ~ 66.10) h = 300



V7 = 3.58 × 1.50 × 0.30 = 16.11

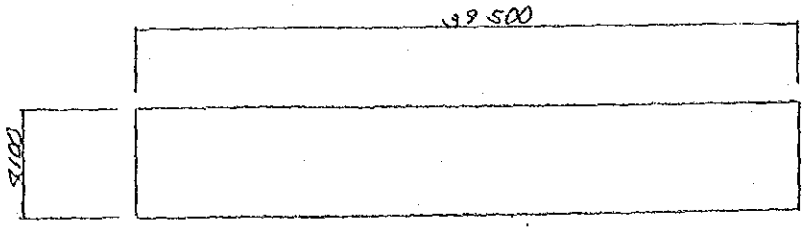
WALL
CONCRETE

10

WALL CONCRETE CALCUTION

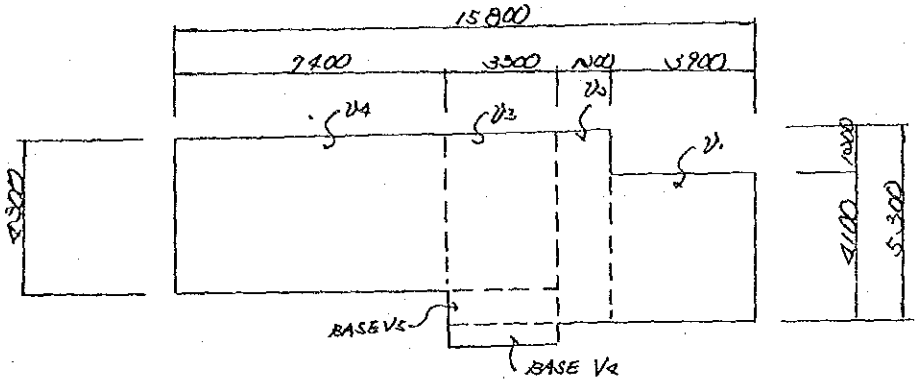
V_1	28.59
V_2	08.37
V_3	5.81
V_4	3.44
V_5	0.46
V_6	1.15
V_7	60.77
V_8	1.19
V_9	31.86
V_{10}	79.50
V_{11}	74.38
V_{12}	0.98
V_{13}	3.18
V_{14}	8.60
V_{15}	01.37
V_{16}	25.03
V_{17}	100.90
V_{18}	23.41
V_{19}	0.09
V_{20}	2.90
V_{21}	0.45
V_{22}	1.55
V_{23}	16.03
TOTAL	600.03

V_1 $t = 300$



$V_1 = 4.10 \times 39.50 \times 0.30 = 48.59$

V_2 $t = 400$



$v_1 = 3.90 \times 4.10 \times 0.40 = 6.40$

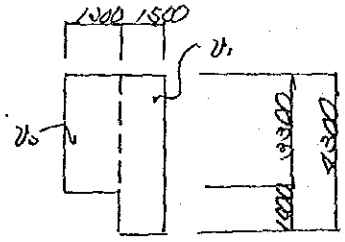
$v_2 = 1.00 \times 3.30 \times 0.40 = 1.32$

$v_3 = 3.30 \times 3.30 \times 0.40 = 4.36$

$v_4 = 2.40 \times 4.30 \times 0.40 = 10.33$

$V_2 = 22.41$

V_3 $t = 300$

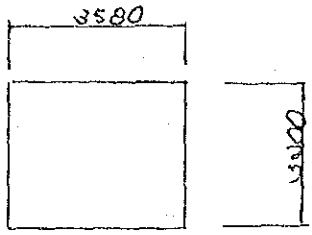


$v_1 = 1.50 \times 4.30 \times 0.30 = 1.94$

$v_2 = 4.30 \times 3.30 \times 0.30 = 4.26$

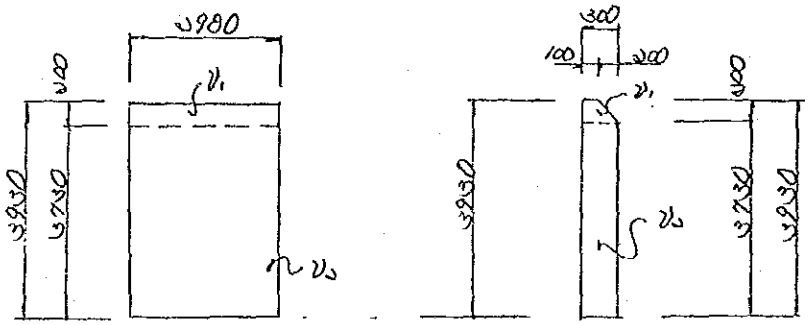
$V_3 = 6.20$

V4 t = 300



$V_4 = 3.58 \times 3.00 \times 0.30 = 3.44$

V5

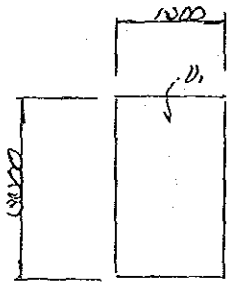


$V_1 = 1/6 \times (0.30 + 0.10) \times 0.30 \times 3.98 = 0.13$

$V_2 = 0.30 \times 3.73 \times 0.30 = 0.34$

$V_5 = 0.46$

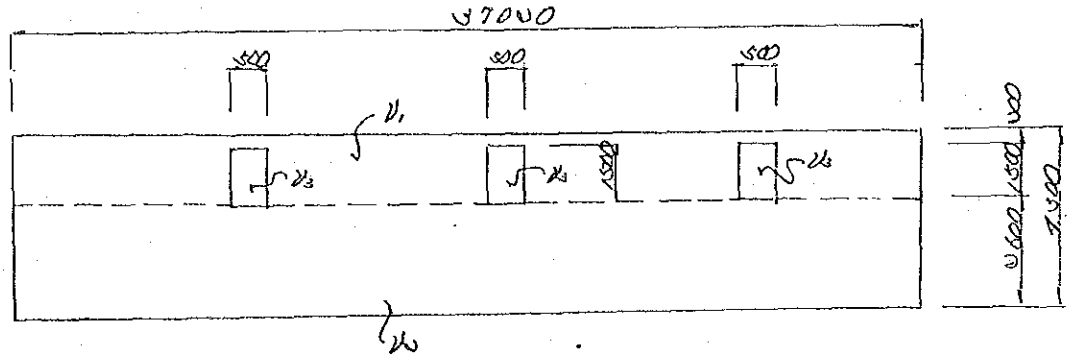
V6



$V_1 = 1.00 \times 3.00 \times 0.30 = 1.15$

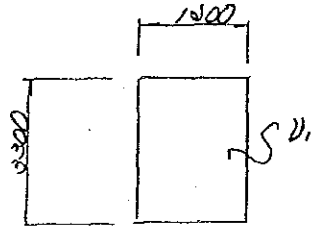
$V_6 = 1.15$

V7 t = 400



V1	=	37.00 × 1.70 × 0.40	=	25.16
V6	=	37.00 × 0.60 × 0.40	=	8.88
V3	=	0.50 × 1.50 × 0.40 × 3	= ⊖	0.90
			V7 =	33.14

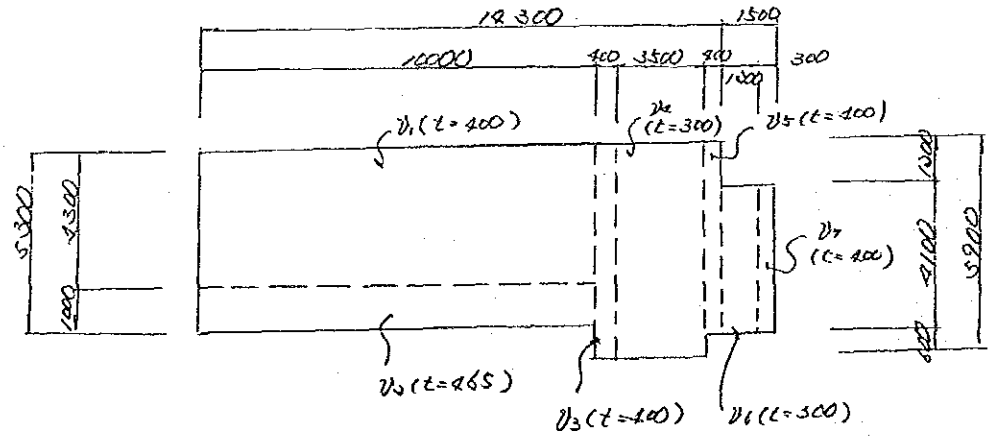
V8 t = 300



V1 = 1.00 × 3.30 × 0.30 = 1.19

V8 = 1.19

V9



V_1 = 10.00 x 4.30 x 0.40 = 17.00

V_2 = 10.00 x 1.00 x 0.47 = 4.70

V_3 = 0.40 x 5.90 x 0.40 = 0.94

V_4 = 3.50 x 5.90 x 0.30 = 6.00

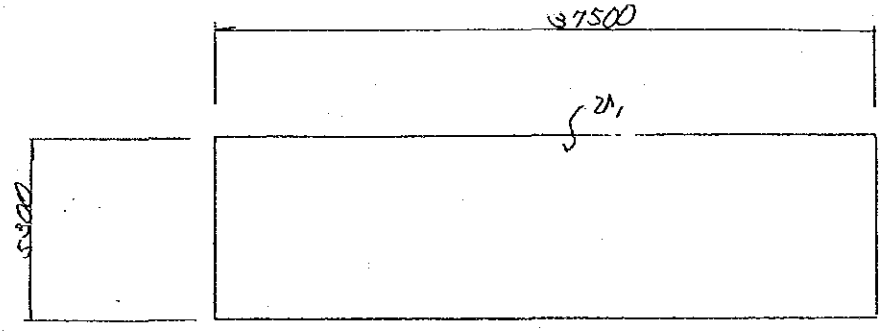
V_5 = 0.40 x 5.30 x 0.40 = 0.85

V_6 = 1.00 x 4.10 x 0.30 = 1.48

V_7 = 0.30 x 4.10 x 0.40 = 0.49

V_9 = 31.86

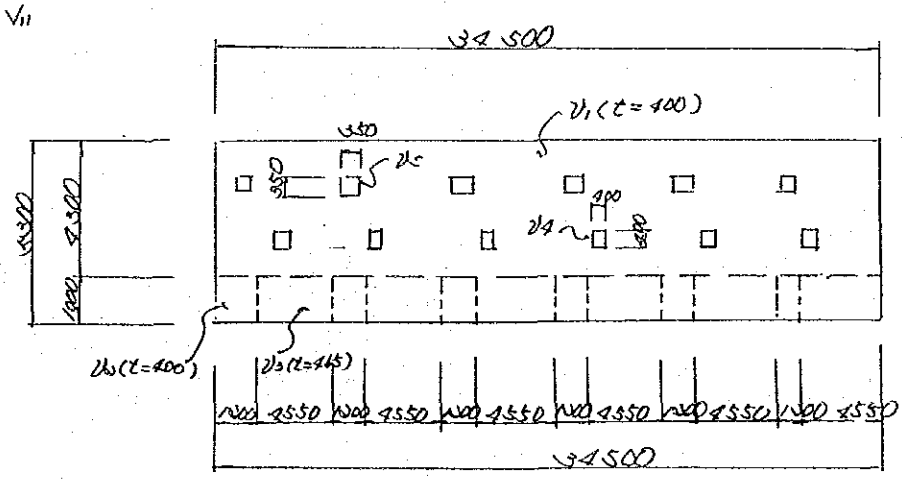
V_{10} t = 400



V_1 = 37.50 x 5.30 x 0.40 = 79.50

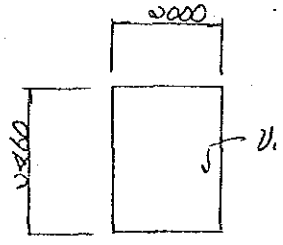
V_{10} = 79.50

V_{11}



V_1	= 34.50 x 4.30 x 0.40	=		59.34
V_2	= 1.00 x 1.00 x 0.40 x 6	=		2.88
V_3	= 4.55 x 1.00 x 0.47 x 6	=		12.83
V_4	= 0.40 x 0.40 x 0.40 x 6	=	⊖	0.38
V_5	= 0.35 x 0.35 x 0.40 x 6	=	⊖	0.09
		V_{11} =		74.38

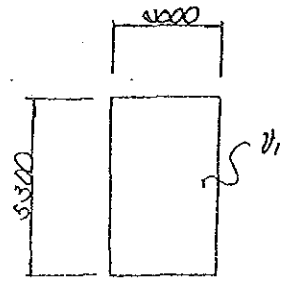
V_{10} $t = 0.00$



V_1 = 1.00 x 0.46 x 0.00 = 0.98

V_{10} = 0.98

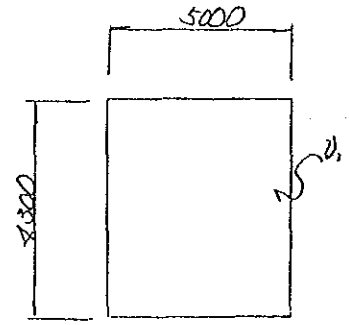
V_{13} $t = 300$



V_1 = 1.00 x 5.30 x 0.30 = 3.18

V_{13} = 3.18

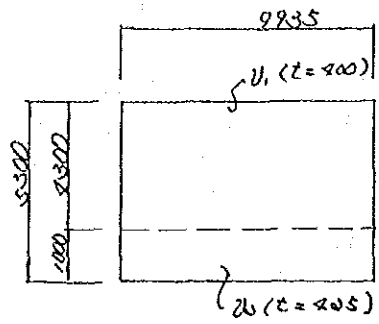
V_{14} $t = 400$



V_1 = 5.00 x 4.30 x 0.40 = 8.60

V_{14} = 8.60

V_{15}

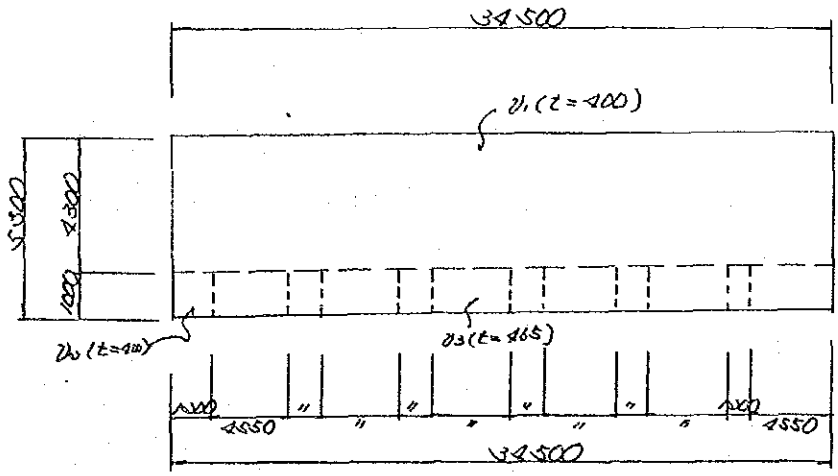


$V_1 = 9.94 \times 4.30 \times 0.40 = 17.10$

$V_3 = 9.94 \times 1.00 \times 0.43 = 4.27$

$V_{15} = 21.37$

V_{16}



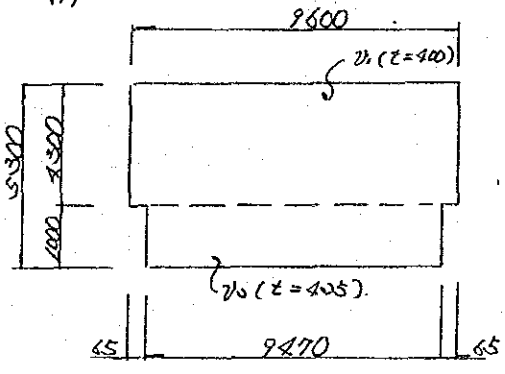
$V_1 = 34.50 \times 4.30 \times 0.40 = 59.34$

$V_3 = 1.00 \times 1.00 \times 0.40 \times 6 = 2.88$

$V_3 = 4.55 \times 1.00 \times 0.47 \times 6 = 12.81$

$V_{16} = 75.03$

V_{17}

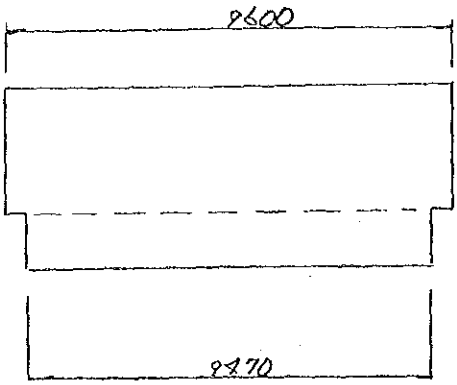


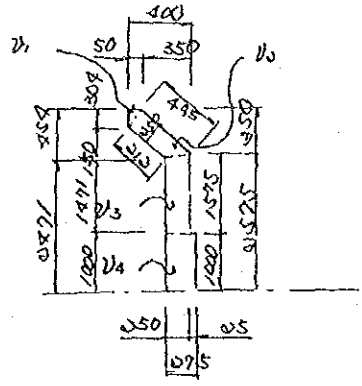
$V_1 = 9.60 \times 4.30 \times 0.40 \times 5 = 82.56$

$V_3 = 9.47 \times 1.00 \times 0.43 \times 5 = 20.36$

$V_{17} = 102.92$

V18





$V_1 = \frac{1}{3} \times 0.05 \times 0.30 \times 9.60 \times 6 = 0.43$

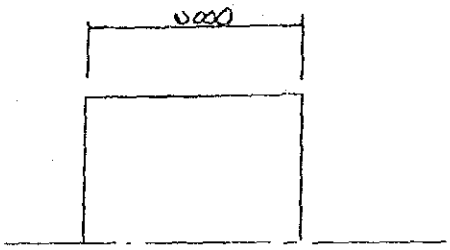
$V_2 = \frac{1}{3} \times (0.50 + 0.31) \times 0.05 \times 9.60 \times 6 = 5.11$

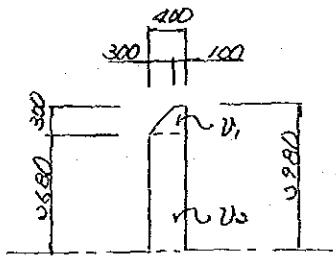
$V_3 = \frac{1}{3} \times (1.47 + 1.58) \times 0.05 \times 9.60 \times 6 = 11.96$

$V_4 = 0.08 \times 1.00 \times 9.47 \times 6 = 15.91$

$V_{18} = 43.41$

V19

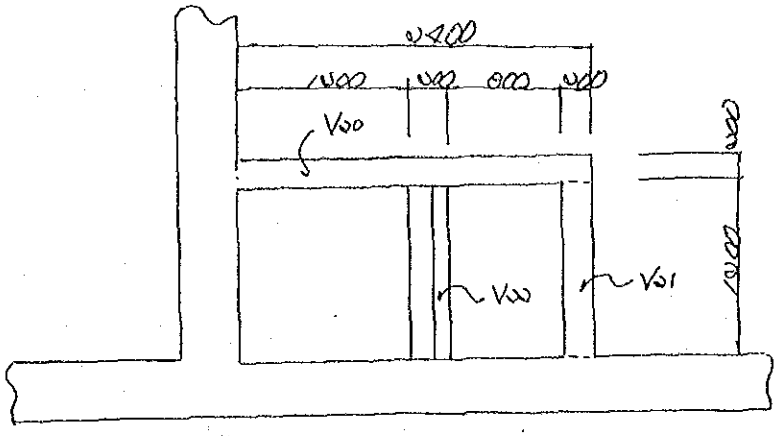




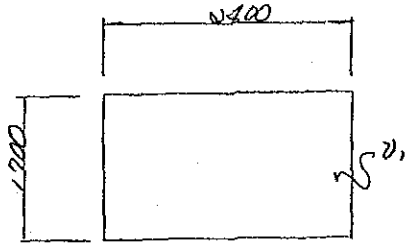
$V_1 = \frac{1}{3} \times (0.10 + 0.40) \times 0.30 \times 1.00 = 0.15$

$V_2 = 0.40 \times 1.68 \times 1.00 = 1.12$

$V_{19} = 1.09$



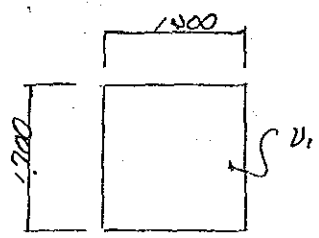
V00 (t = 000)



$V_1 = 0.40 \times 1.70 \times 0.00 \times 6 = 4.90$

$V_{00} = 4.90$

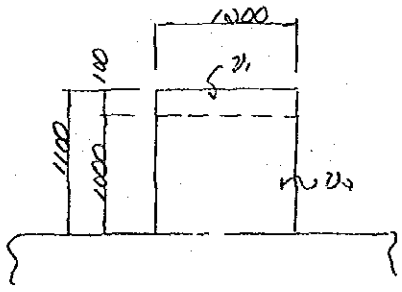
V01 (t = 000)

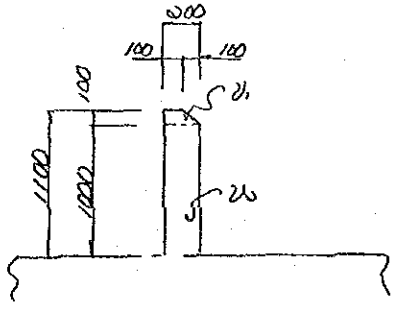


$V_1 = 1.00 \times 1.70 \times 0.00 \times 6 = 0.45$

$V_{01} = 0.45$

V02

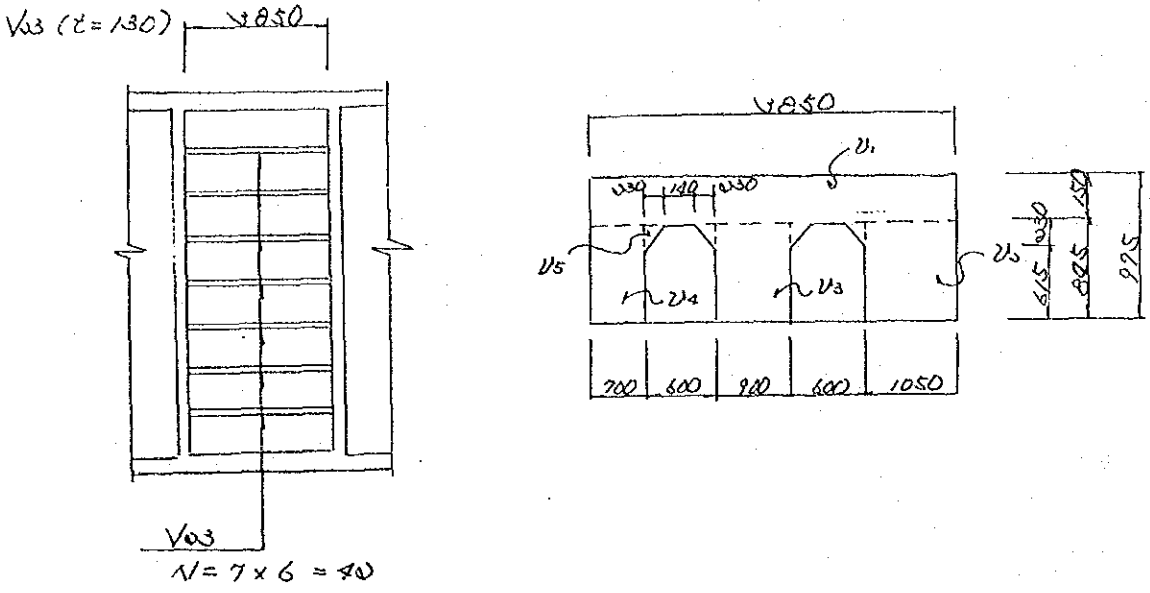




$V_1 = 1/3 \times (0.10 + 0.00) \times 0.10 \times 1.00 \times 6 = 0.11$

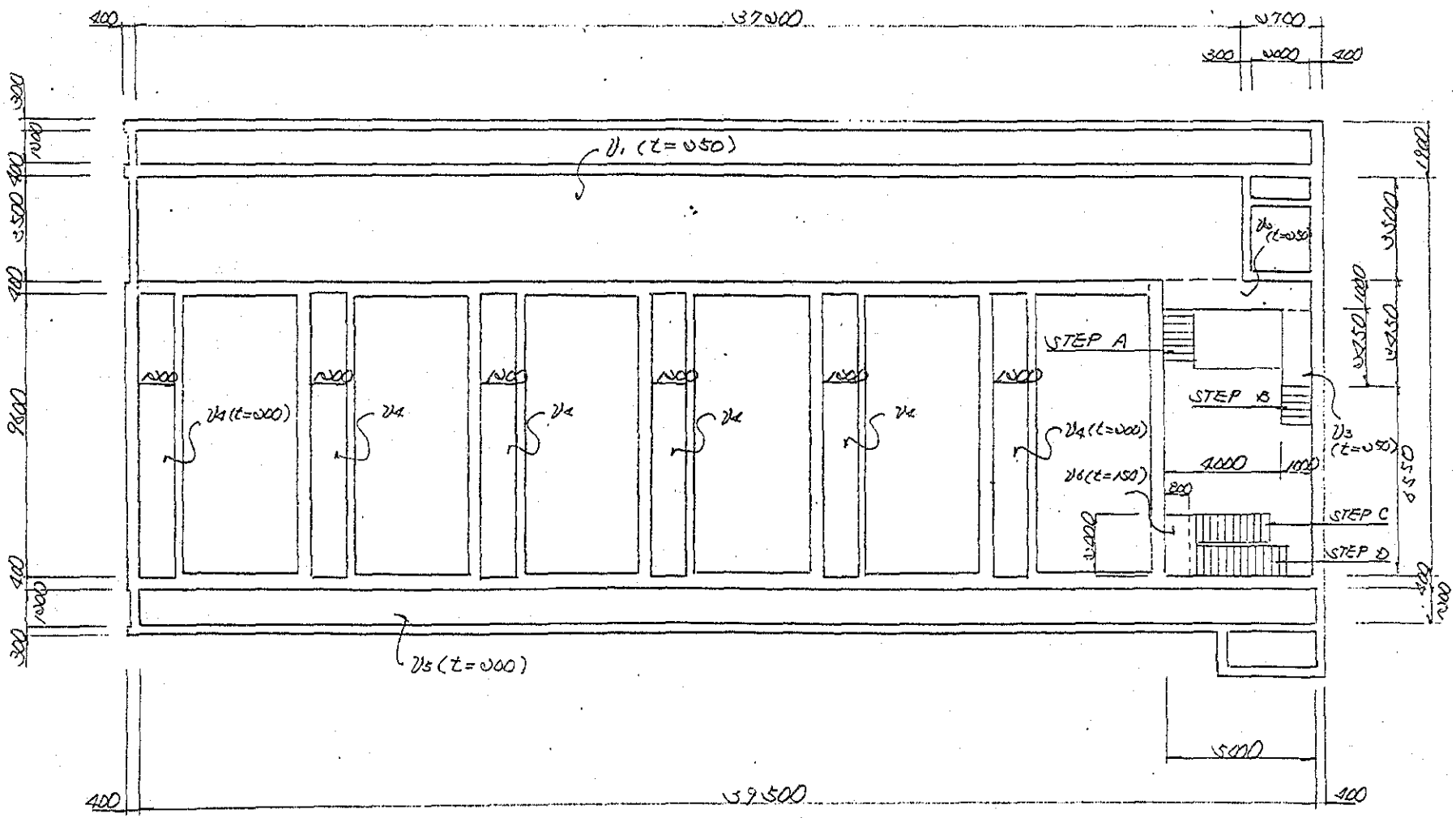
$V_2 = 0.00 \times 1.00 \times 1.00 \times 6 = 1.44$

$V_{02} = 1.55$



V_1 =	3.85 x 0.15 x 0.13 x 42	=	3.15
V_2 =	1.05 x 0.85 x 0.13 x 42	=	4.87
V_3 =	0.90 x 0.85 x 0.13 x 42	=	4.18
V_4 =	0.70 x 0.85 x 0.13 x 42	=	3.25
V_5 =	½ x 0.03 x 0.03 x 4 x 42 x 0.13	=	0.58
		V_{03} =	16.03

~~INTERMEDIATE SLAB~~ AND STEP CONCRETE



INTERMEDIATE SLAB

~~干涉板~~ CONCRETE

(+66.15 ~ 66.40) h=0.50

V_1 = 3.50 x 37.00 x 0.05 = 6.48

(+66.15 ~ 66.40) h=0.50

V_2 = 5.00 x 1.00 x 0.05 = 1.25

(+61.15 ~ 66.40) h=0.50

V_3 = 1.00 x 0.25 x 0.05 = 0.61

(+65.475 ~ 65.675) h=0.00

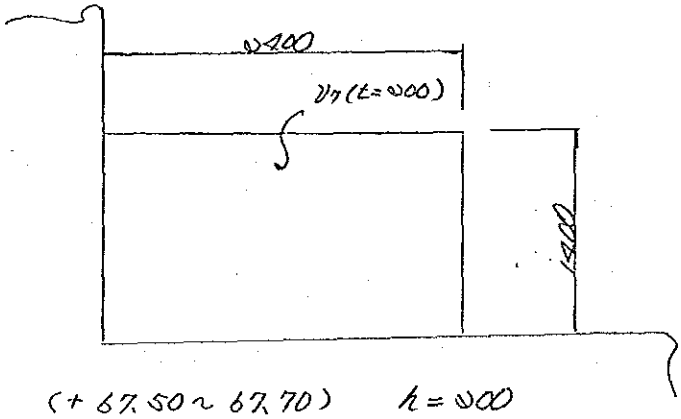
V_4 = 9.60 x 1.00 x 0.00 x 6 = 13.82

(+67.50 ~ 67.70) h=0.00

V_5 = 39.50 x 1.00 x 0.00 = 9.48

(+67.50 ~ 67.70) h=0.00

V_6 = 0.00 x 0.80 x 0.00 = 0.00



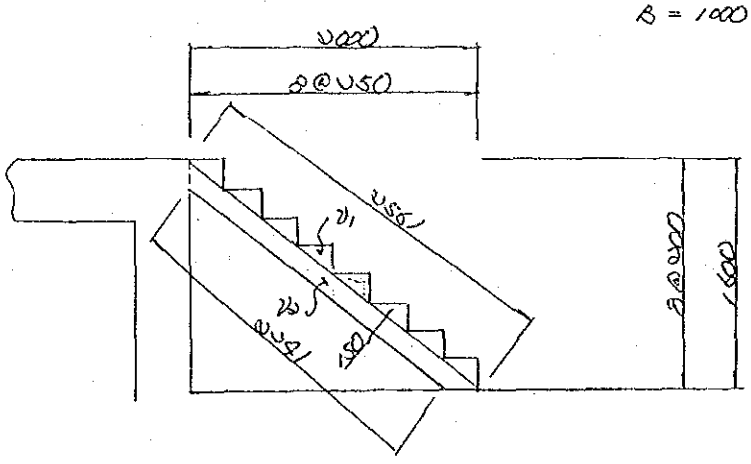
(+67.50 ~ 67.70) h=0.00

V_7 = 0.40 x 1.40 x 0.00 x 6 = 4.03

TOTAL = 60.06

STEP A CONCRETE

B = 1000



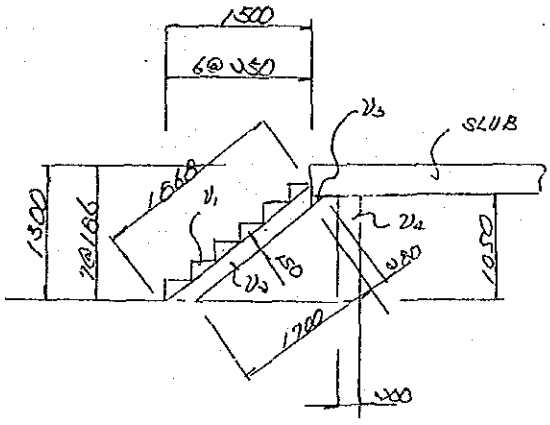
v_1 = 1/3 x 0.15 x 0.20 x 1.00 x 8 = 0.80

v_2 = 1/2 x (0.56 + 0.24) x 0.15 x 1.00 = 0.36

TOTAL = 0.56

STEP B

B = 1000



v_1 = 1/3 x 0.19 x 0.15 x 6 x 1.00 = 0.14

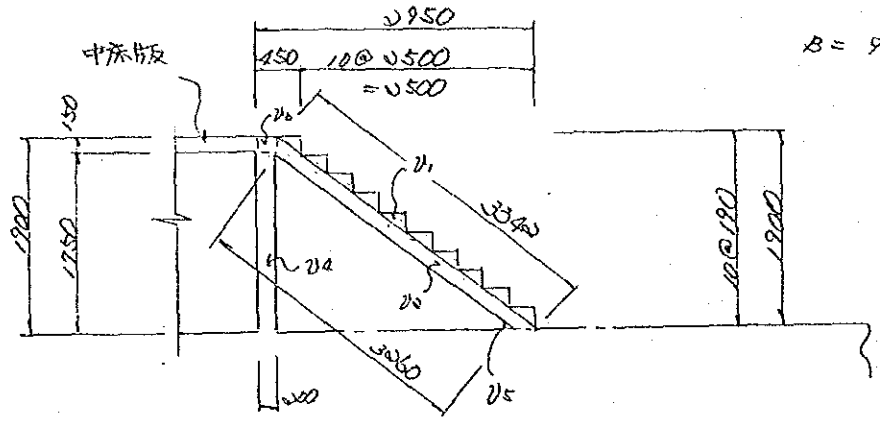
v_2 = 1/2 x (1.97 + 1.70) x 0.15 x 1.00 = 0.27

v_3 = 1/2 x 0.20 x 0.20 x 1.00 = 0.02

v_4 = 0.20 x 1.05 x 1.00 = 0.21

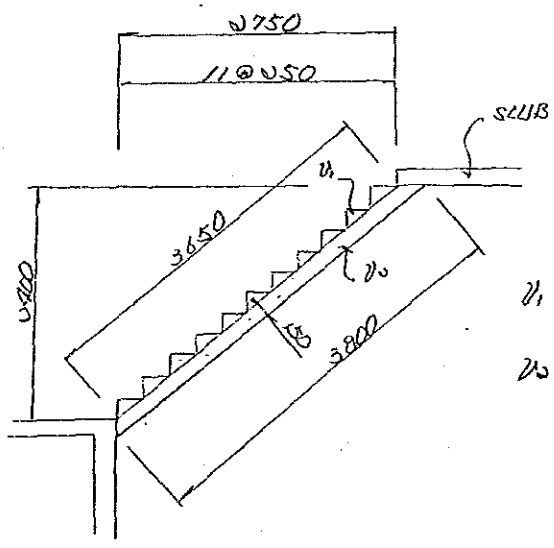
TOTAL = 0.64

STEP C CONCRETE



V_1	=	1/2 × 0.05 × 0.19 × 0.95 × 10	=	0.03
V_2	=	1/2 × (3.34 + 3.36) × 0.15 × 0.95	=	0.47
V_3	=	0.15 × 0.30 × 0.00	=	0.06
V_4	=	1.75 × 0.40 × 0.00	=	0.70
V_5	=	1/2 × 0.10 × 0.10 × 0.95	=	—
			TOTAL =	1.26

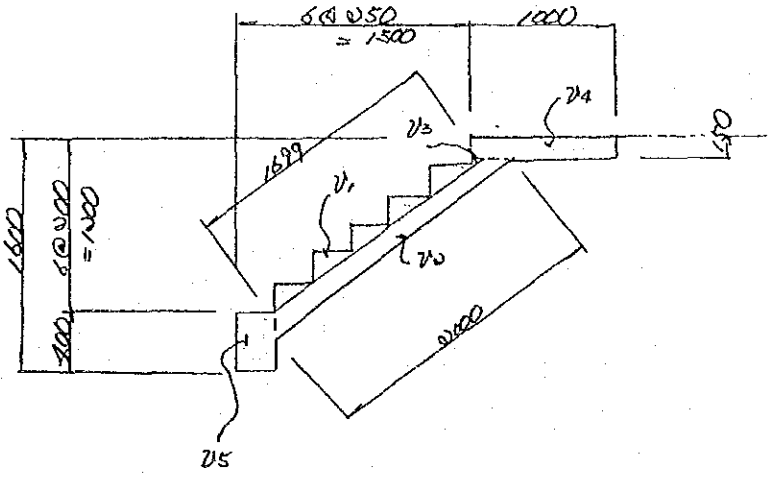
STEP D CONCRETE



V_1	=	1/2 × 0.05 × 0.30 × 0.95 × 11	=	0.06
V_2	=	1/2 × (3.65 + 3.80) × 0.15 × 0.95	=	0.53
			TOTAL =	0.79

STEP E

B = 1500



V_1 = 1/2 × 0.00 × 0.05 × 1.00 × 5 = 0.15

V_2 = 1/2 × (1.70 + 0.00) × 0.15 × 1.00 = 0.33

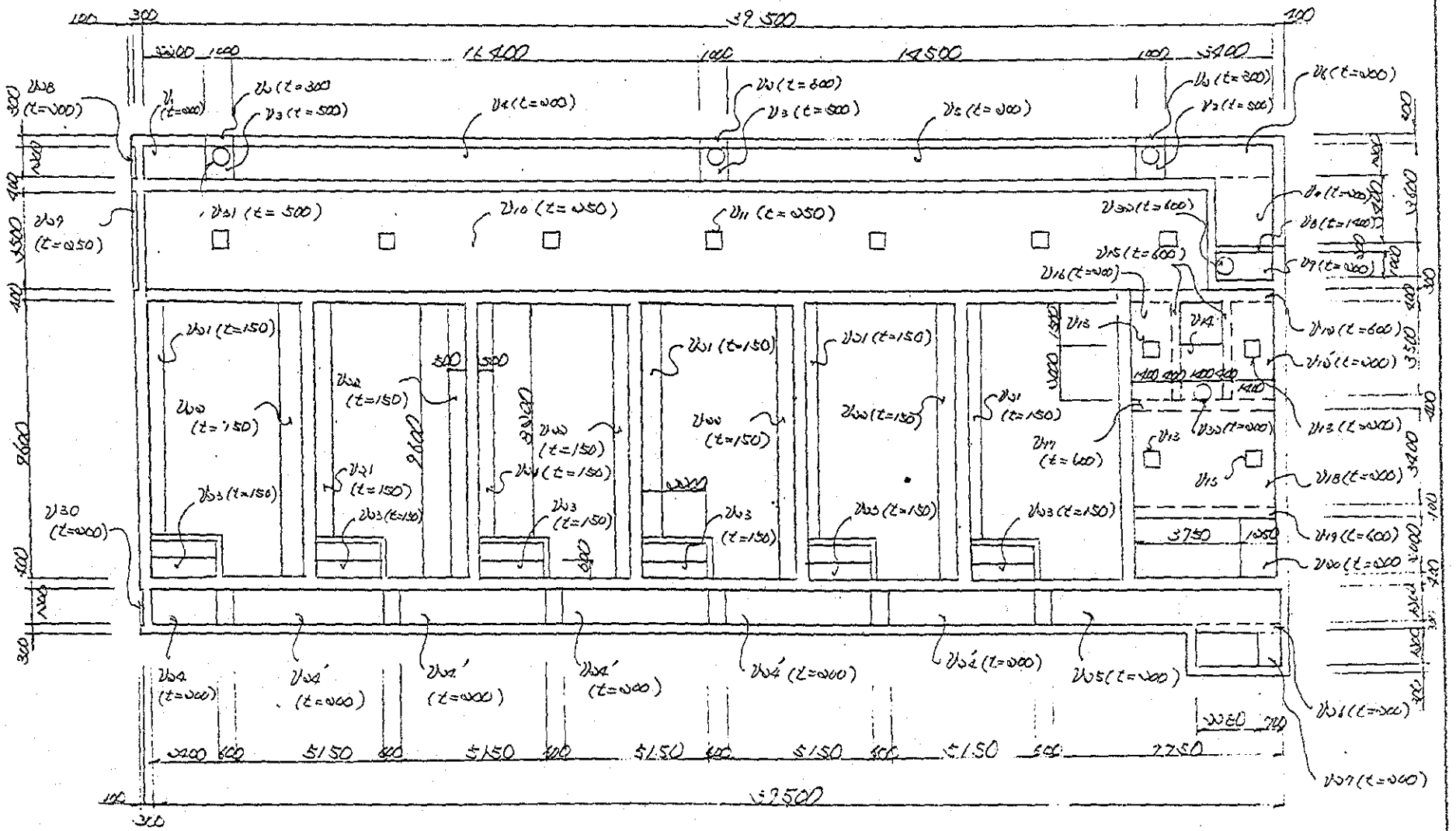
V_3 = 1/2 × 0.05 × 0.05 × 1.00 = —

V_4 = 1.00 × 0.15 × 1.00 = 0.18

V_5 = 0.05 × 0.40 × 1.00 = 0.10

TOTAL = 0.78

SLAB CONCRETE



SLUB CONCRETE

V_1 =	0.00 x 1.00 x 0.00	=	0.53
V_2 =	1.00 x 0.30 x 0.30 x 3	=	0.07
V_3 =	1.00 x 1.00 x 0.50 x 3	=	1.80
V_4 =	16.40 x 1.00 x 0.00	=	3.94
V_5 =	14.50 x 1.00 x 0.00	=	3.48
V_6 =	3.40 x 1.00 x 0.00	=	0.80
V_7 =	0.00 x 0.40 x 0.00	=	0.96
V_8 =	0.00 x 1.40 x 0.00	=	0.56
V_9 =	0.00 x 1.00 x 0.00	=	0.40
V_{10} =	37.00 x 3.50 x 0.25	=	32.55
V_{11} =	0.50 x 0.50 x 0.25 x 7	= ⊖	0.44
V_{12} =	5.00 x 0.40 x 0.60	=	1.00
V_{13} =	0.50 x 0.50 x 0.00 x 4	= ⊖	0.00
V_{13} =	1.40 x 3.50 x 0.00	=	0.98
V_{14} =	1.40 x 0.00 x 0.00	=	0.56
V_{15} =	0.40 x 3.50 x 0.60 x 2	=	1.68
V_{16} =	1.40 x 3.50 x 0.00	=	0.98
V_{17} =	5.00 x 0.40 x 0.60	=	1.00
V_{18} =	5.00 x 3.40 x 0.00	=	3.40
V_{19} =	5.00 x 0.40 x 0.60	=	1.00
V_{20} =	1.25 x 0.00 x 0.00	=	0.50
V_{21} =	8.00 x 0.50 x 0.15 x 6	=	3.69

V_{w} =	9.60 x 0.50 x 0.15 x 6	= 4.32
V_{w3} =	0.00 x 0.60 x 0.15 x 6	= 1.19
V_{w4} =	0.40 x 1.00 x 0.00	= 0.58
V_{w5} =	5.15 x 1.00 x 0.00 x 5	= 5.18
V_{w5} =	1.75 x 1.00 x 0.00	= 1.86
V_{w6} =	0.98 x 0.30 x 0.00	= 0.18
V_{w7} =	0.70 x 1.00 x 0.00	= 0.17
V_{w8} =	0.10 x 1.00 x 0.00	= 0.00
V_{w9} =	0.10 x 3.50 x 0.05	= 0.09
V_{30} =	0.10 x 1.00 x 0.05	= 0.03
V_{31} =	$\pi/4$ x 0.60^2 x 0.50 x 3	= ⊖ 0.42
V_{32} =	$\pi/4$ x 0.60^2 x 0.00 x 0	= ⊖ 0.11
	TOTAL =	14.15.

STAIRCASE ROOM

- WALL

(2.40 x 2.40^h x 2 + 5.40 x 2.40^h x 2) x 0.20 = 7.50

- ROOF

3.40 x 6.80 x 0.12^t + 0.10^2 x (3.40 x 2 + 6.60 x 2) = 3.00

TOTAL = 10.50

6. WASTEWATER AND SLUDGE POND

CONCRETE CLASS A

- BASE	:	234.04
- HAUNCH	:	5.48
- WALL	:	354.93
- SLAB	:	5.58
TOTAL		600.03
	x	2
		1,200.06 m^3

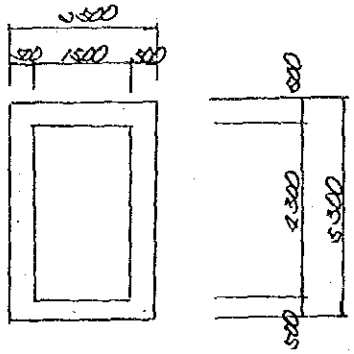
· CONCRETE CLASS A (躯体)

BASE

V_1 (+61.05 ~ 61.55) $t = 500$

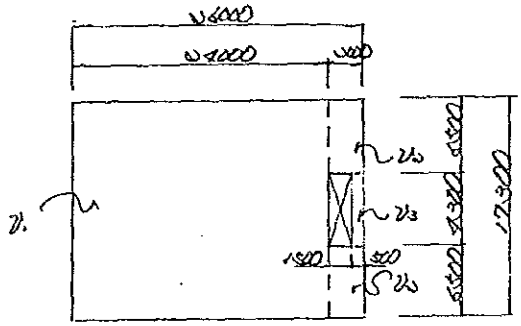
$V_1 = 5.30 \times 3.50 \times 0.50$ = 6.63

V_2 (61.55 ~ 61.65) $t = 100$



$V_2 = (3.50 \times 5.30 - 1.50 \times 4.30) \times 0.10$ = 0.68

V_3 (+61.65 ~ 60.15) $h = 500$



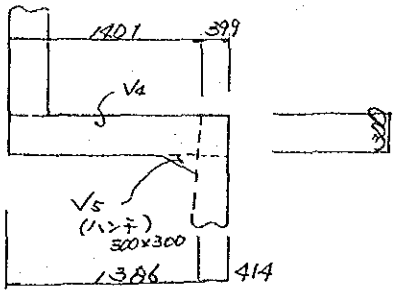
$v_1 = 14.00 \times 17.30 \times 0.50$ = 307.60

$v_2 = 3.00 \times 6.50 \times 0.50 \times 2$ = 19.00

$v_3 = 4.30 \times 0.50 \times 0.50$ = 1.08

V_3 = 327.68

V4 (+63.90 ~ 64.00) h = 300



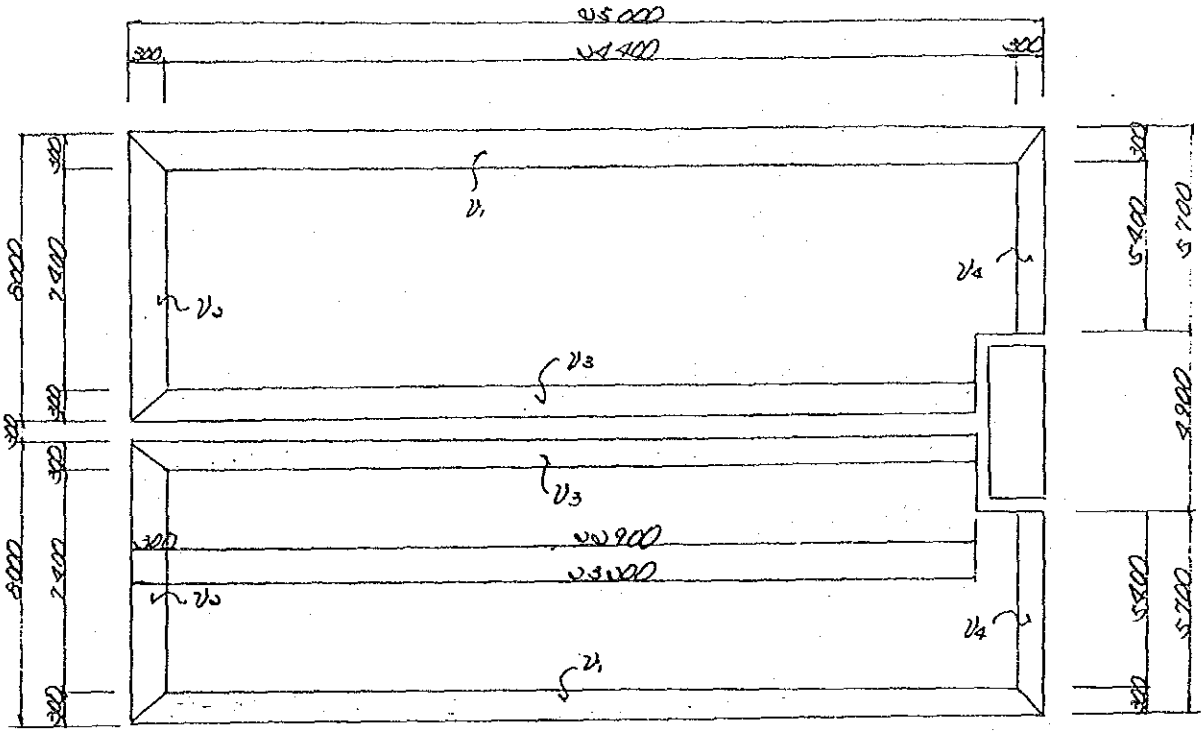
$V_4 = \frac{1}{2} \times (1.40 + 1.39) \times 0.30 \times 10.90 = 4.58$

V5 (ハンチ 300 × 300)

$V_5 = \frac{1}{2} \times 0.30 \times 0.30 \times 10.90 = 0.49$

	BASE CONCRETE
V1	6.63
V2	0.68
V3	22.68
V4	4.58
V5	0.49
TOTAL	34.04 m³

HANCH 300 × 300



V_1 = ½ × (5.00 + 4.40) × ½ × 0.30 × 0.30 × 5 = 0.35

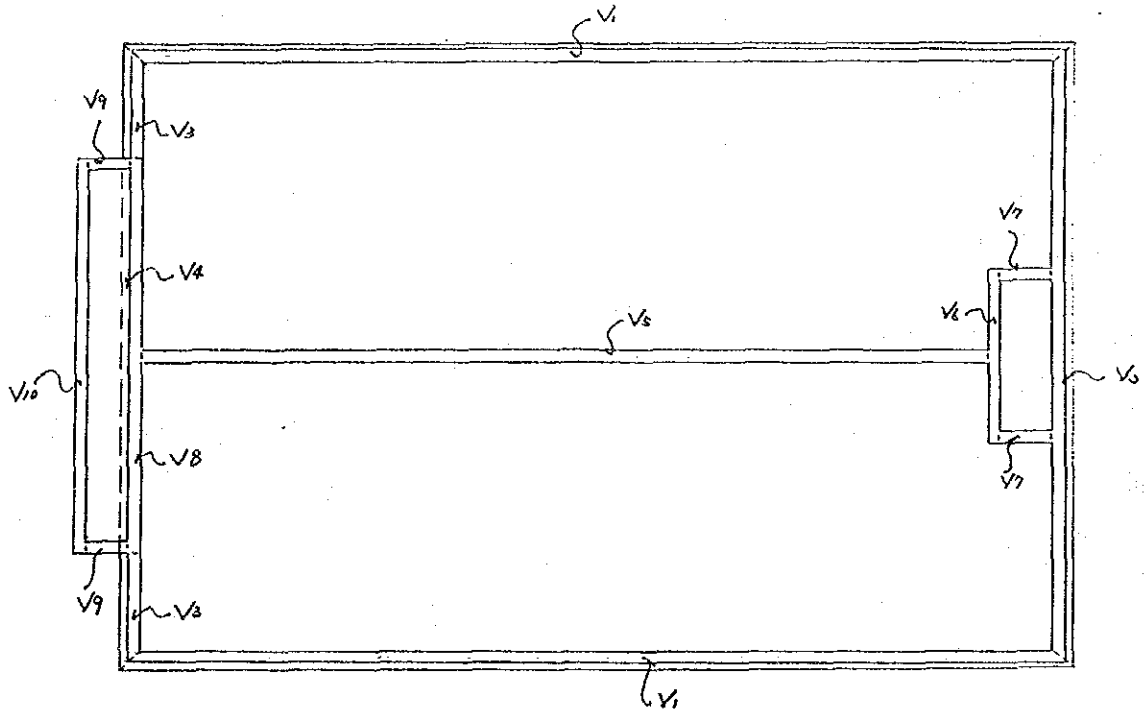
V_2 = ½ × (0.00 + 1.40) × ½ × 0.30 × 0.30 × 5 = 0.09

V_3 = ½ × (3.10 + 3.90) × ½ × 0.30 × 0.30 × 5 = 0.07

V_4 = ½ × (5.40 + 5.70) × ½ × 0.30 × 0.30 × 2 = 0.50

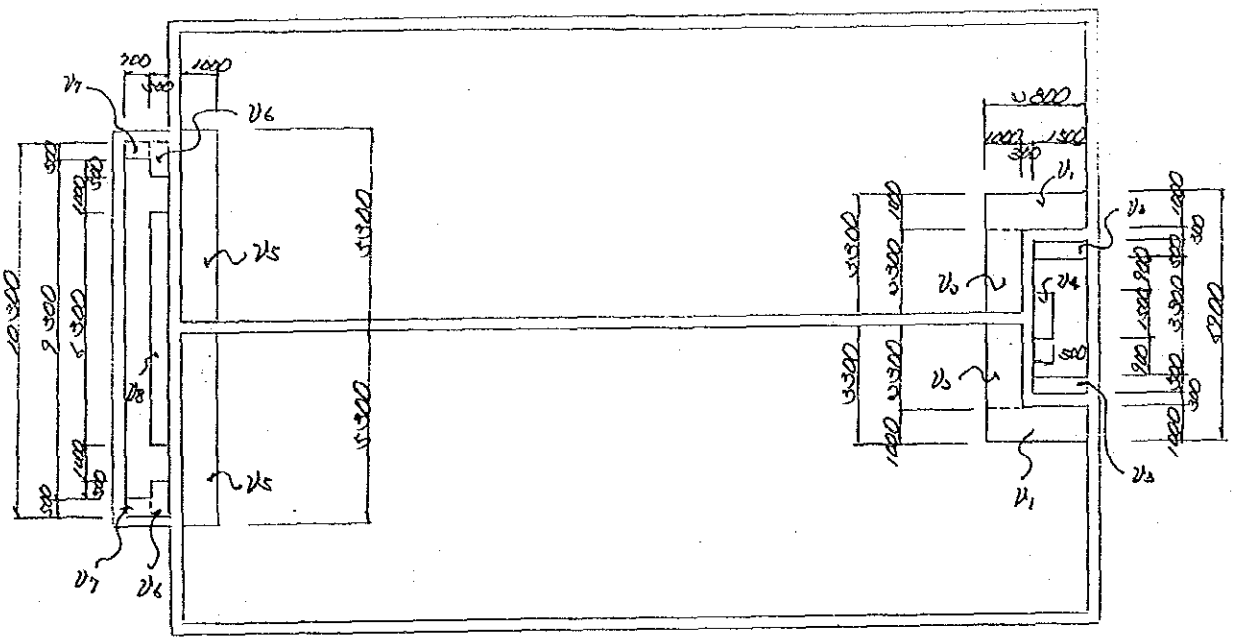
HANCH TOTAL = 5.48 m³

WALL



$V_1 = \frac{1}{2}\{\frac{1}{2} \times (25.00 + 25.60) + \frac{1}{2} \times (25.00 + 25.90)\} \times 4.05 \times 2$	=	205.54
$V_2 = \frac{1}{2} \times \{(\frac{1}{2} \times (16.30 + 16.90) + \frac{1}{2} \times (16.30 + 17.30)\} \times 4.05$	=	67.64
$V_3 = \frac{1}{2} \times \{\frac{1}{2} \times (2.70 + 3.00) + \frac{1}{2} \times (2.70 + 3.00)\} \times 4.05 \times 2$	=	23.49
$V_4 = \frac{1}{2} \times (0.40 \times 10.90 + 0.50 \times 10.90) \times 2.05$	=	10.06
$V_5 = 23.00 \times 0.30 \times 4.05$	=	28.19
$V_6 = 4.90 \times 0.30 \times 4.05 - 0.30 \times 1.00 \times 3.75 \times 2$	=	3.70
$V_7 = (1.50 \times 4.05 \times 0.30 - 0.30 \times 0.30 \times 0.30) \times 2$	=	3.59
$V_8 = 0.30 \times 10.90 \times 2.00 - 1.00 \times 0.30 \times 2.00 \times 2$	=	5.34
$V_9 = 0.70 \times 0.30 \times 2.00 \times 2$	=	0.84
$V_{10} = 10.90 \times 0.30 \times 2.00$	=	6.54
WALL TOTAL =		354.93 m³

SLAB $t = 0.00$



V_1	=	1.00 x 0.80 x 0.00 x 0	=	1.10
V_2	=	0.30 x 1.00 x 0.00 x 0	=	0.90
V_3	=	1.50 x 0.50 x 0.00 x 0	=	0.30
V_4	=	0.50 x 1.50 x 0.00	=	0.15
V_5	=	1.00 x 5.30 x 0.00 x 0	=	0.10
V_6	=	0.50 x 1.00 x 0.00 x 0	=	0.00
V_7	=	0.70 x 0.50 x 0.00 x 0	=	0.14
V_8	=	6.30 x 0.50 x 0.00	=	0.63
			SLAB TOTAL =	5.58 m³

7. OPERATION BUILDING

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
F1 	1.2 × 1.2 × 0.45	9	5.83	1.2 × 4 × 0.45	9	19.44
F2	1.3 × 1.3 × 0.5	11	9.3	1.3 × 4 × 0.5	11	28.6
F3	1.5 × 1.5 × 0.55	2	2.48	1.5 × 4 × 0.55	2	6.6
						
FG1 Ⓐ⑥ ①~⑦	0.3 × 0.7 × 3.65	12	9.2	0.7 × 3.65 × 2	12	61.32
〃 ①⑦ Ⓐ~Ⓑ	0.3 × 0.7 × 3.35	2	1.41	0.7 × 3.35 × 2	2	9.38
〃 ①⑦ Ⓑ~Ⓒ	0.3 × 0.7 × 5.95	2	2.5	0.7 × 5.85 × 2	2	16.66
						
C1 9L⊖ F1	0.35 × 0.35 × 0.3	8	0.29	0.35 × 4 × 0.3	8	3.36
〃 〃 F2	0.35 × 0.35 × 0.25	11	0.34	0.35 × 4 × 0.25	11	3.85
〃 〃 F3	0.35 × 0.35 × 0.2	2	0.05	0.35 × 4 × 0.2	2	0.56
C2 〃 F1	0.3 × 0.3 × 0.3	1	0.03	0.3 × 4 × 0.3	1	0.36
FCG1 Ⓒ ~ ①	0.3 × 0.7 × 1.53	1	0.32	0.7 × 1.53 × 2	1	2.14
			⟨31.75⟩			⟨152.27⟩

CONCRETE AND FORMWORK

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
C1 Ⓐ ①~⑦	0.35 × 0.35 × 7.6	7	6.52	0.35 × 4 × 7.6	7	74.48
〃 ⒷⒸ 〃	0.35 × 0.35 × 8.0	14	13.72	0.35 × 4 × 8.0	14	156.8
C2 STAIR	0.3 × 0.3 × 2.3	1	0.21	0.3 × 4 × 2.3	1	2.76
191 ⒶⒸ ①~⑦	0.3 × 0.75 × 3.65	12	9.86	1.67 × 3.65	6	36.57
				1.8 × 3.65	1	6.57
				1.54 × 3.65	2	11.24
(G and B)				1.49 × 3.65	3	16.32
				C52 ⊖ 0.18 × 2.8	3	⊖ 1.51
193 Ⓑ ①~⑦	0.3 × 0.5 × 3.65	6	3.29	1.04 × 3.65	5	18.98
				1.17 × 3.65	1	4.27
194 ①⑦ Ⓑ~Ⓒ	0.3 × 0.75 × 5.95	2	2.68	1.67 × 5.95	1	9.94
				1.49 × 5.95	1	8.87
195 ①⑦ Ⓐ~Ⓑ	0.3 × 0.75 × 3.35	2	1.51	1.67 × 3.35	1	5.59
				1.8 × 3.35	1	6.03
196 ②④ Ⓑ~Ⓒ	0.3 × 0.65 × 5.95	2	2.32	1.34 × 5.95	2	15.95
197 ②~Ⓑ Ⓐ~Ⓒ	0.3 × 0.5 × 3.35	5	2.51	1.04 × 3.35	4	13.94
				1.17 × 3.35	1	3.92
			< 42.62 >			< 390.72 >

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
1G8 ③Ⓐ⑤·Ⓑ~Ⓒ	0.3 × 0.65 × 5.95	3	3.48	1.34 × 5.95	3	23.97
1C9 1 ③Ⓐ⑤·Ⓒ~	0.3 × 0.65 × 1.83	3	1.07	1.34 × 1.83	1	2.45
				1.47 × 1.83 − 0.18 × 1.03	2	5.0
1C9 3 Ⓑ· ~①	0.3 × 0.65 × 1.53	1	0.3	1.38 × 1.53	1	2.11
1B1 Ⓒ~Ⓓ ①~⑦	0.3 × 0.5 × 3.73	2	1.12	1.04 × 3.73	2	7.76
" "	0.3 × 0.5 × 3.7	4	2.22	1.04 × 3.7	4	15.39
1 − C' Ⓑ~⑤	0.3 × 0.5 × 3.73	2	1.12	1.04 × 3.73	2	7.76
			< 9.31 >			< 64.39 >

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
RG1 Ⓐ·①~Ⓑ Ⓒ·②·Ⓔ·Ⓕ	0.3 × 0.65 × 3.65	8	5.69	1.33 × 3.65	8	38.84
RG1A Ⓒ ②~③ Ⓓ~Ⓔ	0.3 × 0.65 × 3.65	2	1.42	1.33 × 3.65	2	9.71
RG2 Ⓒ ③~⑤	0.3 × 0.75 × 7.65	1	1.72	1.56 × 7.65	1	11.93
RG3 Ⓑ ①~⑦	0.3 × 0.5 × 3.65	6	3.29	1.06 × 3.65	6	23.21
RG4 ①Ⓐ·Ⓑ~Ⓔ	0.3 × 0.65 × 5.95	2	2.32	1.33 × 5.95	2	15.83
RG5 ①⑦·Ⓐ~Ⓓ	0.3 × 0.65 × 3.35	2	1.31	1.33 × 3.35	2	8.91
RG6 ②⑥·Ⓐ~Ⓒ	0.3 × 0.65 × 5.95	2	2.32	1.41 × 5.95	2	16.78
RF7 ②~⑥·Ⓐ~Ⓑ	0.3 × 0.5 × 3.35	5	2.51	1.06 × 3.35	5	17.76
RF8 ③⑤·Ⓑ~Ⓔ	0.3 × 0.9 × 5.95	2	3.21	1.84 × 5.95	2	22.13
RC9 ③⑤·Ⓓ~	0.3 × 0.65 × 1.83	2	0.71	1.48 × 1.83 − 0.15 × 1.13	2	5.08
RB1 Ⓐ'·①~③ ⑤~⑦	0.3 × 0.5 × 3.73	2	1.12	1.06 × 3.73	2	7.71
	0.3 × 0.5 × 3.7	2	1.11	1.06 × 3.7	2	7.84
RB3 Ⓑ'·③~⑤	0.3 × 0.75 × 7.7	1	1.73	1.56 × 7.7	1	12.01
			<28.46>			<177.94>

CONCRETE AND FORMWORK

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
RB4 ⓒ'·③~⑤	0.3 × 0.65 × 7.75	1	1.51	1.48 × 7.75	1	11.47
2S3 Ⓐ~Ⓑ·①~⑥	18.55 × 3.45 × 0.13	1	8.32	18.55 × 3.45	1	64.0
Ⓑ~ⓒ·①~⑦	22.25 × 5.7 × 0.13	1	16.49	22.25 × 5.7	1	126.83
2S3A ⓒ~Ⓒ'·③~⑤	7.45 × 1.53 × 0.13	1	1.48	7.45 × 1.53	1	11.4
2CS2 ⓒ·①~③	(1.13 × 6.83 (7.37 − 7.5) − 0.9 × 0.9/2) × 0.18	1	1.32	(DO · LEFT) × 1	1	7.31
Ⓐ·①~③	(1.13 × 7.0 − 0.9 × 0.9/2) × 0.18	1	1.35	(· · ·) × 1	1	7.5
ⓒ·Ⓐ~①	(1.13 × 7.18 (7.47 − 5.58) − 1.13 × 1.13/2) × 0.18	1	1.34	(· · ·) × 1	1	7.47
①·Ⓐ~ⓒ	(1.13 × 5.5 − 1.13 × 1.13/2) × 0.18	1	1.0	(· · ·) × 1	1	5.58
RS1 Ⓐ~Ⓑ·①~⑦	22.25 × 3.45 × 0.12	1	9.21	22.25 × 3.45	1	76.76
Ⓑ~ⓒ·②~③ ⑤~⑦	7.43 × 5.7 × 0.12	2	10.16	7.43 × 5.7	2	84.7
RS2 Ⓑ~ⓒ·③~⑤	7.7 × 5.7 × 0.12	1	5.27	7.7 × 5.7	1	43.89
RS1A ⓒ~Ⓒ'·③~⑤	7.75 × 1.53 × 0.12	1	1.42	7.75 × 1.53	1	11.86
RCS1 Ⓐ	1.13 × 26.6 × 0.15	1	4.51	1.13 × 26.6	1	30.06
ⓒ	1.13 × (26.6 (19.25) − 8.35) × 0.15	1	3.09	1.13 × 18.25	1	20.62
①·⑦	1.13 × 10.35 × 0.15	2	3.51	1.13 × 10.35	2	23.39
1S	251.39 × 0.13	1	32.68			
			<102.66>			<532.84>
TOTAL			214.8			1.338.16

8. CHEMICAL BUILDING

CONCRETE AND FORMWORK

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
F1	1.3 × 1.3 × 0.5	5	4.23	1.3 × 4 × 0.5	5	13.0
F2	1.5 × 1.5 × 0.55	12	14.85	1.5 × 4 × 0.55	12	39.6
F3	1.6 × 1.6 × 0.6	8	12.29	1.6 × 4 × 0.6	8	30.72
FG1 Ⓐ~Ⓓ, ①~②	0.3 × 0.7 × 3.15	6	3.97	0.7 × 3.15 × 2	6	26.46
Ⓐ~Ⓓ, ②~④	0.3 × 0.7 × 2.4	6	3.02	0.7 × 2.4 × 2	6	20.16
①~②, Ⓑ~Ⓒ	0.3 × 0.7 × 3.65	2	1.53	0.7 × 3.65 × 2	2	10.22
①~⑥, Ⓐ~Ⓓ	0.3 × 0.7 × 2.65	6	3.34	0.7 × 2.65 × 2	6	22.26
①~⑥, Ⓓ~Ⓔ	0.3 × 0.7 × 2.65	2	1.11	0.7 × 2.65 × 2	2	7.42
FB1 Ⓐ'~Ⓓ, ①~③	0.3 × 0.7 × 3.18	1	0.67	0.7 × 3.18 × 2	1	4.45
①'~②, Ⓐ~Ⓐ'	0.3 × 0.7 × 1.5	1	0.32	0.7 × 1.5 × 2	1	2.1
C1 GL⊖ F1	0.35 × 0.35 × 0.3	4	0.15	0.35 × 4 × 0.3	4	1.68
〃 〃 F2	0.35 × 0.35 × 0.25	12	0.37	0.35 × 4 × 0.25	12	4.2
〃 〃 F3	0.35 × 0.35 × 0.2	8	0.2	0.35 × 4 × 0.2	8	2.24
C3 〃 F1	$\pi 0.15^2 \times 0.3$	1	0.02	$\phi^{300}_{0.3}$	1	$\phi^{300}_{0.3}$
〃 GL⊕	$\pi 0.15^2 \times 4.4$	1	0.31	$\phi^{300}_{4.4}$	1	$\phi^{300}_{4.4}$
					φ300	< 4.7 >
			< 46.38 >			< 184.51 >

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
C1	0.35 × 0.35 × 11.6	24	34.1	0.35 × 4 × 11.6	24	389.76
1G1 Ⓐ~Ⓓ · Ⓑ~① Ⓓ~Ⓔ	0.3 × 0.6 × 3.15	12	6.8	1.35 × 3.15	3	12.76
				1.22 × 3.15	3	11.53
				1.24 × 3.15	2	7.81
				1.37 × 3.15	2	8.63
				1.5 × 3.15	2	9.45
〃 Ⓐ~Ⓓ · ②~Ⓐ	0.3 × 0.6 × 2.4	8	3.46	1.35 × 2.4	2	6.48
				1.22 × 2.4	2	5.86
				1.37 × 2.4	2	6.58
				1.5 × 2.4	2	7.2
1G2 ①~⑥ · Ⓐ~Ⓓ	0.3 × 0.6 × 2.65	12	5.72	1.35 × 2.65	2	7.16
				1.37 × 2.65	3	10.89
				1.5 × 2.65	3	11.93
				1.2 × 2.65	4	12.72
〃 × · ×	0.3 × 0.6 × 3.45	6	3.94	1.37 × 3.65	2	10.0
				1.24 × 3.65	4	18.1
1B1 Ⓐ' · Ⓐ~Ⓒ	0.3 × 0.5 × 3.73	1	0.56	1.04 × 3.73	1	3.88
2G1 Ⓐ~Ⓓ · ①~③ Ⓖ~Ⓚ	0.3 × 0.5 × 3.15	7	3.31	1.0 × 3.15	4	12.6
				1.06 × 3.15	1	3.34
				1.12 × 3.15	1	3.53
				1.18 × 3.15	1	3.72
			<57.89>			<563.93>

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
2G1 Ⓐ~Ⓓ · ②~④	0.3 × 0.5 × 2.4	8	2.88	1.0 × 2.4	4	9.6
				1.06 × 2.4	4	10.18
2G1A Ⓐ~Ⓓ · ①~② Ⓢ~⑥	0.35 × 0.6 × 3.15	5	3.31	1.25 × 3.15	1	3.94
				1.31 × 3.15	4	16.51
2G2 ①~⑥ · Ⓐ~Ⓑ Ⓒ~Ⓔ	0.35 × 0.6 × 2.65	12	6.68	1.25 × 2.65	4	13.25
				1.31 × 2.65	7	24.3
				1.43 × 2.65	1	3.79
2G2A ①~⑥ · Ⓑ~Ⓒ	0.3 × 0.5 × 3.65	6	3.29	1.0 × 3.65	2	7.3
				1.06 × 3.65	4	15.48
2B2 Ⓐ'~Ⓒ · ①~② Ⓢ~⑥	0.35 × 0.5 × 2.8	4	1.96	1.11 × 2.8	4	12.43
3B3 Ⓑ~Ⓢ · ①~⑥	0.3 × 0.6 × 2.58	4	1.86	1.2 × 2.58	3	9.29
				1.28 × 2.58	1	3.3
" · "	0.3 × 0.6 × 2.4	4	1.73	1.2 × 2.4	4	11.52
" · "	0.3 × 0.6 × 3.15	2	1.13	1.2 × 3.15	1	3.78
				1.35 × 3.15	1	4.25
Ⓐ'Ⓒ · "	0.3 × 0.6 × 2.6	3	1.4	1.35 × 2.6	3	10.53
" · "	0.3 × 0.6 × 2.45	4	1.76	1.35 × 2.45	4	13.23
" · "	0.3 × 0.6 × 3.2	1	0.58	1.35 × 3.2	1	4.32
Ⓐ' · Ⓢ'~⑥	0.3 × 0.6 × 1.2	1	0.22	1.35 × 1.2	1	1.62
Ⓢ' · Ⓐ'~Ⓑ	0.3 × 0.6 × 2.13	1	0.38	1.35 × 2.13	1	2.88
			<27.18>			<181.5>

CONCRETE AND FORMWORK

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
3B4 ①~⑥, Ⓐ~Ⓓ	0.3 × 0.6 × 2.1	4	1.51	1.35 × 2.1	4	11.34
〃	0.3 × 0.6 × 3.7	2	1.33	1.35 × 3.7	2	9.99
〃	0.3 × 0.6 × 2.08	7	2.62	1.2 × 2.08	7	17.47
〃	0.3 × 0.6 × 3.65	4	2.63	1.2 × 3.65	4	17.52
RG1 Ⓐ~Ⓓ, ①~③ Ⓐ~⑥	0.3 × 0.5 × 3.15	12	5.67	1.18 × 3.15	6	22.3
				1.06 × 3.15	6	20.03
〃 ②~④	0.3 × 0.5 × 2.4	8	2.88	1.18 × 2.4	4	11.33
				1.06 × 2.4	4	10.18
RG2 ①~⑥ Ⓐ~Ⓓ	0.3 × 0.5 × 2.65	12	4.77	1.18 × 2.65	4	12.51
				1.06 × 2.65	8	22.47
〃 Ⓑ~Ⓒ	0.3 × 0.5 × 3.65	6	3.29	1.18 × 3.65	2	8.61
				1.06 × 3.65	4	15.48
FS2 Ⓐ~Ⓐ', ①~②	1.5 × 3.0 × 0.15	1	0.68			
〃 ②~④	2.65 × 5.2 × 0.15	1	2.07			
IS2 Ⓒ~Ⓓ, ①~④	2.73 × 14.55 × 0.15	1	5.96	2.73 × 14.55	1	39.72
IS4,4A Ⓑ~Ⓒ, ①~⑥	3.73 × 14.25 − 1.0 × 1.0 = (52.15)					
Ⓐ'~Ⓑ, ①~②	3.23 × 0.8 = (2.58)					
Ⓐ~Ⓑ, ⑤~⑥	3.23 × 2.7 = (8.72)					
	(63.45) × 0.13	1	8.25	(63.45) × 1.0	1	63.45
			(41.66)			(282.4)

CONCRETE AND FORMWORK

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
2S1, 1A Ⓐ~Ⓓ · ①~② Ⓔ~Ⓖ	(3,15 × 2,35 × 2 + 3,23 × 3,65) × 2 = 53,2 (26,6)					
〃 · ②~④	2,4 × 2,23 × 4 + 2,45 × 3,7 × 2 = 39,54					
Ⓑ~Ⓓ Ⓕ~Ⓖ	3,15 × 2,23 + 3,2 × 3,68 = 20,38					
	(113,12)	× 0,12 =	13,57	(113,12) ×	1,0 =	113,12
2CS1 Ⓐ~Ⓓ · ①~⑥	0,83 × 18,0 × 2 = 29,88					
①~② · Ⓐ~Ⓓ	0,83 × 10,35 × 2 = 17,18					
	(47,06) × 0,18	=	8,47	(47,06) ×	1,0 =	47,06
3S2, S3 Ⓐ~Ⓓ · ⑪~⑭	7,9 × 7,5 = 59,25					
Ⓑ~Ⓓ · Ⓕ~⑥	5,8 × 5,78 = 33,52					
Ⓐ~Ⓑ · Ⓖ'~Ⓖ	1,2 × 2,13 = 2,56					
	(95,33) × 0,15	=	14,3	(95,33) ×	1,0 =	95,33
RS1	14,55 × 9,15 × 0,12	1	15,98	14,55 × 9,15	1	133,1³
2C2	0,3 × 0,3 × 1,1	17	1,68	0,3 × 4 × 1,1	17	22,44
1B1 GANG WAY	0,3 × 0,5 × (5,41 + 0,65) (6,06)	1	0,91	0,94 × (5,41 + 0,65) (6,06)	1	5,7
1CS1 〃	0,9 × 5,51 × 0,18	1	0,89	0,9 × 5,51	1	4,96
STAIR 〃	1,2 × 2,6 × 0,28	1	0,87	1,2 × (2,6 + 2,0 + 1,4) (6,0)	1	7,2
			<56,67>			<428,94>

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
W200 G.F Ⓐ·①~③	7.95 × 2.9 =		23.06			
× ①·Ⓐ~Ⓐ′	1.7 × 2.9 =		4.93			
× ②~Ⓐ·Ⓐ~Ⓑ	2.65 × 2.9 × 3 =		23.06			
× Ⓑ·①~④	2.4 × 2.9 × 2 =		13.92			
× Ⓐ′·①~③	3.23 × 3.37 =		10.89			
× ①′·Ⓐ~Ⓐ′	1.5 × 3.5 =		5.25			
1F Ⓐ·Ⓐ~Ⓑ	2.65 × 2.9 =		7.69			
3F Ⓐ·①~④	7.23 × 1.7 =		13.14			
× Ⓓ·①~Ⓔ	13.4 × 1.7 =		22.78			
× ①~Ⓔ·Ⓐ~Ⓓ	7.4 × 1.7 × 2 =		25.16			
× Ⓑ·④~⑤	3.15 × 1.7 =		5.36			
× Ⓑ·⑤~⑤	1.93 × 1.7 =		3.28			
× ④·Ⓐ~Ⓑ	2.13 × 1.7 =		3.62			
× Ⓓ′ 〃	2.3 × 1.7 =		3.91			
× Ⓐ·Ⓑ~Ⓔ	1.1 × 1.7 =		1.87			
× PIPE. PIT	7.8 × 0.35 =		2.73			
× Ⓡ CORNER	1.1 × 1.7 × 4 =		7.48			
	(178.13) × 0.2	1	35.63	(178.13) × 2	1	356.26
W100 3F	7.1 × 0.5 × 0.1	1	0.36	7.1 × 0.5 × 2	1	7.1
Slab on grade			16.8			
			<52.79>			<363.36>
TOTAL			282.57			2004.64
				4.43	4300	4.7

9. CHLORINATION BUILDING

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
F1	0.7 × 0.7 × 0.3	8	1.18	0.7 × 4 × 0.3	8	6.72
C1	0.3 × 0.3 × 5.07	8	3.65	0.3 × 4 × 5.07	8	48.67
B1 SPAN 4.7	0.25 × 0.6 × 4.4	2	1.32	1.18 × 4.4	2	10.38
× 5.15	" " " × 4.95	2	1.49	1.18 × 4.95	2	11.68
× 4.7	" " " × 4.47	1	0.67	1.21 × 4.47	1	5.41
× 5.15	" " " × 5.02	1	0.75	1.21 × 4.47	1	5.41
× 3.275	" " " × 2.63	2	0.79	(1.18 + 1.41)/2 × 2.63	2	6.29
× 2.775	" " " × 2.13	1	0.32	1.33 × 2.13	1	2.83
S1	(4.47 × 2.23 + 5.02 × 2.23) × 0.12	1	2.81	(4.47 × 2.23 + 5.02 × 2.23)	1	23.39
CS1	{11.45 × 3.78 − (5.0 × 3.18 + 5.15 × 2.68)}			{11.45 × 3.78 − (5.0 × 3.18 + 5.15 × 2.68)}	1	13.58
	× 0.15	1	2.04			
PARAPET	(11.45 + 3.43) × 2 × 0.2 × 0.15	1	0.83	(11.45 + 2.43) × 2 × 0.55 − 14.18 × 0.35	1	10.31
Slab on grade	11.45 × 3.8 × 0.15	1	6.53			
	⊖ 2.1 × 6.7 × 0.15	1	⊖ 2.11			
trench	2.1 × 6.7 × 0.3	1	4.22			
	16.4 × 2.0 × 0.3	1	9.84	16.4 × 4.3	1	70.52
	1.7 × 1.1 × 0.2 × 2	1	0.75	5.6 × 0.2 × 2	1	2.24
	0.3 × 4.2 × 0.33 × 4	1	1.66	9.0 × 0.45 × 4	1	16.2
	0.3 × 0.9 × 0.33 × 4	1	0.36	2.4 × 0.45 × 4	1	4.32

CONCRETE AND FORMWORK

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
TOTAL			37.1			237.95

10. WORKSHOP

CONCRETE AND FORMWORK

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
F1	$1.2 \times 1.2 \times 0.4 + (1.2^2 + 0.35^2)/2 \times 0.2$	20	17.8	$1.2 \times 4 \times 0.4$	20	38.4
FG1 Ⓐ·Ⓓ	$0.3 \times 0.7 \times 5.65$	8	9.49	$0.7 \times 2 \times 5.65$	8	63.28
〃 Ⓓ·Ⓢ	$0.3 \times 0.7 \times 5.65$	6	7.12	$0.7 \times 2 \times 5.65$	6	47.46
C1 ①~③·Ⓐ~Ⓓ	$0.35 \times 0.35 \times 5.05$	12	7.42	$0.35 \times 4 \times 5.05$	12	84.84
〃 Ⓐ~Ⓢ·Ⓐ~Ⓓ	$0.35 \times 0.35 \times 3.85$	8	3.77	$0.35 \times 4 \times 3.85$	8	43.12
G1 Ⓐ~Ⓓ·①~⑤	$0.3 \times 0.6 \times 5.65$	16	16.27	1.38×5.65	8	62.38
				1.26×5.65	8	56.95
G2 ①~Ⓓ·Ⓐ~Ⓓ	$0.3 \times 0.6 \times 5.65$	19	19.32	1.38×5.65	13	101.36
				1.26×5.65	6	42.71
B1 ③·Ⓐ'·Ⓐ~Ⓓ	$0.3 \times 0.5 \times 5.7$	4	3.42	1.06×5.7	4	24.17
	$0.3 \times 0.5 \times 5.75$	2	1.73	1.06×5.75	2	12.19
B1A ①'·②'·Ⓐ~Ⓓ	$0.3 \times 0.6 \times 5.7$	4	4.10	1.26×5.7	4	28.73
	$0.3 \times 0.6 \times 5.75$	2	2.07	1.26×5.75	2	14.49
G1 Ⓑ·Ⓒ ~①	$0.3 \times 0.6 \times 2.83$	2	1.02	1.38×2.83	2	7.81
B2 -① Ⓑ~Ⓒ	$0.3 \times 0.5 \times 5.75$	1	0.86	1.18×5.75	1	6.79
CB1 Ⓑ ①'~⑤'	$0.3 \times 0.5 \times 4.55$	2	1.37	1.18×4.55	1	5.07
			< 95.76 >			< 640.05 >

CONCRETE AND FORMWORK

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
B3 ⑤′ Ⓐ′~Ⓓ′	0.25 × 0.5 × 2.9	1	0.36	1.13 × 2.9	1	3.28
S1 ~① Ⓑ~Ⓒ	2.53 × 5.75 = 14.55					
S2 ①~⑤ Ⓐ~Ⓓ	21.65 × 17.15 = 371.3					
S1A CB1	Δ 0.3 × 2.73 × 2 = Δ 1.64					
⑤~ Ⓐ′~Ⓑ′	1.58 × 2.9 = 4.58					
	(388.79) × 0.12	1	46.65	(388.79) × 1	1	388.79
CS1 Ⓓ ①′~②′	0.83 × 8.0 × 0.15	1	1.0	0.83 × 8.0	1	6.64
S1F ①~⑤ Ⓐ~Ⓓ	23.75 × 17.25 = 421.56					
~① Ⓑ~Ⓒ	2.83 × 6.35 = 17.97					
〃	1.0 × 3.5 = 3.5					
Ⓓ ①′~②′	8.0 × 3.33 = 26.64					
⑤ Ⓐ′~Ⓑ′	1.63 × 3.5 = 5.71					
	(475.38) × 0.13	1	61.8	———		
F ~① Ⓓ~Ⓒ	0.45 × 12.0 = 5.4			0.6 × 12.0 = 7.2		
〃	0.3 × 5.5 = 1.65			0.45 × 5.5 = 2.48		
Ⓓ ①′~②′	0.15 × 8.0 = 1.2			0.3 × 8.0 = 2.4		
〃	0.38 × 6.65 = 2.53			0.53 × 6.65 = 3.52		
⑤ Ⓐ′~Ⓑ′	0.55 × 6.25 = 3.71			0.7 × 6.75 = 4.73		
	(14.49) × 0.13	1	1.88	(20.33) × 1	1	20.33
			<111.69>			<419.04>

	CONCRETE			FORMWORK		
	Calculation	Q'ty	Total m^3	Calculation	Q'ty	Total m^2
Parapet ①~③ Ⓐ~Ⓓ	(12,2+18,2)×2×0.5×0.15	1	4,56	(12,2+18,2)×2×0.5×2	1	60,8
〃 ③~⑤ Ⓐ~Ⓓ	(11,93×2+18,2)×0.2×0.15	1	1,26	(11,93×2+18,2)×0.2×2	1	16,87
〃 ~① Ⓐ~Ⓒ	(2.75×2+6,2)×0.2×0.15	1	0.35	(2.75×2+6,2)×0.2×2	1	4,68
〃 ⑤~ Ⓐ'~Ⓑ'	(1.75×2+3,35)×0.2×0.15	1	0,21	(1.75×2+3,35)×0.2×2	1	2.74
			< 6,38 >			< 85,04 >
TOTAL			213,83			1.144,13

PART III BORING LOG DATA

DRILL LOG

SITE	PAILLES TREATMENT PLANT	HOLE No.	JTP-1
LATITUDE	0.00 LONGITUDE 0.00	ELEVATION	70.66m
DATE	From 8, June, 1990 to 11, June, 1990	DEPTH	20.00m
ANGLE	180° UP / DOWN 0°, 90°	DIRECTION	N 0°, E 90°, S 180°, W 270°
SLOPE	HORIZON 0°, 90°		

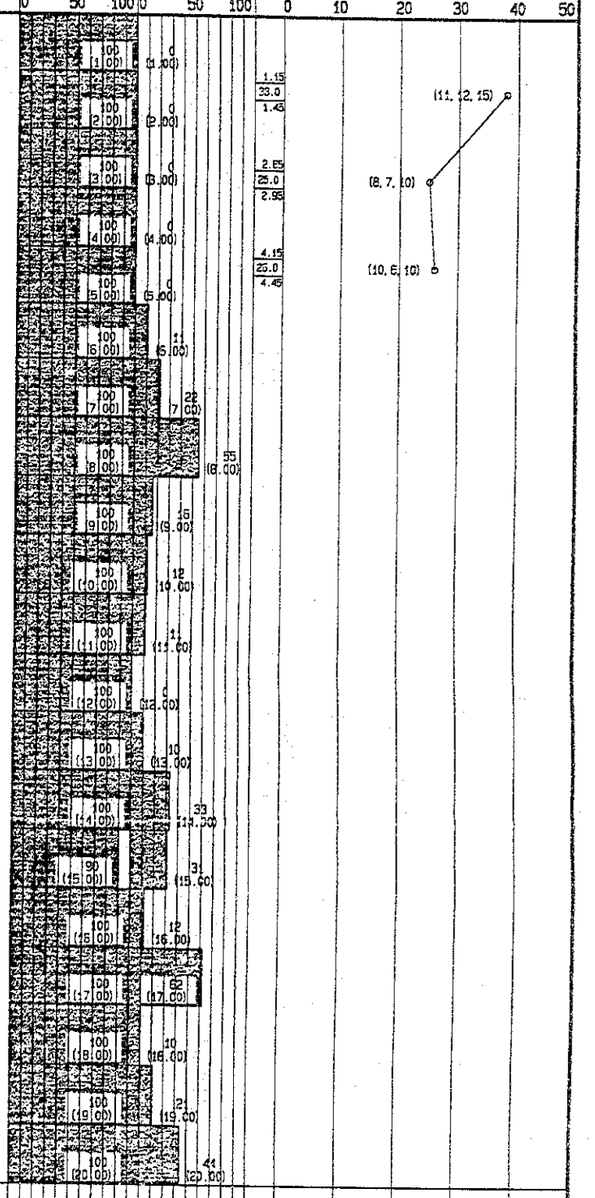
SCALE	DEPTH	ELEVATION	GEOLOGICAL AGE	ROCK TYPE	COLUMN SECTION	ROCK CLASS	DESCRIPTION
1	1.00	69.66	Young Lava	Residual Soil		D	Reddish brown residual soil. Up to 0.70m, fragments of basalt white weathered rock are include
	1.45	69.21					
2	2.00	68.66					
	2.65	68.01					
3	3.00	67.66					
	3.50	67.16					Intensely weathered vesicular ba Light yellowish grey, earthy cor recovered.
4	4.00	66.66		Weathered Basalt			
	4.45	66.21					Light grey to grey, intensely we ed vesicular basalt. Fragile fragmental cores are eco
5	5.00	65.66				CL	
							Moderately weathered vesicular b Cracks are stained with water. Partially fragmental cores are r ered.
6	6.00	64.66					
	6.45	64.21					
7	7.00	63.66		Basalt			Dark grey, weakly weathered vesi basalt. Fine olivine phenocrysts are rec able. Brecciated and weathered to brow grey earthy material at 8.40m. Less vesicular from 9.20 to 11.2
8	8.00	62.66					
9	9.00	61.66				CM	
10	10.00	60.66					
11	11.00	59.66					
	11.45	59.21					
12	12.00	58.66		Weathered Basalt		D	Intensely weathered basalt. Fragmental to earthy cores are r ered.
	12.60	58.06					
13	13.00	57.66				CL	Slightly weathered basalt. Partially weathered and broken i fragments. Less vesicular from 15.90 to 16. Cracky below 17.1m.
	13.40	57.26					
14	14.00	56.66		Basalt		CM	
15	15.00	55.66					
16	16.00	54.66					
17	17.00	53.66					
	17.30	53.36					
18	17.80	52.86				CL	Brecciated and filled with cream ored clayey material.
	18.00	52.66		Flow Breccia			
	18.30	52.36				CM	Slightly weathered vesicular bas
19	18.80	51.86		Basalt		CH	Fresh, compact basalt.
	19.25	51.41					
20	20.00	50.66					
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DATE | BIT & DIAMETER | WATER LEVEL

CORE RECOVERY % (m) 0 50 100

R.Q.D % (m) 0 50 100

SPT 0 10 20 30 40 50



*R.Q.D is Rock Quality Designation, R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total drill length) x 100%
*LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm2
*DEPTH and ELEVATION are in meter
*DIAMETER is in millimeter

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DRILL LOG

SHEET NO. 1 OF 1

SITE	PAILLE TREATMENT PLANT	HOLE No.	JTP-2
LATITUDE	0.00 LONGITUDE 0.00	ELEVATION	68.62m
DATE	From 7, June, 1990 to 8, June, 1990	DEPTH	20.00m
ANGLE	150° UP / DOWN 0° / 90°	DIRECTION	N 0° / E 90° / S 180° / W 270°
SLOPE	HORIZON 0° / 90°		

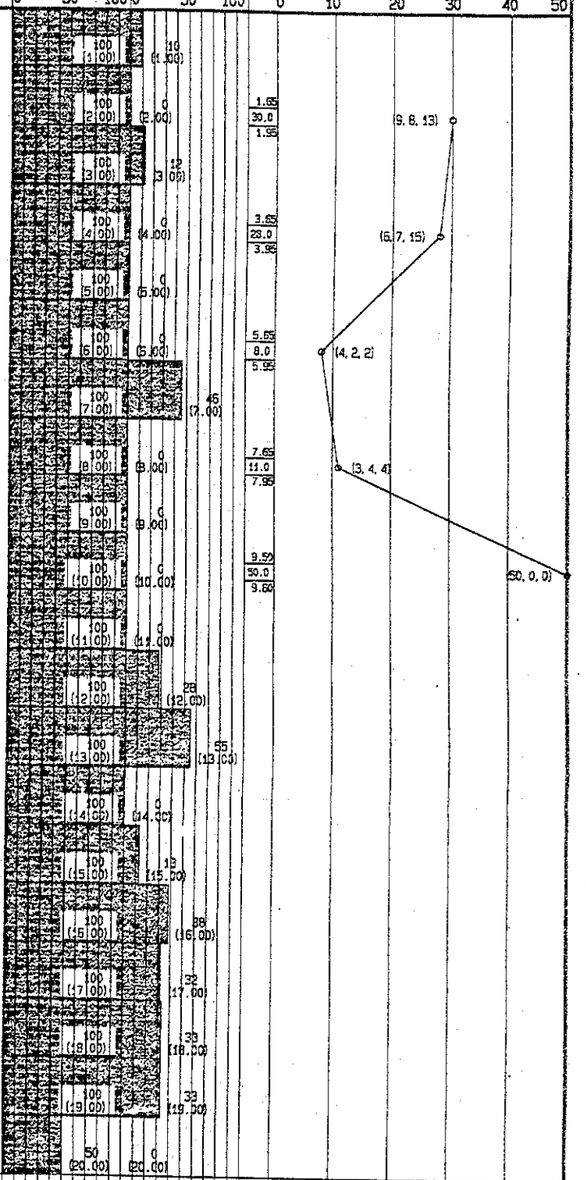
SCALE	DEPTH	ELEVATION	GEOLOGICAL AGE	ROCK TYPE	COLUMN SECTION	ROCK CLASS	DESCRIPTION
	0.40	68.22		Coral Sand			Light grey coral sand for filtra
1	1.00	67.62		Residual Soil		D	Reddish brown lateritic residual Boulder- to cobble-size basalt r are included.
	1.65	66.97					
2	2.00	66.62					
3	3.00	65.62					
	3.50	65.12					
	3.80	64.82					
4	4.00	64.62		Weathered Basalt			Light yellowish grey, earthy cor reccovered.
5	5.00	63.62					
	5.65	62.97					
6	6.00	62.62					
7	7.00	61.62		Basalt		CM	Light grey to grey, moderately w ed vesicular basalt.
	7.40	61.22					
	7.65	60.97					
8	8.00	60.62					
	8.50	60.12		Weathered Basalt		CL-D	Intensely weathered basalt. Fragile fragmental cores are eco
9	9.00	59.62					Weakly weathered, less vesicular
	9.50	59.12					
	9.80	58.82				CL	Moderately weathered basalt. Partially fragmental cores are r ered.
10	10.00	58.62					
11	11.00	57.62	Young Lava				
	11.30	57.32					
12	12.00	56.62		Basalt			Weakly weathered basalt. Cores are broken into fragments 14.60 to 15.00m, and 15.50 to 1
13	13.00	55.62				CM	
14	14.00	54.62					
	14.60	54.02					
15	15.00	53.62		Weathered Basalt		CL	
	15.50	53.12		Basalt		CM	
	16.00	52.62		Weathered Basalt		CL	
	17.00	51.62		Basalt		CM	
	17.20	51.42					
	17.80	50.82		Flow Breccia		CL-D	Weathered to white clayey materi Supposed to be flow breccia
18	18.00	50.62					
19	19.00	49.62		Basalt		CM	Weakly weathered vesicular basal Cracky below 19.00m. Cores are lost from 19.10 to 19.
						CL-D	
20	20.00	48.62					
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DATE	BIT & DIAMETER	WATER LEVEL

CORE RECOVERY % (m) 0 50 100

R.Q.D % (m) 0 50 100

SPT 0 10 20 30 40 50



*R.Q.D is Rock Quality Designation, R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total drill length) x 100%
*LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm2
*DEPTH and ELEVATION are in meter
*DIAMETER is in millimeter

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DRILL LOG

SITE	PAILLES TREATMENT PLANT	HOLE No.	JTP-3
LATITUDE	0.00 LONGITUDE 0.00	ELEVATION	68.01m
DATE	From 9, June, 1990 to 16, June, 1990	DEPTH	20.00m
ANGLE	100° UP / DOWN 0° / 90°	DIRECTION	N 0° / E 90° / S 180° / W 270°
SLOPE	HORIZON 0° / 90°		

SCALE	DEPTH	ELEVATION	GEOLOGICAL AGE	ROCK TYPE	COLUMN SECTION	ROCK CLASS	DESCRIPTION
	0.40	67.61		Coral Sand			Light grey coral sand for filtra
1	1.00	67.01		Residual Soil			Reddish brown lateritic residual
	1.45	66.56				D	Intensely weathered basalt.
2	2.00	66.01					
	2.65	65.36				CL	Moderately weathered basalt. Fragmental to earthy cores are r ered.
3	3.00	65.01					
4	4.00	64.01					
	4.45	63.56					
5	5.00	63.01	Young Lava	Weathered Basalt			Light brownish grey, weakly to ately weathered basalt. Fragile fragmental cores are eco from 12.65 to 13.00m.
6	6.00	62.01					
7	7.00	61.01					
8	8.00	60.01					
9	9.00	59.01				CM	
10	10.00	58.01					
11	11.00	57.01					
12	12.00	56.01					
	12.65	55.36				CL-D	
13	13.00	55.01					
	13.65	54.36					
14	14.00	54.01		Basalt			Dark grey, fresh vesicular basal Olivine phenocrysts are recogniz
15	15.00	53.01				CM	
	15.50	52.51					
	16.00	52.01					Moderately to intensely weathere Earthy cores are recovered from to 16.80m.
	16.20	51.81				CL-D	
	16.80	51.21					
	17.00	51.01		Weathered Basalt			Moderately weathered, light brow grey basalt.
18	18.00	50.01				CM	
19	19.00	49.01					
	19.55	49.46					Intensely weathered to brownish Fragile, fragmental cores are r ed.
20	20.00	48.01				D	
21							
22							
23							
24							
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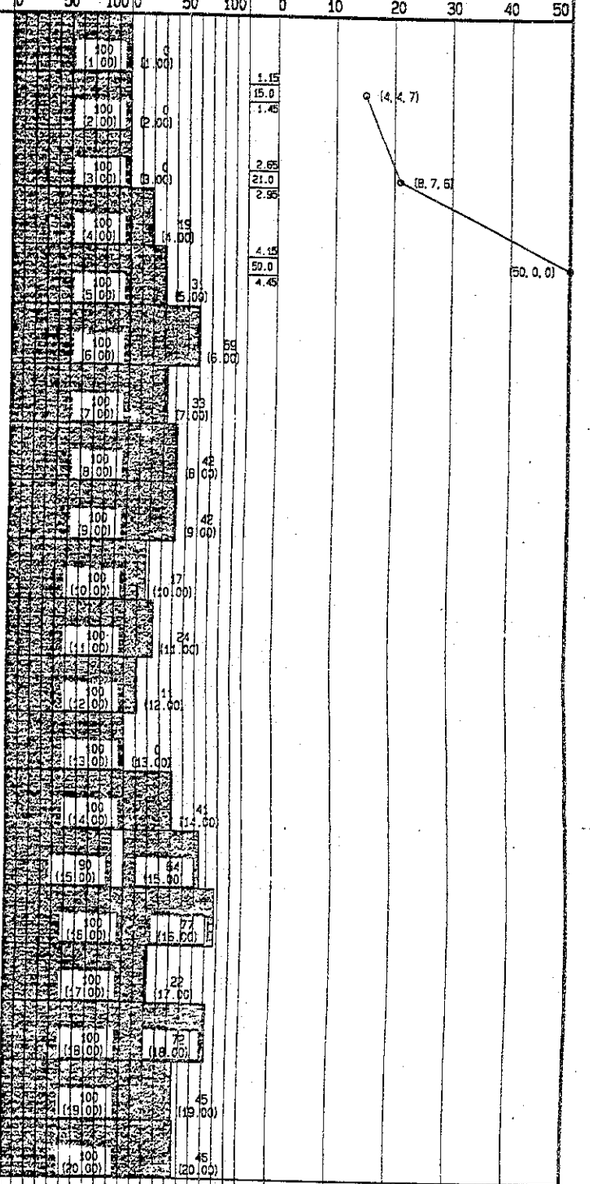
30							

DATE | BIT & DIAMETER | WATER LEVEL

CORE RECOVERY % (m) | R.Q.D % (m) | SPT



*R.Q.D is Rock Quality Designation, R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total drill length) x 100%
*LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm2
*DEPTH and ELEVATION are in meter
*DIAMETER is in millimeter

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DRILL LOG

SHEET NO. 1 OF 1

SITE	PAILLES TREATMENT PLANT	HOLE No.	JTP-4
LATITUDE	0.00 LONGITUDE 0.00	ELEVATION	67.94m
DATE	From 15, June, 1990 to 16, June, 1990	DEPTH	20.00m
ANGLE	180° UP / DOWN 0° / 90°	DIRECTION	N 0° / E 90° / S 180° / W 270°
SLOPE	HORIZON 0° / 90°		

SCALE	DEPTH	ELEVATION	GEOLOGICAL AGE	ROCK TYPE	COLUMN SECTION	ROCK CLASS	DESCRIPTION
1	1.00	66.94	Young Lava	Residual Soil		D	Reddish brown residual soil. Cobbles of vesicular basalt are cluded.
2	1.65	66.29					
	1.95	66.00					
3	3.00	64.94					
	3.15	64.79					
	3.45	64.49		Basalt		CH	Dark grey, less vesicular basalt Compact and hard.
4	4.00	63.94					
	4.80	63.14				CM	Weakly weathered and vesicular. Partially weathered along cracks
5	5.00	62.94					
	5.80	62.14				CL	Moderately weathered vesicular b Fragmental to short cylindric co are recovered.
6	6.00	61.94					
7	7.00	60.94				CM	Slightly weathered, less vesicu basalt. Cracks are coated with yellowish clayey material.
8	8.00	59.94				CH	Massive, compact non-vesicular b Very hard.
	8.45	59.49					
9	9.00	58.94					Moderately weathered, light brow grey basalt. Fragile, fragmental cores are re from 9.00 to 9.80m.
10	10.00	57.94					
11	11.00	56.94				CM-CL	
	11.45	56.49					
12	12.00	55.94		Weathered Basalt			
13	13.00	54.94					
	13.30	54.64					
	13.45	54.64					
14	14.00	53.94				CM	Weakly weathered, less vesicular Cracks are coated with light yel brown clayey material. Cracky below 15.20m.
15	15.00	52.94		Basalt			
	15.75	52.19					
	16.00	51.94				CL	Weathered to brownish grey. Fragmental cores are recovered.
	16.20	51.74					
	17.00	50.94				CM-CH	Slightly weathered, less vesicul basalt. Cracky up to 17.30m.
	17.00	50.14					
18	18.00	49.94		Flow Breccia			
	18.30	49.64					
19	19.00	48.94		Basalt			Weakly to moderately weathered v ular basalt. Cracks are filled with white pow material.
	19.20	48.74				CM	
20	20.00	47.94					
21							
22							
23							
24							
25							
26							
27							
28							
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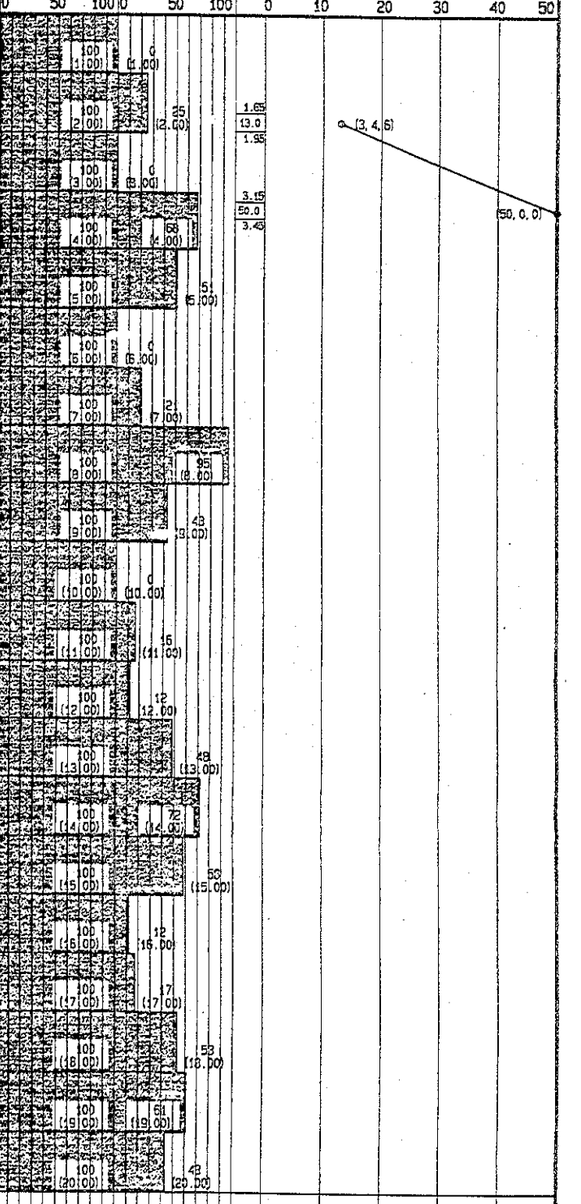
30							

DATE	BIT & DIAMETER	WATER LEVEL

CORE RECOVERY % (m) 0 50 100

R.Q.D % (m) 0 50 100

SPT 0 10 20 30 40 50



*R.Q.D is Rock Quality Designation, R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total drill length) x 100%
*LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm2
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DRILL LOG

SITE	PAILLES TREATMENT PLANT	HOLE No.	JTP-5
LATITUDE	0.00 LONGITUDE 0.00	ELEVATION	67.01m
DATE	From 14, June, 1990 to 15, June, 1990	DEPTH	20.00m
ANGLE	180° UP / DOWN 0°, 90° DIRECTION (N 0°, E 90°, S 180°, W 270°) SLOPE HORIZON 0° / 90°		

SCALE	DEPTH	ELEVATION	GEOLOGICAL AGE	ROCK TYPE	COLUMN SECTION	ROCK CLASS	DESCRIPTION
1	1.00	66.01	Young Lava	Residual Soil		D	Reddish brown residual soil. Fragments of vesicular basalt ar cluded.
	1.15	65.86					
	1.45	65.56					
2	2.00	65.01					
	2.65	64.36					
3	3.00	64.01					Intensely weathered vesicular ba
	3.30	63.71					
4	4.00	63.01		Basalt		CH	Weakly weathered, vesicular basa Partially intense weathering alo cracks.
	4.80	62.21				CM	
5	5.00	62.01				CL	
6	5.80	61.21					
	6.00	61.01					
	6.55	60.46				CM	Intensely weathered to brownish
7	7.00	60.01					Moderately weathered basalt. Partially vesicular.
8	7.80	59.21				CH	
	8.00	59.01					
	8.45	58.56					Slightly weathered vesicular bas basalt.
	8.75	58.26					
9	9.00	58.01					Weakly weathered, less vesicular Partially weathered along cracks
10	10.00	57.01					
11	11.00	56.01				CM-CL	
	11.45	55.56					
12	12.00	55.01		Weathered Basalt			
	12.80	54.21					
13	13.00	54.01					Intensely weathered basalt. Earthy cores are recovered.
	13.30	53.71					
14	14.00	53.01		Basalt		CM	
	14.50	52.51					
15	15.00	52.01					Weakly weathered vesicular basal
	15.75	51.26					
	16.00	51.01				CL	Moderately weathered to light br grey. Partially spherulitic vesicles a included.
	16.20	50.81					
	17.00	50.01					
	17.80	49.21				CM-CH	
18	18.00	49.01		Flow Breccia			
	18.30	48.71					
19	19.00	48.01		Basalt			
	19.20	47.81					
20	20.00	47.01				CM	
21							
22							
23							
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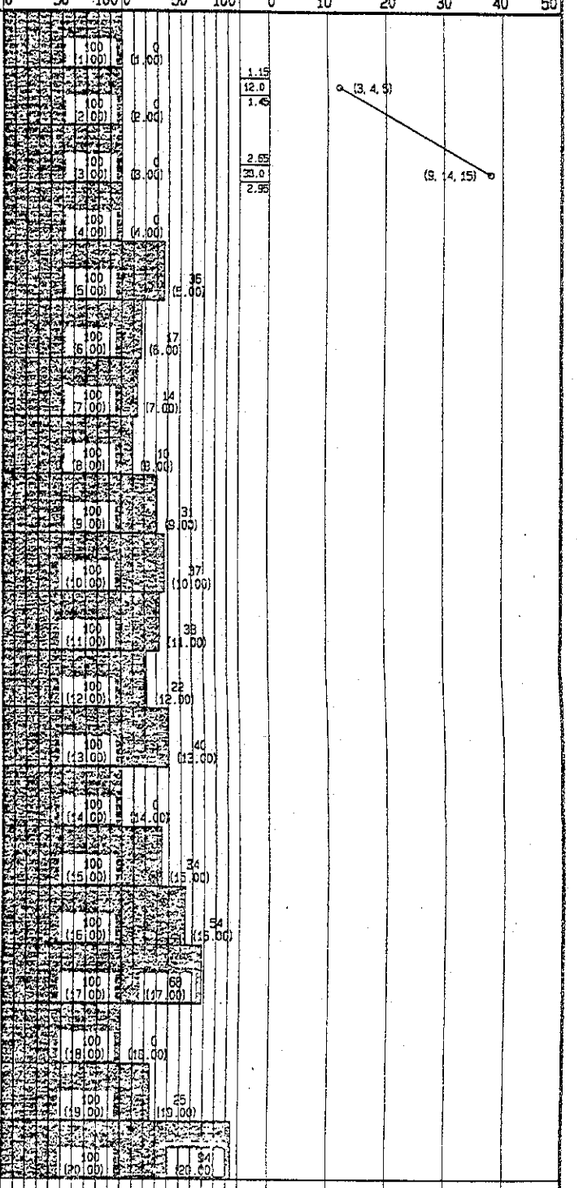
30							

DATE | BIT & DIAMETER | WATER LEVEL

CORE RECOVERY % (m) | R.Q.D % (m) | SPT



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※LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm2
※DEPTH and ELEVATION are in meter
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DRILL LOG

SHEET NO. 1 OF 1

SITE	PAILLES TREATMENT PLANT	HOLE No.	JTP-6
LATITUDE	0.00 LONGITUDE 0.00	ELEVATION	67.08m
DATE	From 17, June, 1990 to 20, June, 1990	DEPTH	20.00m
ANGLE	150° UP / DOWN 0° 90°	DIRECTION	N 0° E 90° S 180° W 270°
SLOPE	HORIZON 0° / 90°		

SCALE	DEPTH	ELEVATION	GEOLOGICAL AGE	ROCK TYPE	COLUMN SECTION	ROCK CLASS	DESCRIPTION
1	1.00	66.08	Young Lava	Residual Soil		D	Reddish brown residual soil. Fragments of weathered basalt ar cluded.
	1.35	65.73					
	1.45	65.63					
2	2.00	65.48					
	2.30	65.43					
3	3.00	64.08				CH	Dark grey, less vesicular, compac basalt. Supposed to be boulders.
	3.70	63.38					
4	4.00	63.08					
	4.65	62.43				D	Reddish brown residual soil. Fragments of weathered basalt ar cluded.
5	4.85	62.23					
	5.35	61.73					
6	6.00	61.08		Weathered Basalt		CL-D	Intensely to moderately weathere vesicular basalt. Fragmental cores are recovered.
	6.50	60.58					
7	7.00	60.08				CM	Moderately weathered, vesicular Partially fragmental to earthy c are recovered.
8	8.00	59.08					
9	9.00	58.08					
10	10.00	57.08					
11	11.00	56.08					
	11.45	55.63					
12	12.00	55.08		Weathered Basalt			
13	13.00	54.08					
	13.40	53.68		Basalt		CH	Weakly weathered, less vesicular
14	14.00	53.08					
	14.50	52.58					
15	15.00	52.08		Weathered Basalt		CH	Cracks are stained with water.
	15.75	51.33					
	16.00	51.08				CH-CL	Moderately weathered to light br grey to light grey, less vesicul basalt.
	17.00	50.08					
	17.40	49.68					
18	18.00	49.08		Basalt		CH-CH	Massive, compact basalt with few ulitic vesicles. Dark grey and fresh.
19	19.00	48.08					
20	20.00	47.08					
21							
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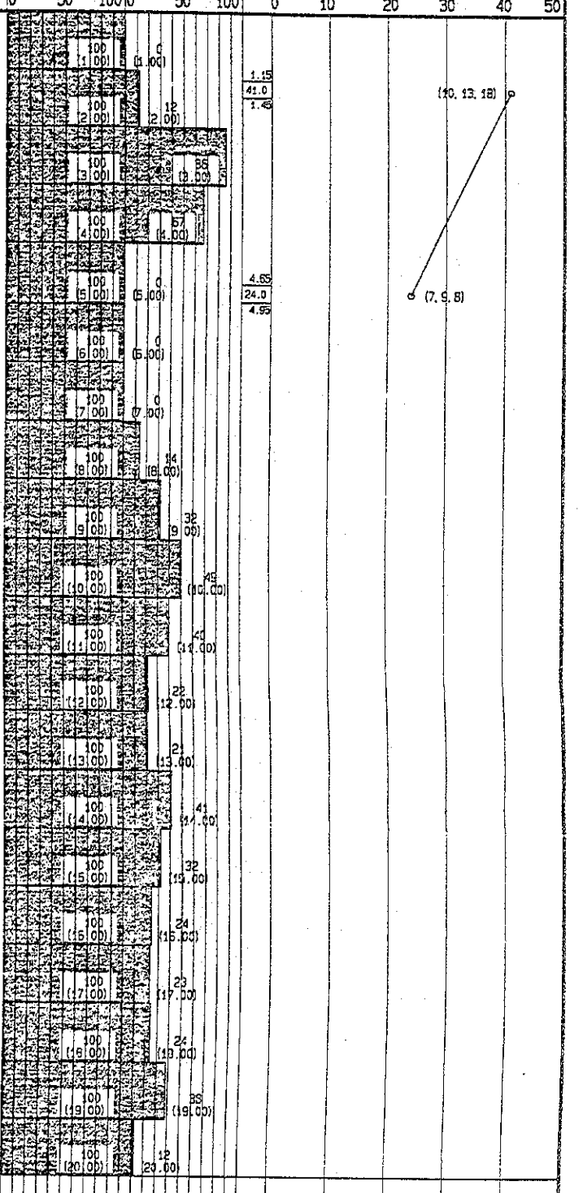
DATE | BIT & DIAMETER | WATER LEVEL

CORE RECOVERY % (m) | R.Q.D % (m) | SPT



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*LUGEON VALUE is l/min/m under injection water pressure of 10kg/cm2
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