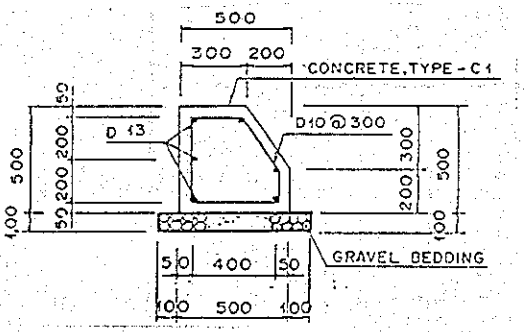
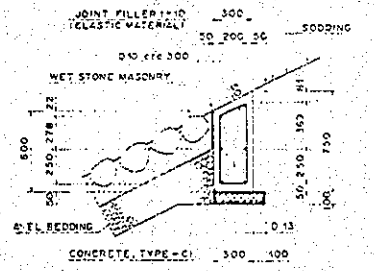
TYPE OF WORK : REVETMENT FOR SLOPE OF 1:2.0
LOCATION : WF.178R ~ WF.179R (UPPER CHANNEL)
:

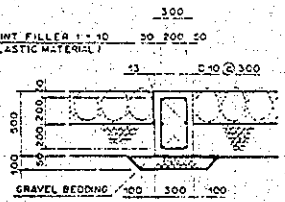
CALCULATION		RESULT
STRUCTURAL EXCAVATION		
V = 71.745 m^3 / 15.0 m x 80.00	= 382.640	382.640 m^3
BACKFILL WITH SELECTED SOIL		
V = 22.695 m^3 / 15.0 m x 80.00	= 121.040	121.040 m^3
WET STONE MASONRY		
V = 22.851 m^3 / 15.0 m x 80.00	= 121.872	121.872 m^3
CEMENT MORTAR POINTING		
A = 73.500 m^3 / 15.0 m x 80.00	= 392.000	392.000 m^2
WEEP HOLE		
PVC PIPE ø 50		
n = 53		
L = 8.0 m / 15.0 m x 80.0 m	= 42.667	42.667 m
FILTER CLOTH		
A = 6.400 m^2 / 15.0 m x 80.0 m	= 34.133	34.133 m^2
GABION CYLINDER ø 500 (GALVANIZED AND COATED WITH PVC)		
n = 20		
a = π x 0.5^2 / 4	= 0.196 m^2	
V = 20 x 0.196 x (3.00 + 5.366)	= 32.795 m^3	32.795 m^3
SOIL FILLING		
V_1 = 10.0 x 0.50 x (3.00 + 5.366)	= 41.830	
V_2 = Volume of Cylinder	= 32.795	
V = $V_2 - V_1$	= 9.035	9.035 m^3

TYPE OF WORK :	GRAVEL BEDDING
LOCATION :	

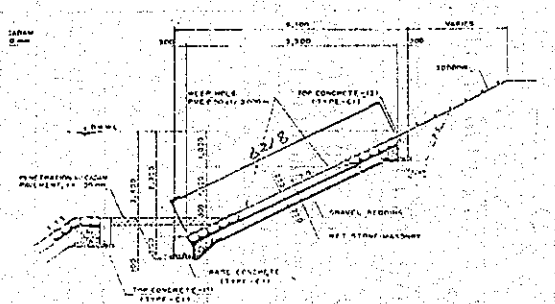




TOP CONCRETE (2)
SCALE C

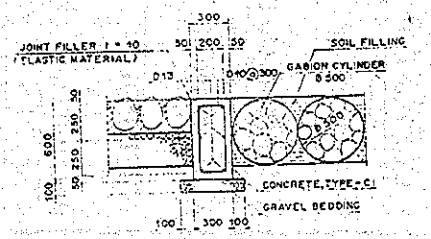


PARTITION WALL
SCALE C



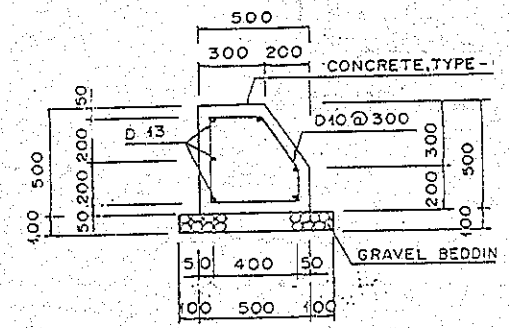
STANDARD CROSS SECTION OF REVETMENT (UPPER CHANNEL)
SCALE C

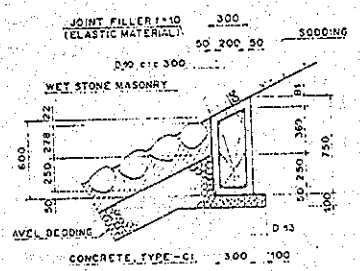
CALCULATION	RESULT
① REVETMENT	
22.859 m²/15.0 x 80.0 m = 121.915	121.915 m³
② BASE CONCRETE	
1.05 m²/15.0m x 80.0m = 5.6	5.600 m³
③ TOP CONCRETE	
0.450 m²/15.0m x 80.0m = 2.4	2.400 m³
④ PARTITION WALL	
0.350 m²/15.0m x 80.0m = 1.867	1.867 m³
⑤ END WALL	
0.231 m³ x 1 place	0.231 m³



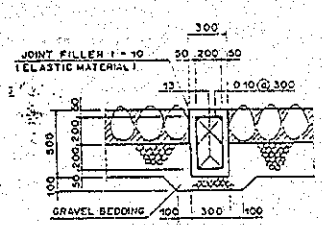
END WALL
SCALE C

TYPE OF WORK :	CONCRETE , FORM
LOCATION :	

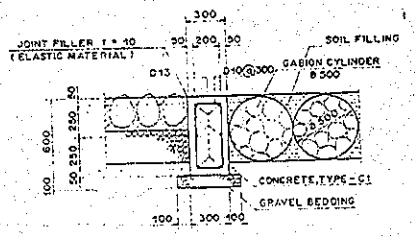




TOP CONCRETE (2)
SCALE C



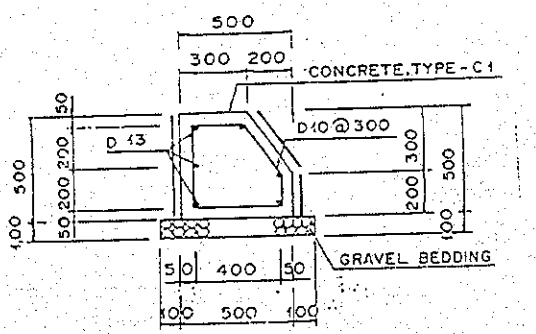
PARTITION WALL
SCALE C

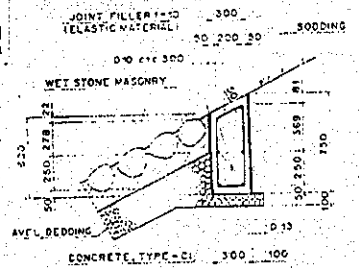


END WALL
SCALE C

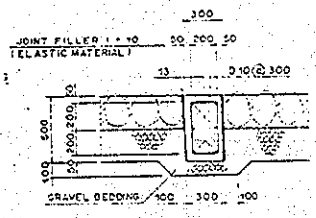
CALCULATION	RESULT
• CONCRETE	
① BASE CONCRETE	
3.300 m^3 / 15.0m × 80.0m = 17.600	17.600 m^3
② TOP CONCRETE	
3.045 m^3 / 15.0m × 80.0m = 16.240	16.240 m^3
③ PARTITION WALL	
7.244 m^3 / 15.0m × 80.0m = 38.635	38.635 m^3
④ END WALL	
0.893 m^3 / place × 1 place = 0.893	0.893 m^3
• FORM	
① BASE CONCRETE	
16.135 m^2 / 15.0m × 80.0m = 86.053	86.053 m^2
② TOP CONCRETE	
20.453 m^2 / 15.0m × 80.0m = 109.083	109.083 m^2
③ PARTITION WALL	
42.581 m^2 / 15.0m × 80.0m = 227.099	227.099 m^2
④ END WALL	
5.954 m^2 / 1place × 1place = 5.954	5.954 m^2

TYPE OF WORK :	REINFORCING BAR
LOCATION :	

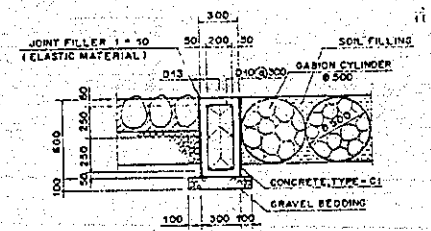




TOP CONCRETE (2)
SCALE C



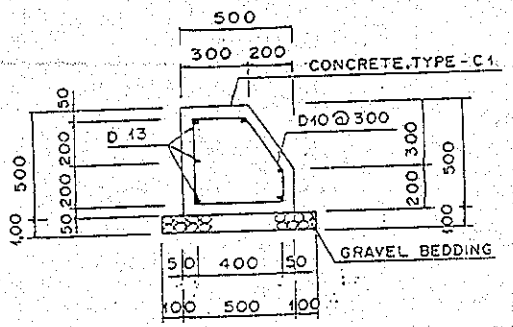
PARTITION WALL
SCALE C

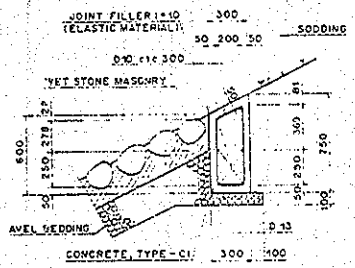


END WALL
SCALE C

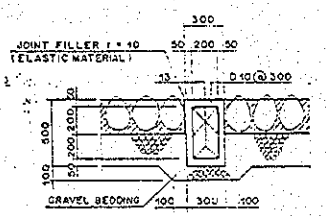
CALCULATION	RESULT
① BASE CONCRETE.	
W = 0.139 tf/15.0m x 80.0m = 0.741	0.741 tf
② TOP CONCRETE	
W = 0.142 tf/15.0m x 80.0m = 0.757	0.757 tf
③ PARTITION WALL	
W = 0.052 tf/15.0m x 80.0m = 0.277	0.277 tf
④ END WALL	
W = 0.055 tf/place x 1 place = 0.055	0.055 tf

TYPE OF WORK :	JOINT FILLER
LOCATION :	

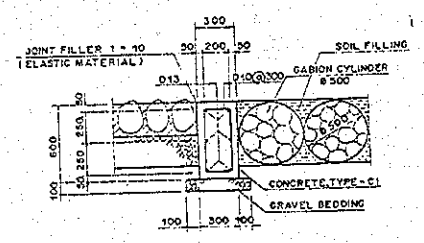




TOP CONCRETE (2)
SCALE C



PARTITION WALL
SCALE C



END WALL
SCALE C

CALCULATION	RESULT
① TOP CONCRETE (2)	
A = 4.648 m² / 15.0 m x 80.0m = 24.768	24.768m²
② PARTITION WALL	
A = 1.798 m² / 15.0m x 80.0m = 9.589	9.589m²
③ BASE CONCRETE	
A = 0.160 m² / 15.0m x 80.0m = 0.853	0.853 m²
④ END WALL	
A = 1.490 m² / place x 1 place = 1.490	1.490 m²

2-76

2.2 Revetment for Channel Side Slope of 1:1.5

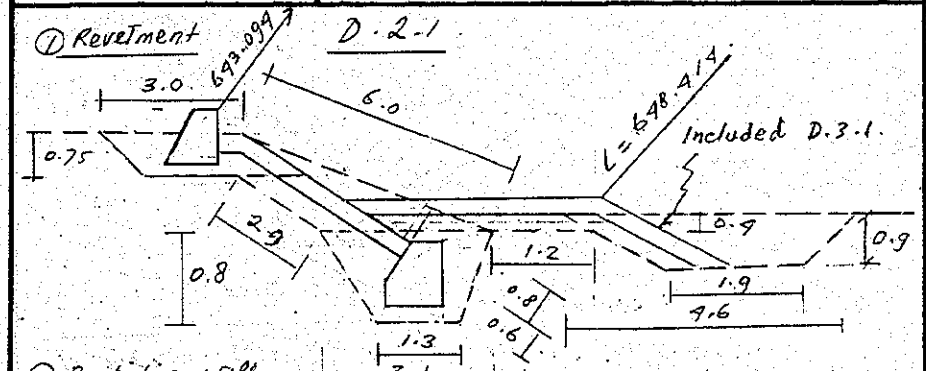
TYPE OF WORK : REVETMENT FOR SIDESLOPE 1:2 AND 1:1.5.

LOCATION : WF(3L) – WF(-9L).

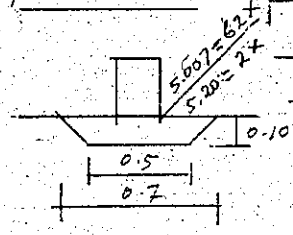
CALCULATION	RESULT
D.2 : Revetment for side slope 1:1.5	
D.2.1 : Structural Excavation.	5,289.407 m^3
D.2.2 Backfill with selected soil.	658.140 m^3
D.2.3 gravel Bedding.	1,097.189 m^3
D.2.4. Wet stone Masonry.	1,597.004 m^3
D.2.5 · Cement Mortar Pointing on Riverside Surface of Wet Stone Mas.	4,005.003 m^2
D.2.6 : Concrete, Type C1 Including Formwork	262.954 m^3
D.2.7. Deformed Reinforcing Bars.	9,836.825 kg
D.2.8. Log pile, Dia 150 mm L = 3.00m.	1,299 m
D.2.9 · Joint Filler, 10mm thick (Elastic Material).	368.802 m^2
D.2.10 Weep Hole, Dia 50mm Including Filter @10th.	1,140 Nos.
D.2.11 Gabion Cylinder Dia 500 mm (Galvanized and Coated with PVC).	—
D.2.12 : Soil Filling.	473.317 m^3
D.2.13 : Gabion Mattress t = 500 mm (Galvanized).	—
D.2.14 : Rubble Stone Filling (Dia 50 to 150 mm).	—
D.3 : Revetment for Side slope of 1:2 (Stone Facing Type)	
D.3.1 : Structural Excavation.	2,207.850 m^3
D.3.2 : Rubble Stone Bedding (Dia 50 to 150 mm).	1,374.638 m^3
D.3.3 : Stone Facing (Dia 250 to 400 mm)	2,901.653 m^3

TYPE OF WORK :	REVETMENT FOR SIDE SLOPE 1:2 AND 1:1.5
LOCATION :	WF(3L) – WF(-9L)

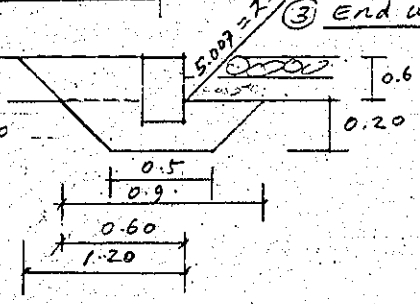
① Revetment D.2.1



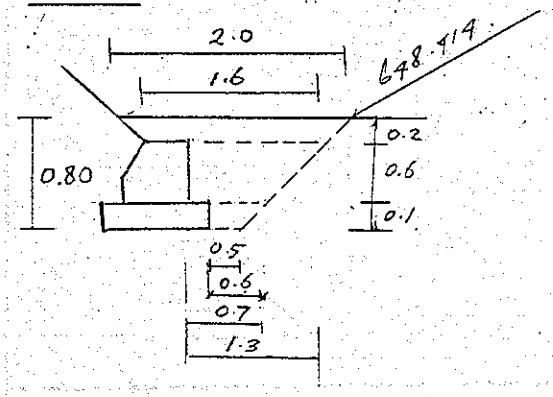
② Partition Wall



③ End Wall



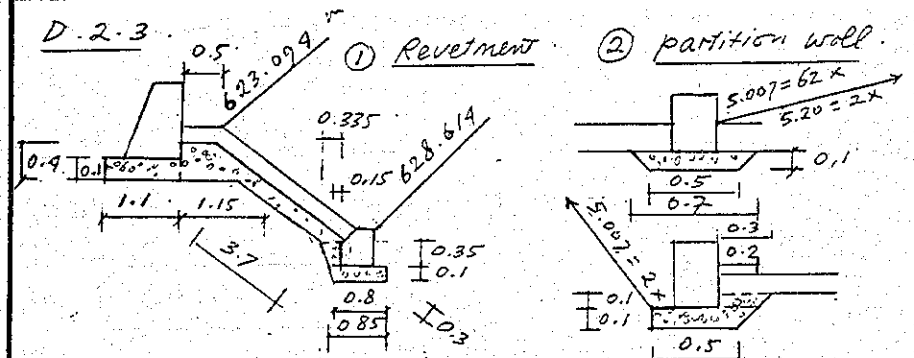
D.2.2



CALCULATION		RESULT
D.2.1. Structural Excavation		
V1 = ½(3.0×0.75)×693.099	= 1,496.961	
½(2.9×0.6)×693.099	= 1,118.983	
½(6.0×0.80)×½×648.414	= 1,556.194	
½(1.3+3.1)×½×0.8×648.414	= 1,141.209	
V1	5,263.397	
V2 = ½(0.5+0.7)×½×0.10×5.007×62	= 18.626	
½(0.5+0.7)×½×0.10×5.20×2	= 0.624	
V2	= 19.250	
V3 = ½(0.5+0.9)×½×0.20×5.007×2	= 1.402	
½(0.6+1.2)×½×0.60×5.007×2	= 5.408	
V3	= 6.810	
TOTAL	5,289.407	5,289.407 m^3
D.2.2. Back Fill with Selected Soil		
V = ½(0.5+0.8)×½×0.1×648.414	= 35.663	
½(0.7+1.3)×½×0.6×648.414	= 389.048	
½(1.6+2.0)×½×0.2×648.414	= 233.429	
TOTAL	658.140	658.140 m^3

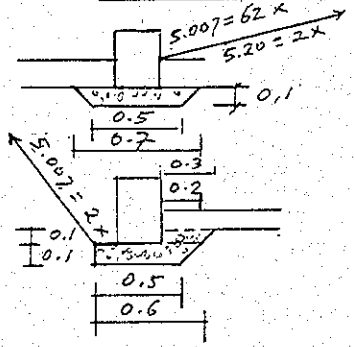
TYPE OF WORK :	REVETMENT FOR SIDE Slope 1:2 AND 1:1.5
LOCATION :	WF(3L) – WF(–9L)

D.2.3



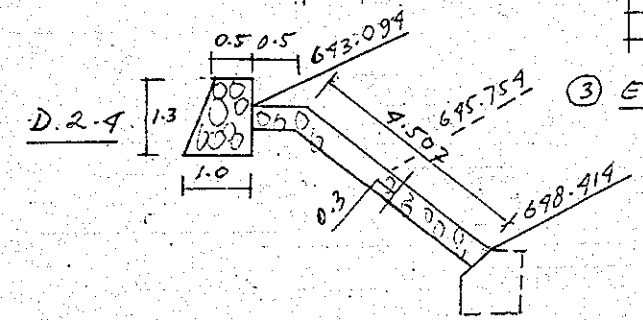
① Revetment

② partition wall.

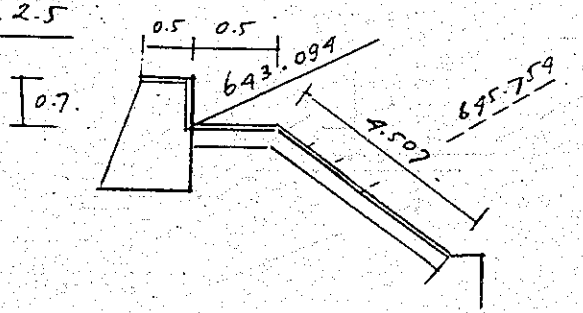


③ End wall

D.2.4



D.2.5

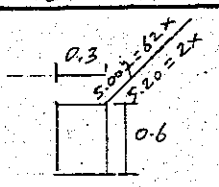


CALCULATION		RESULT
D.2.3 GRAVEL BEDDING.		
$V_1 = \frac{1}{2}\{(0.1\times1.1)\times 623.094\}$	= 68.590	
$\frac{1}{2}\{(0.5+1.15)\times\frac{1}{2}\times0.4\}\times 623.094$	= 205.621	
$\frac{1}{2}\{(3.7\times0.3)\times 628.614\}$	= 697.762	
$\frac{1}{2}\{(0.15+0.335)\times\frac{1}{2}\times0.35\}\times628.614$	= 53.354	
$\frac{1}{2}\{(0.8+0.85)\times\frac{1}{2}\times0.10\}\times628.614$	= 51.861	
V_1	= 1,077.138	
$V_2 = \frac{1}{2}\{(0.5+0.7)\times\frac{1}{2}\times0.10\times5.007\}\times62$	= 18.626	
$\frac{1}{2}\{(0.5+0.7)\times\frac{1}{2}\times0.10\times5.20\}\times2$	= 0.624	
V_2	= 19.250	
$V_3 = \frac{1}{2}\{(0.5+0.6)\times\frac{1}{2}\times0.10\times5.007\}\times2$	= 0.551	
$\frac{1}{2}\{(0.2+0.3)\times\frac{1}{2}\times0.10\times5.007\}\times2$	= 0.250	
V_3	= 0.801	
TOTAL	1,097.189	1,097.189 m²
D.2.4 Wet stone masonry		
$V = \frac{1}{2}\{(0.5+1.0)\times\frac{1}{2}\times1.3\}\times 643.094$	= 627.017	
$\frac{1}{2}\{(4.507+0.5)\times0.3\}\times695.754$	= 969.987	
TOTAL	1,597.004	1.597.004 m³
D.2.5 Cement mortar Pointing on Riverside surface		
$A = \frac{1}{2}\{(0.5+0.7)\times643.094\}$	= 771.713	
$\frac{1}{2}\{(0.5+4.507)\times695.754\}$	= 3,233.290	
TOTAL	4,005.003	4,005.003 m²

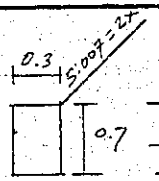
TYPE OF WORK :	REVETMENT FOR SIDE SLOPE 1:2 AND 1=1.5
LOCATION :	WF.(3L) – WF(-9L)

D.2.6

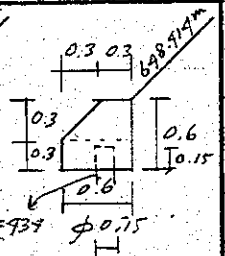
① Partition wall



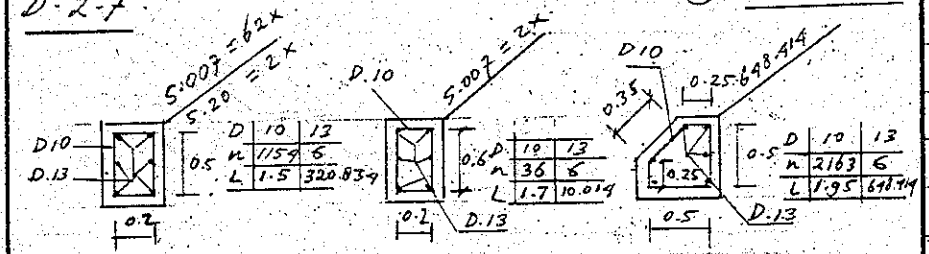
② End wall



③ Base Concrete

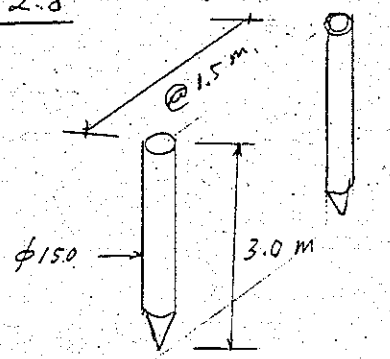


D.2.7



① Partition wall ② End wall ③ Base Concrete

D.2.8

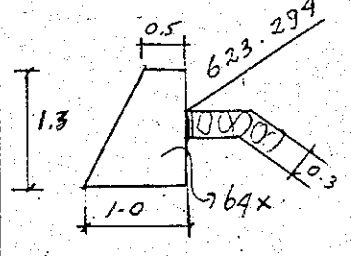


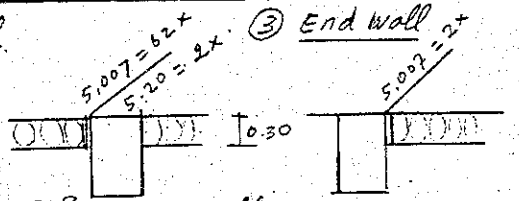
ϕ	0.15 m
n	433
L	3.0 m.

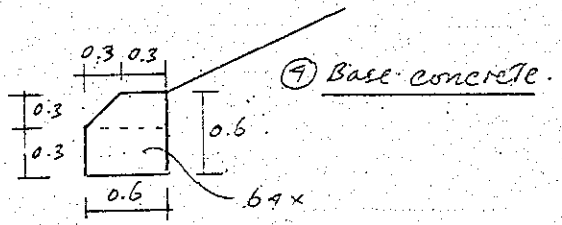
CALCULATION		RESULT
D.2.6 Concrete, Type C1 Including Formwork.		
$V_1 = \frac{1}{2}(0.3\times0.6)\times5.007\}\times62$	= 55.878	
$\frac{1}{2}(0.3\times0.6)\times5.20\}\times2$	= 1.872	
V_1	= 57.750	
$V_2 = \frac{1}{2}(0.3\times0.7)\times5.007\}\times2$	= 2.103	
$V_3 = \frac{1}{2}(0.3\times0.6)\times648.414\}$ –		
$\frac{1}{2}(3.14\times0.075^2\times0.15\}\times434$	= 115.565	
$\frac{1}{2}(0.3+0.6)\times\frac{1}{2}\times0.3\}\times648.414$	= 87.536	
V_3	= 203.101	
TOTAL	262.954	262.954 m^3
D.2.7 Deformed Reinforcing Bars.		
$W_1 = \frac{1}{2}(1154\times1.5)\times0.62\}$	= 1,073.220	
$\frac{1}{2}(6\times320.834)\times1.04\}$	= 2,002.004	
W_1	= 3,075.224	
$W_2 = \frac{1}{2}(36\times1.7)\times0.62\}$	= 37.944	
$\frac{1}{2}(6\times10.014)\times1.04\}$	= 62.987	
W_2	= 100.931	
$W_3 = \frac{1}{2}(2163\times1.95)\times0.62\}$	= 2,815.067	
$\frac{1}{2}(6\times648.414)\times1.04\}$	= 4,046.103	
W_3	= 6,661.170	
	9,836.825	9,836.825 kg
D.2.8 Log pile Dia.150 mm, L = 3.0 m		
$L = \frac{1}{2}(433\times3.00)\}$	= 1,299	1,299. m.

TYPE OF WORK :	REVETMENT FOR SIDE SLOPE 1:2 AND 1:1.5
LOCATION :	WF(3L) – WF(-9L).

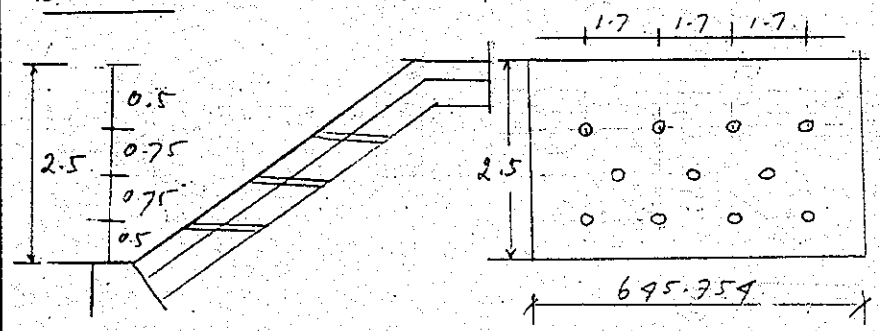
D.2.9 ① Parapet wall







D.2.10



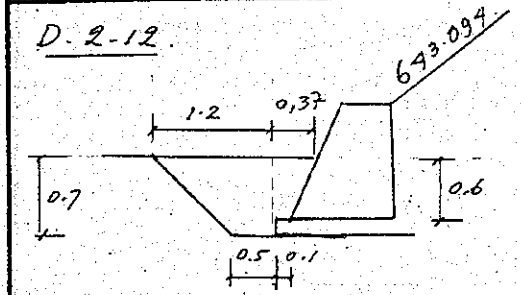
D.2.11.

NOTHING

CALCULATION	RESULT
D.2.9 JOINT FILLER, 10mm thick	
A1 = ½(0.5+1.0)×½×1.3}×64 = 62.400	
½(0.3×623.294)} = 186.988	
= 249.388	
A1	
A2 = ½(0.3×5.007)×62} = 93.130	
½(0.3×5.20)×2} = 3.120	
= 96.250	
A2	
A3 = ½(0.3×5.007)×2} = 3.004	
A4 = ½(0.3×0.60)×64} = 11.52	
½(0.3+0.6)×½×0.3}×64 = 8.64	
= 20.160	
A4	
TOTAL 368.802	368.802 m²
D.2.10. Weep Hole. Dia 50mm	
PVC = $\frac{645.754}{1.7}$ × 3 = 1140	1,140 NOS
D.2.11 Gabion cylinder Dia 500 mm	
NOTHING	

TYPE OF WORK :	REVETMENT FOR SIDE SLOPE 1:2 AND 1:1.5
LOCATION :	WF(3L) – WF(-9L)

D.2-12.



D.2.13.

NOTHING

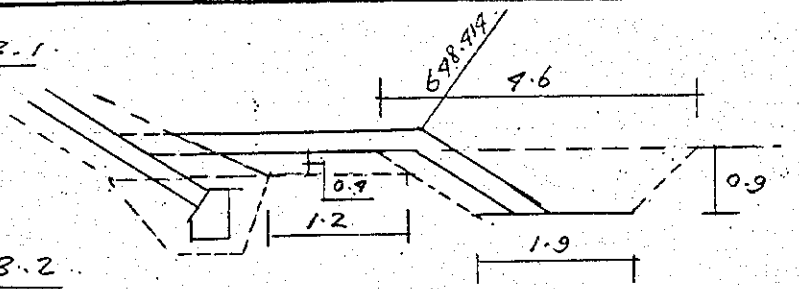
D.2-14.

NOTHING

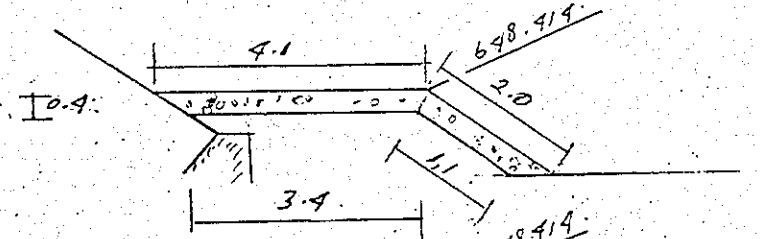
CALCULATION	RESULT
D.2.12 Soil Filling	
$V = \frac{1}{2}(0.5+1.2) \times \frac{1}{2} \times 0.7 \times 693.094 = 382.641$	
$\frac{1}{2}(0.1+0.37) \times \frac{1}{2} \times 0.6 \times 693.094 = 90.676$	
TOTAL 473.317	473.317 m^3
D.2.13 Gabion Mattress $t = 500$ mm	
NOTHING	
D.2-14 RUBBLE STONE FILLING (Dia 50 to 150 mm	
NOTHING	

TYPE OF WORK :	REVETMENT FOR SIDE SLOPE 1:2 AND 1:1.5
LOCATION :	WF (3L) – WF (–9L).

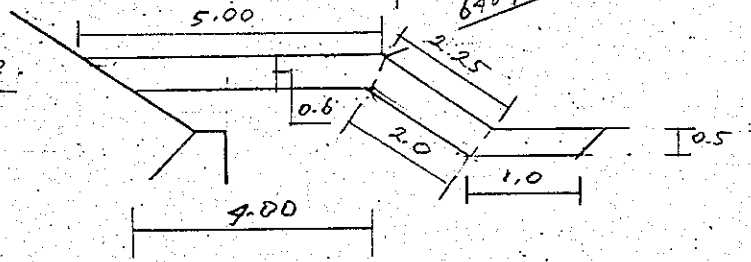
D.3.1



D.3.2



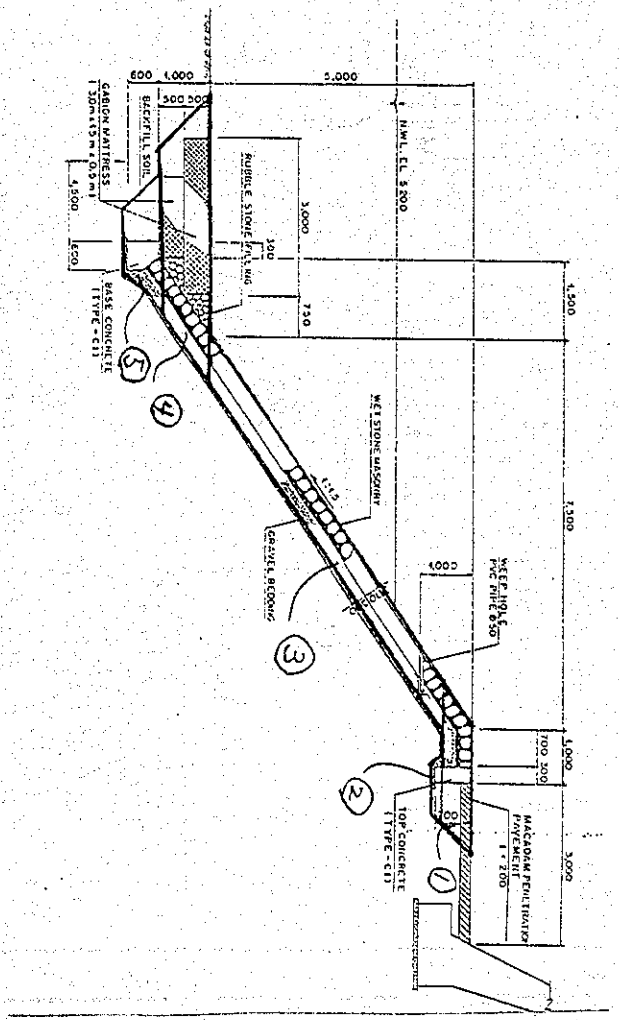
D.3.3



CALCULATION	RESULT
D.3 Revetment for side slope of 1:2	
D.3.1 Structural Excavation	
$V = \frac{1}{2}(1.2 \times 0.9) \times 648.419$ = 311.239	
$\frac{1}{2}(1.9 + 4.6) \times \frac{1}{2} \times 0.9) \times 648.419$ = 1,896.611	
TOTAL 2,207.850	2,207.850 m^3
D.3.2 Rubble stone Bedding (Dia 50 to 150 mm)	
$V = \frac{1}{2}(3.9 + 4.1) \times \frac{1}{2} \times 0.4) \times 648.419$ = 972.621	
$\frac{1}{2}(1.1 + 2.0) \times \frac{1}{2} \times 0.4) \times 648.419$ = 402.017	
TOTAL 1,374.638	1,374.638 m^3
D.3.3 Stone Facing (Dia 250 to 400 mm)	
$V = \frac{1}{2}(4.0 + 5.0) \times \frac{1}{2} \times 0.6) \times 648.419$ = 1,750.718	
$\frac{1}{2}(2.0 + 2.25) \times \frac{1}{2} \times 0.6) \times 648.419$ = 826.728	
$\frac{1}{2}(1.0 \times 0.5) \times 648.419)$ = 324.207	
TOTAL 2,901.653	2,901.653 m^3

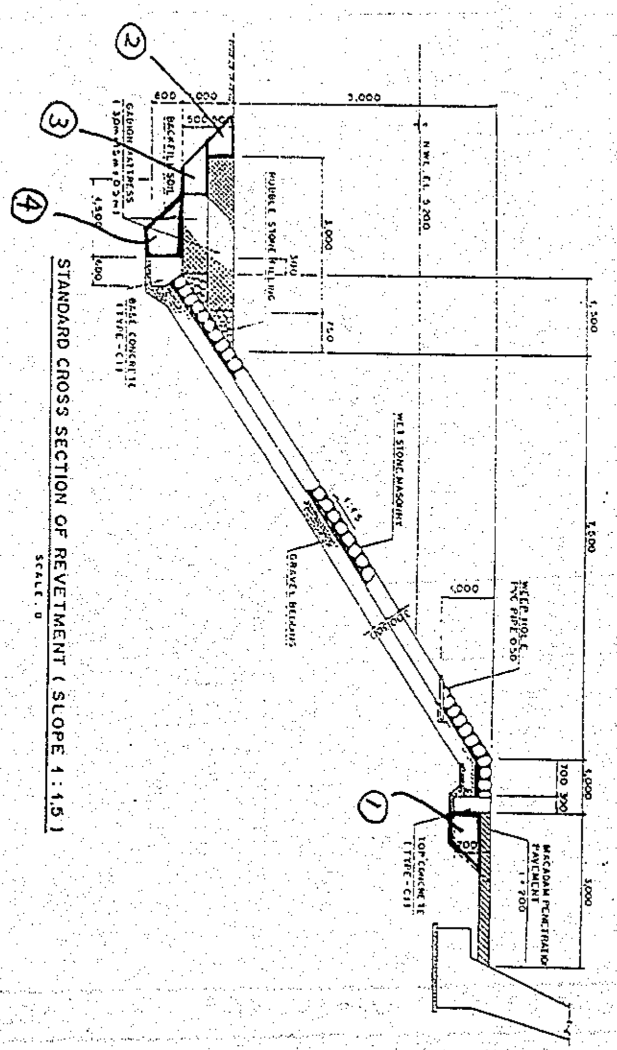
REVETMENT FOR SLOPE OF 1:1.5 and 1:2.0 (Wet Stone Masonry Type)

TYPE OF WORK :	STRUCTURAL EXCAVATION
LOCATION :	WF. 109+10 ~ WF. 111+90



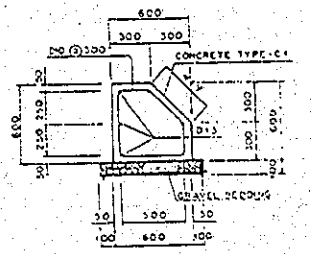
CALCULATION	RESULT
① SLOPE OF 1:1.5	
V = 943.200 m^3	
② SLOPE OF 1:2.0	
V = 867.592 m^3	
③ SLOPE OF 1:1.5 ~ 1:2.0	
V = 357.240 m^3	
TOTAL	2168.032 m^3

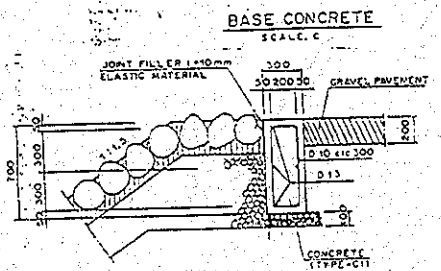
TYPE OF WORK :	BACKFILL WITH SELECTED SOIL	CALCULATION	RESULT
LOCATION :		① SLOPE OF 1:1.5	
		V = 93.040 m^3	
		② SLOPE OF 1:2.0	
		V = 867.592 m^3	
		③ SLOPE OF 1:1.5~1:2.0	
		V = 857.240 m^3	
		TOTAL	1817.872 m^3



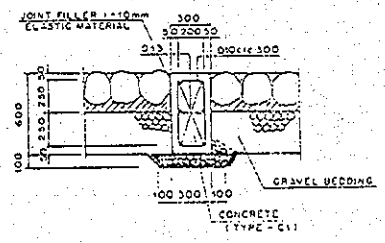
STANDARD CROSS SECTION OF REVETMENT (SLOPE 1 : 1.5)

TYPE OF WORK :	GRAVEL BEDDING
LOCATION :	





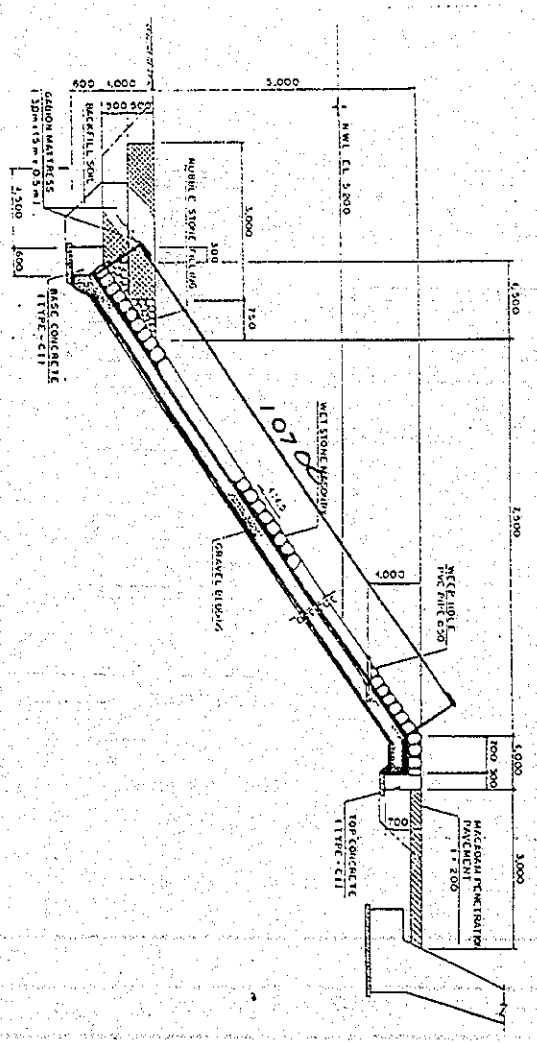
TOP CONCRETE (1)
SCALE: 8



PARTITION WALL
SCALE 8

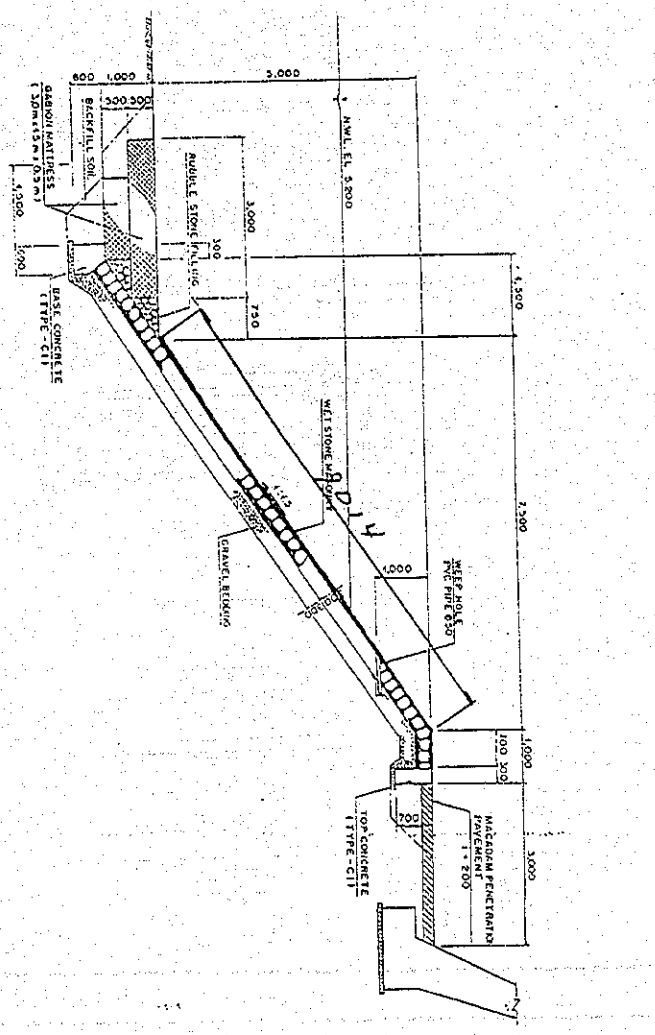
CALCULATION					RESULT
	1:1.5	1:2.0	1:1.3 ~ 1:2.0	TOTAL	
BASE	6,400	4,850	2,400	71,250	
TOP	3,200	5,673	1,200	10,073	
PART.	2,251	3,580	0.706	6,487	
END			0.706	0.706	
REVT.	263,515	249,499	101,285	614,299	

TYPE OF WORK :	WET STONE MASONRY
LOCATION :	



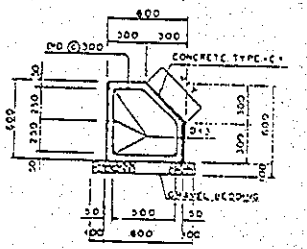
CALCULATION	RESULT
① SLOPE OF 1:1.5	
V = 270.874 m^3	
② SLOPE OF 1:2.0	
V = 248.441 m^3	
③ SLOPE OF 1:1.5 ~ 1:2.0	
V = 102.445	
TOTAL	621.760 M^3

TYPE OF WORK :	CEMENT MORTAR POINTING
LOCATION :	

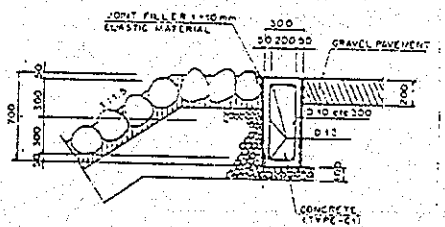


CALCULATION	RESULT
① SLOPE OF 1:1.5	
A = 761.579 m²	
② SLOPE OF 1:2.0	
A = 839.918 m²	
③ SLOPE OF 1:1.5 ~ 1:2.0	
A = 317.432 m²	
TOTAL	1918.929

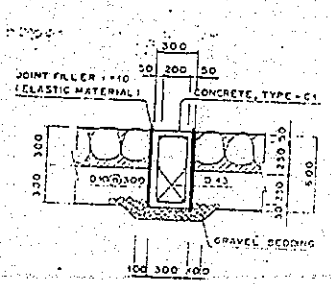
TYPE OF WORK :	CONCRETE , FORM
LOCATION :	



BASE CONCRETE
SCALE: C



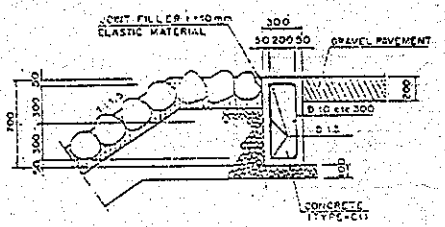
TOP CONCRETE (1)
SCALE: C



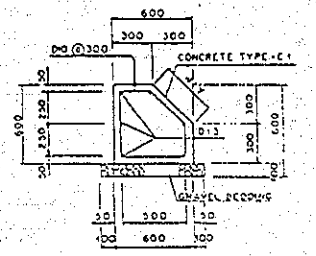
PARTITION WALL
SCALE: C

CALCULATION					RESULT
	1:1.5	1:2.0	1:1.5 ~ 1:2.0	TOTAL	
TOP	16.800	13.615	6.387	36.802	
	113.120	92.130	43.005	248.255	
BASE	25.200	15.243	9.450	49.893	
	107.600	75.037	40.350	222.987	
PAT.	14.416	10.585	2.117	27.118	
	73.707	70.580	14.116	158.403	
END		2.541	2.541	5.082	
		8.470	8.470	16.94	
	Conc.				
	FORM				

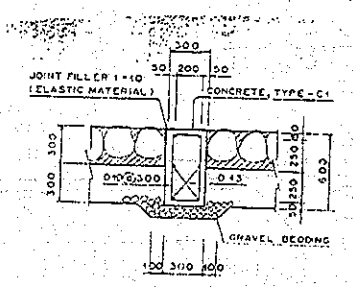
TYPE OF WORK :	DEFORMED REINFORCING BARS
LOCATION :	



(1) TOP CONCRETE (1)
SCALE C



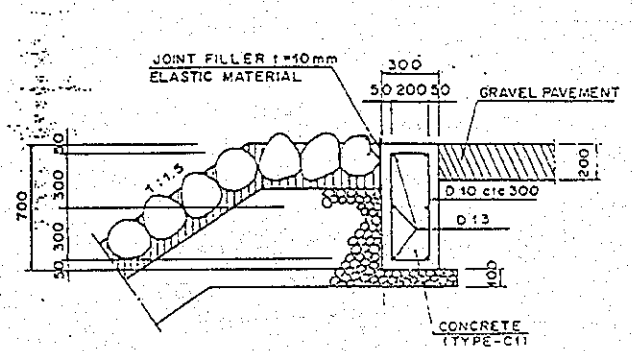
BASE CONCRETE
SCALE C



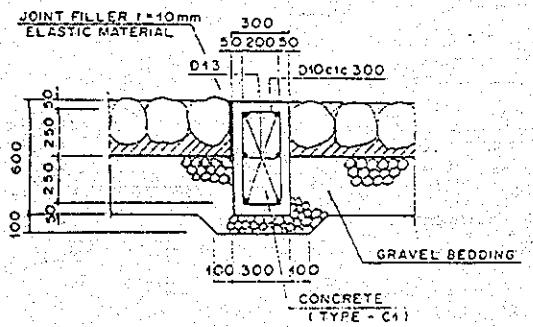
PARTITION WALL
SCALE C

CALCULATION					RESULT
	1:1.5	1:2.0	1:1.5 ~ 1:2.0	TOTAL	
TOP	0.711	0.763	0.290	1.764	
BASE	0.693	0.805	0.302	1.800	
PART.	0.615	0.549	0.123	1.287	
END	0.129		0.129	0.258	

TYPE OF WORK :	JOINT FILLER
LOCATION :	



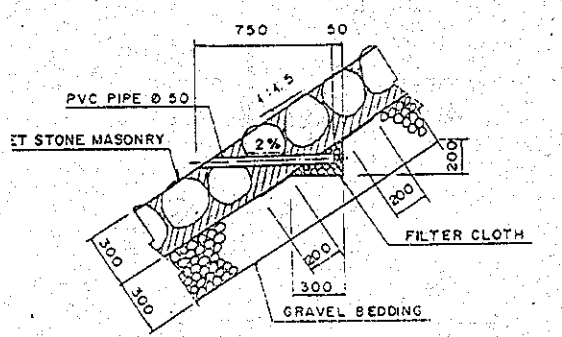
TOP CONCRETE (1)
SCALE 8



PARTITION WALL
SCALE 8

CALCULATION					RESULT
	1:1.5	1:2.0	1:1.5~1:2.0	TOTAL	
TOP	24.640	19.704	9.368	44.344	
PART.	18.427	17.645	3.529	39.601	
2ND		3.529	3.529	7.058	
BASE	1.760	1.524		3.284	

TYPE OF WORK :	WEEP HOLE
LOCATION :	

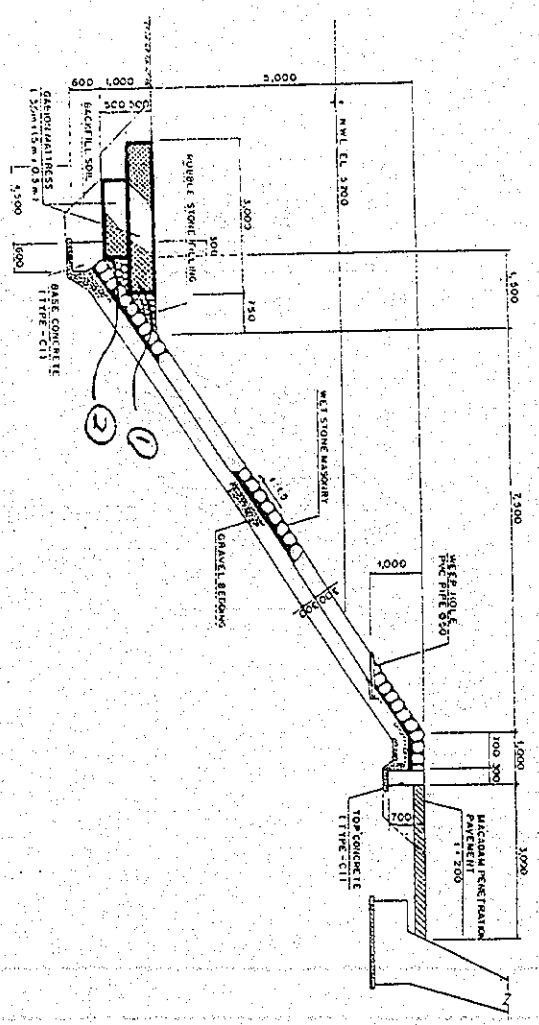


DETAIL OF WEEP HOLE

SCALE : C

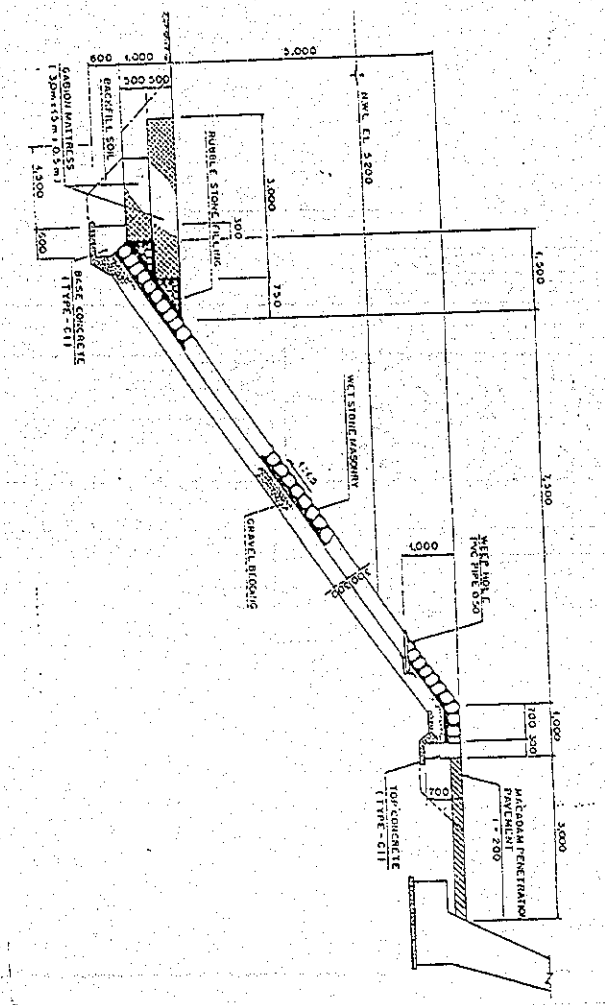
CALCULATION					RESULT
	1:1.5	1:2.0	1:1.5 ~ 1:2.0	TOTAL	
PVC	36.000	36.000	14.400	86.400	
FILTER CLOTH	30.720	28.800	11.520	71.040	
n	48	45	18	111	

TYPE OF WORK :	GABION MATTRESS
LOCATION :	



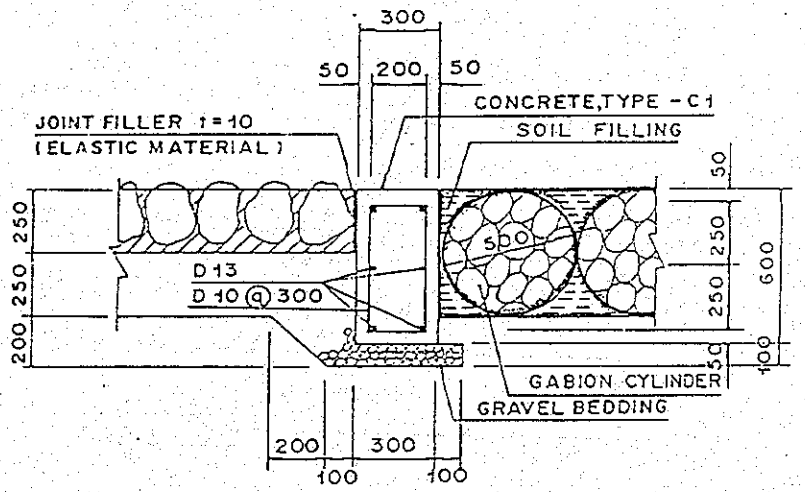
CALCULATION	RESULT
① SLOPE OF 1:1.5	
V = 180.000 m^3	
② SLOPE OF 1:2.0	
V = 155.269 m^3	
③ SLOPE OF 1:1.5 ~ 1:2.0	
V = 67.500 m^3	
TOTAL	402.769 m^3

TYPE OF WORK :	RUBBLE STONE FILLING
LOCATION :	



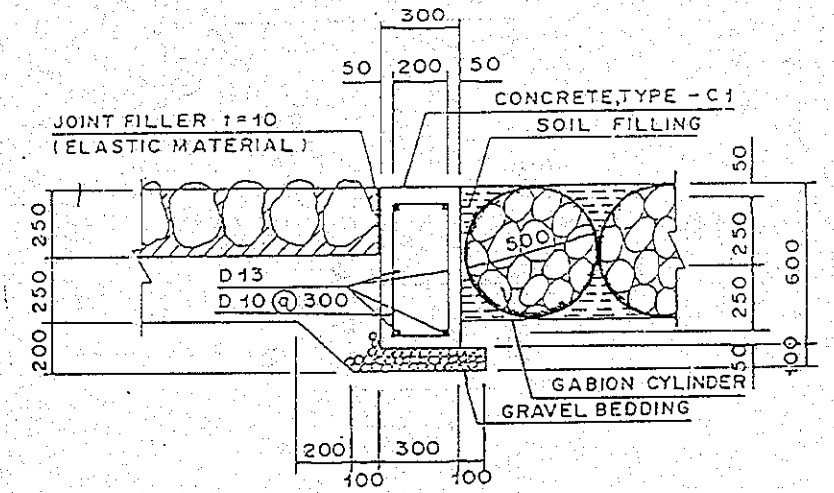
CALCULATION	RESULT
① SLOPE OF 1:1.5	
V = 30.000 m³	
② SLOPE OF 1:2.0	
V = 34.881 m³	
③ SLOPE OF 1:1.5 ~ 1:2.0	
V = 13.125 m³	
TOTAL	78.006m³

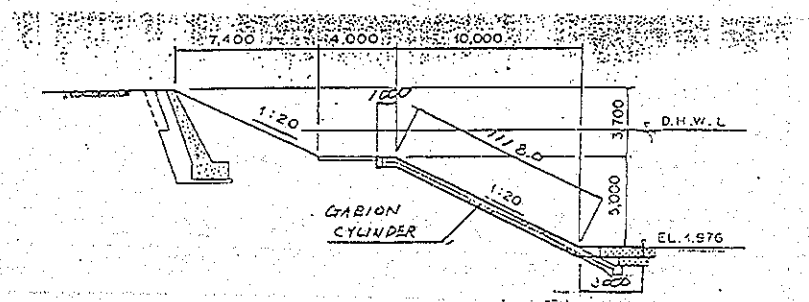
TYPE OF WORK :	SOIL FILLING
LOCATION :	



CALCULATION	RESULT
V = 9.773	9.773 m^3

TYPE OF WORK :	GABION CYLINDER
LOCATION :	

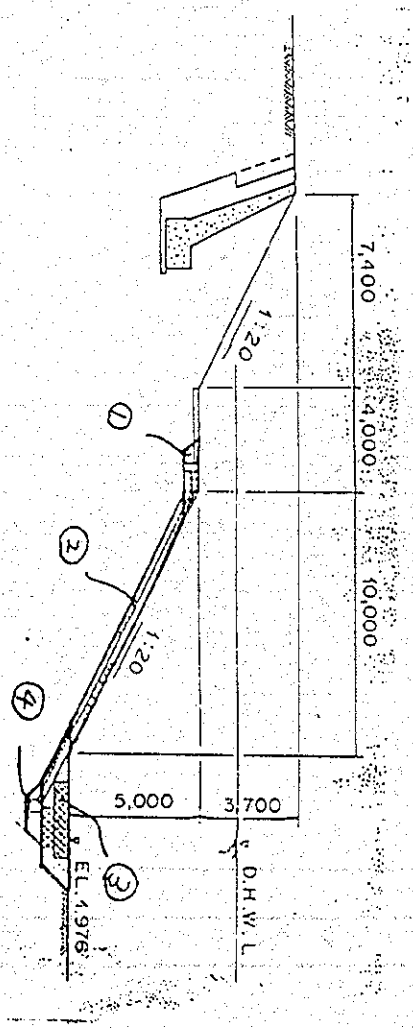




CALCULATION	RESULT
$V = 35.767\ m^3$	$35.767\ m^3$

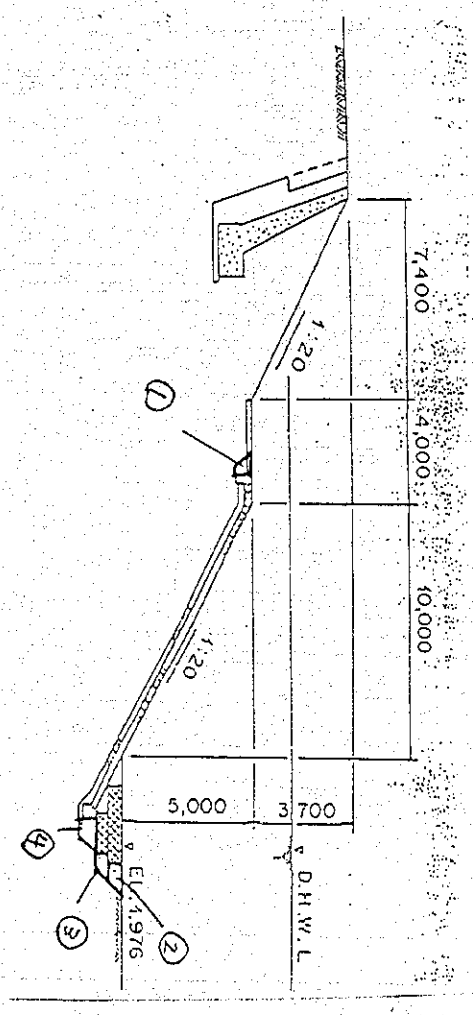
REVETMENT FOR SLOPE OF 1:2.0 (WET STONE MASONRY TYPE)

TYPE OF WORK :	STRUCTURAL EXCAVATION
LOCATION :	WF. 109L+0m ~ WF. 109L+15.0m WF. 111L+0m ~ WF. 111+15.0m



CALCULATION	RESULT
$V = (176.85 + 180.89) \div 2 / 15.0m$	
$\times$ 30.0 m $= 357.24$	$357.240\ m^3$

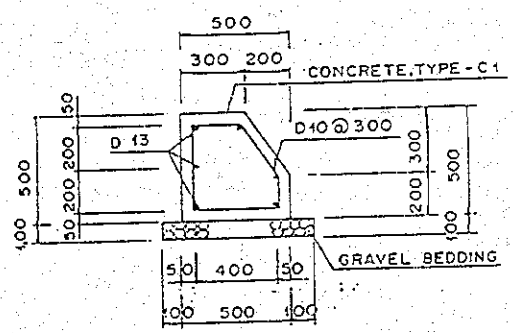
TYPE OF WORK :	BACKFILL WITH SELECTED SOIL.
LOCATION :	

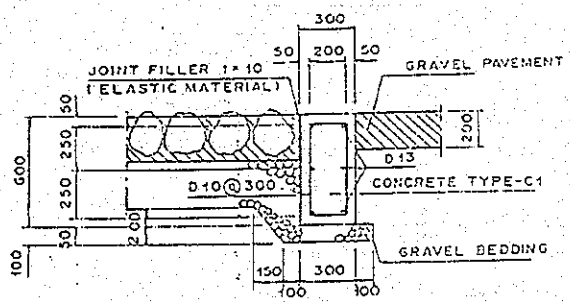


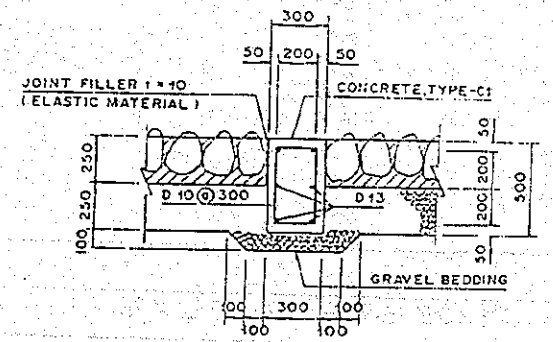
2-98

CALCULATION	RESULT
$V = (17.445 + 20.640) \div 2 / 15.0\,m$	
$\times 30.0\,m \quad = 38.085$	$38.085\,m^3$

TYPE OF WORK :	GRAVEL BEDDING
LOCATION :	

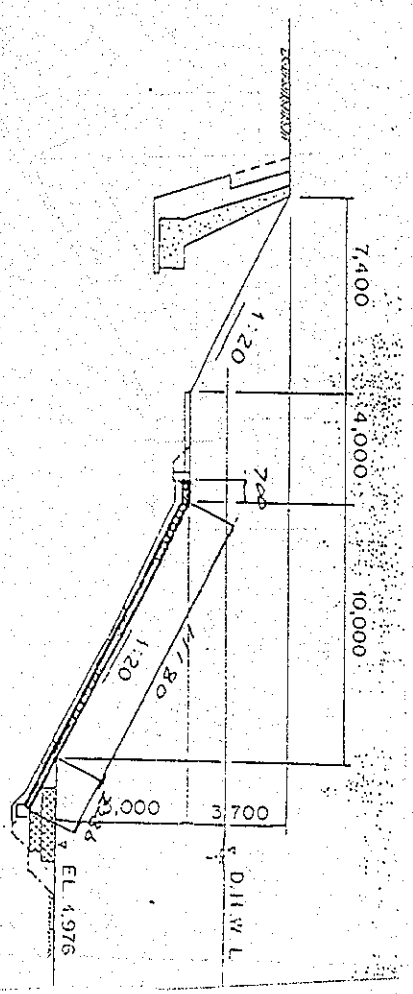






CALCULATION	RESULT
① BASE CONCRETE	
V = 1.20 m³/15.0m x 30.0m = 2.400	2.400 m³
② TOP CONCRETE	
V = 0.60 m³/15.0m x 30.0m = 1.200	1.200 m³
③ PARTITION WALL	
V = 0.706 m³/place x 1 place = 0.706	0.706 m³
④ END WALL	
V = 0.706 m³/place x 1 place = 0.706	0.706 m³
⑤ STANDARD SECTION	
V = (49.409 + 51.876) ÷ 2 / 15.0m x 30.0m = 101.285	101.285 m³
TOTAL	106.297 m³

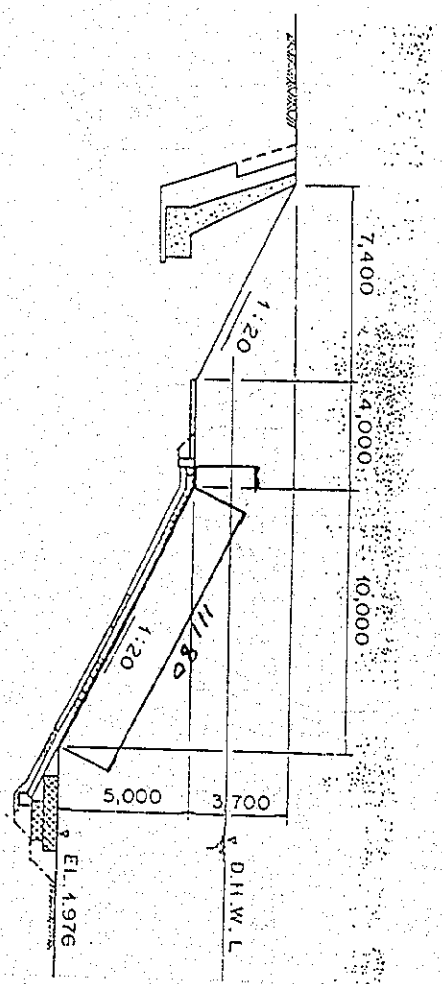
TYPE OF WORK :	WET STONE MASONRY	CALCULATION	RESULT
LOCATION :			



$V = (50.789 + 51.656) \div 2 / 1.5.0m$

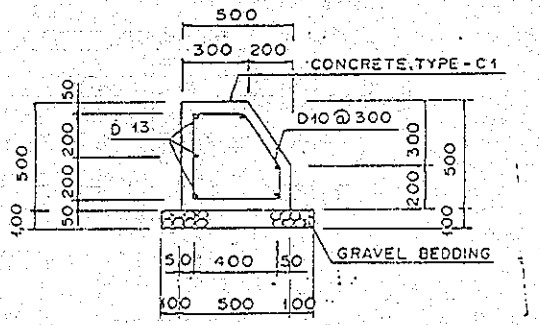
$\times\ 30.0m \qquad = 102.445$

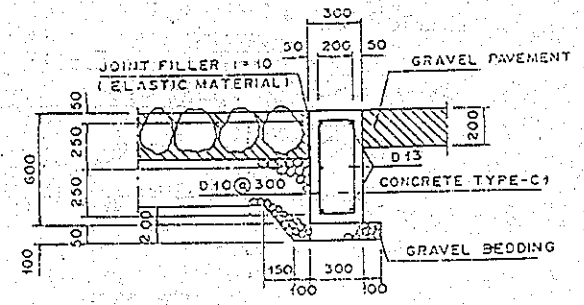
TYPE OF WORK :	CEMENT MORTAR POINTING
LOCATION :	

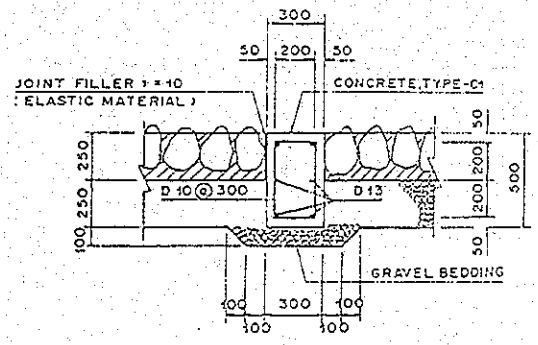


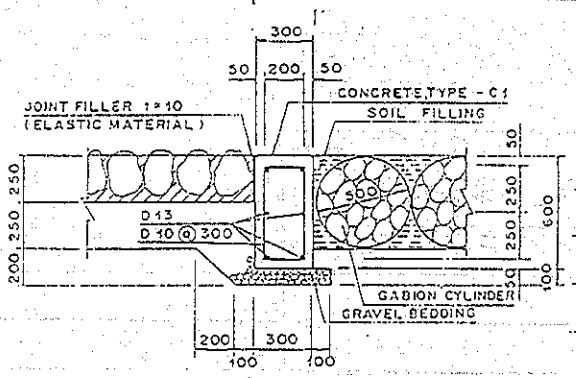
CALCULATION	RESULT
$A = \{(9.014 + 0.7) + (11.18 + 0.7)\} \div 2$	
$\times (30.0 - 0.3 \times 2) \quad = 317.432$	$317.432\ m^2$

TYPE OF WORK :	DEFORMED REINFORCING BARS
LOCATION :	



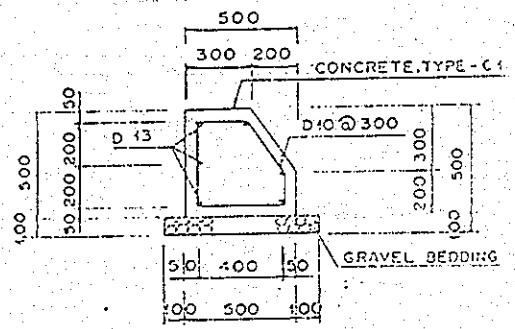


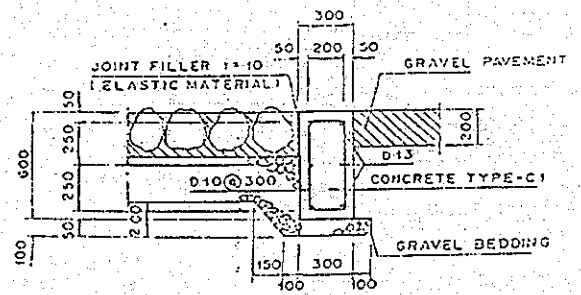


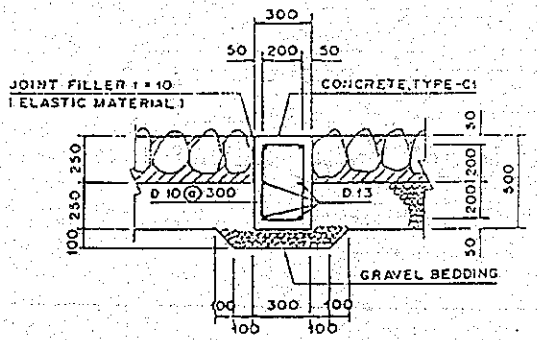


CALCULATION	RESULT
① TOP CONCRETE	
W = (0.093 + 0.050) x 15.207 x 2 = ~~4.349~~	~~4.349~~ tf
÷15 = 0.290	0.290 tf
② BASE CONCRETE	
W = (0.093 + 0.058) x 15.0 x 2 = ~~4.530~~	~~4.530~~ tf
÷15 = 0.302	0.302 tf
③ PARTITION WALL	
W = 0.123 tf/place x 1 place = 0.123	0.123 tf
④ END WALL	
W = 0.129 tf/place x 1 place = 0.129	0.129 tf
TOTAL	~~0.844~~ 0.844

TYPE OF WORK :	CONCRETE , FORM
LOCATION :	

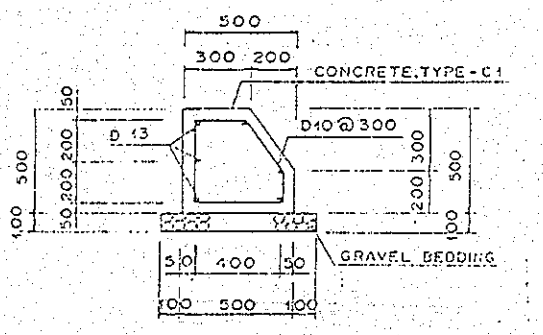


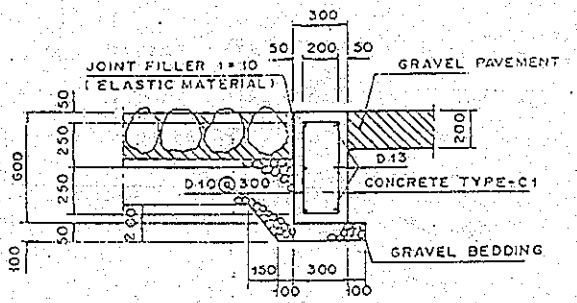


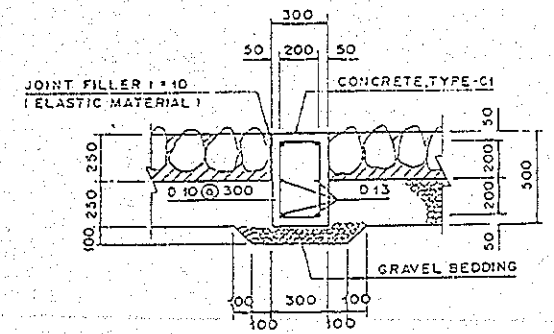


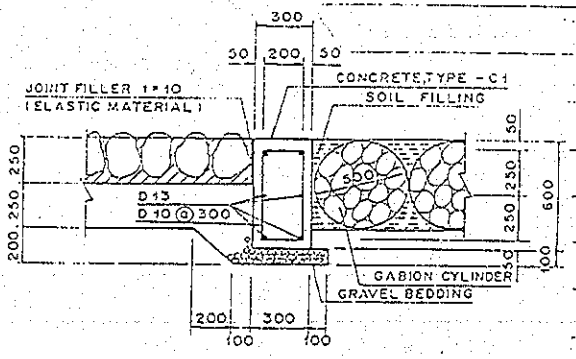
CALCULATION	RESULT
① TOP CONCRETE	
1) CONCRETE.	
$V = 3.150\ m^3/15.0m \times 15.207 \times 2 = 6.387$	$6.387\ m^3$
2) FORM	
$A = 21.210\ m^2/15.0m \times 15.207 \times 2 = 43.005$	$43.005\ m^2$
② BASE CONCRETE	
1) CONCRETE	
$V = 4.725\ m^3/15.0m \times 15.0m \times 2 = 9.450\ m^3$	$9.450\ m^3$
2) FORM	
$A = 20.175\ m^2/15.0m \times 15.0m \times 2 = 40.350\ m^2$	$40.350 m^2$
③ PARTITION WALL	
1) CONCRETE	
$V = 2.117\ m^3/place \times 1\ place = 2.117\ m^3$	$2.117\ m^3$
2) FORM	
$A = 14.116\ m^2/place \times 1\ place = 14.116 m^2$	$14.116\ m^2$
④ END WALL	
1) CONCRETE	
$V = 2.541\ m^3/place \times 1\ place = 2.541$	$2.541\ m^3$
2) FORM	
$A = 8.470\ m^2/place \times 1\ place = 8.470$	$8.470\ m^2$
TOTAL CONCRETE	$20.495\ m^3$
TOTAL FORM	$106.941 m^3$

TYPE OF WORK :	JOINT FILLER
LOCATION :	



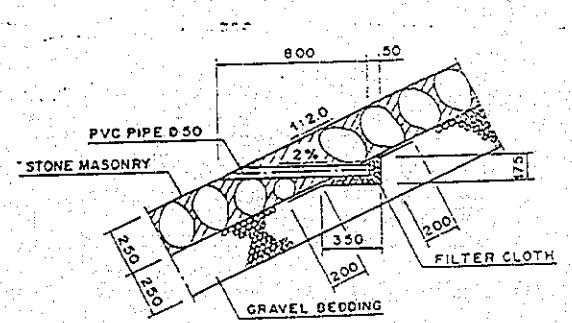






CALCULATION	RESULT
① TOP CONCRETE	
A = 4.620 m²/15.0m x 15.207 x 2 = 9.368	9.368 m²
② PARTITION WALL	
A = 3.529 m²/place x 1 place = 3.529	3.529 m²
③ END WALL	
A = 3.529 m²/place x 1 place = 3.529	3.529 m²
④ BASE CONCRETE	

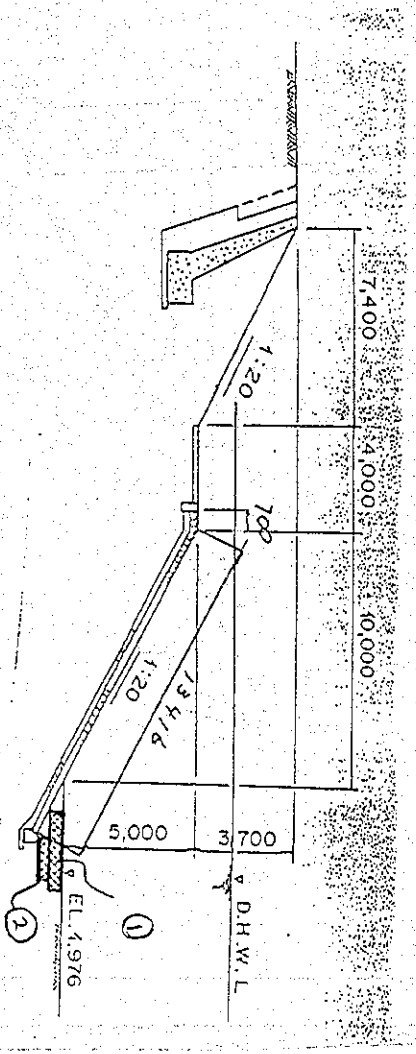
TYPE OF WORK :	WEEP HOLE
LOCATION :	



DETAIL OF WEEP HOLE
SCALE C

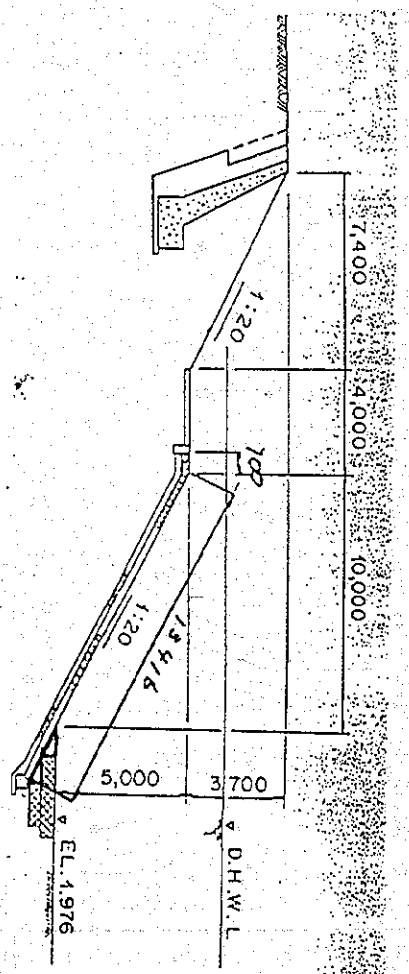
CALCULATION	RESULT
• PVC PIPE ϕ50	
n = 9 / 15.0m x 15.0m x 2 = 18	
L = 1.8 x 0.8 = 14.400	14.400 m
• FILTER CLOTH	
n = 18 places	
A = 18 x 0.64 m²/place = 11.520	11.520 m²

TYPE OF WORK :	GABION MATTRESS
LOCATION :	



CALCULATION	RESULT
V = 33.750 m³/15.0m x 15.0m x 2 = 67.500	67.500m³

TYPE OF WORK :	RUBBLE STONE FILLING
LOCATION :	



CALCULATION	RESULT
$V = (5.625 + 7.5) \div 2 / 15.0m \times 15.0m \times 2$	
$= 13.125$	$13.125\ m^3$