

## **PART III      WORK QUANTITY CALCULATION**



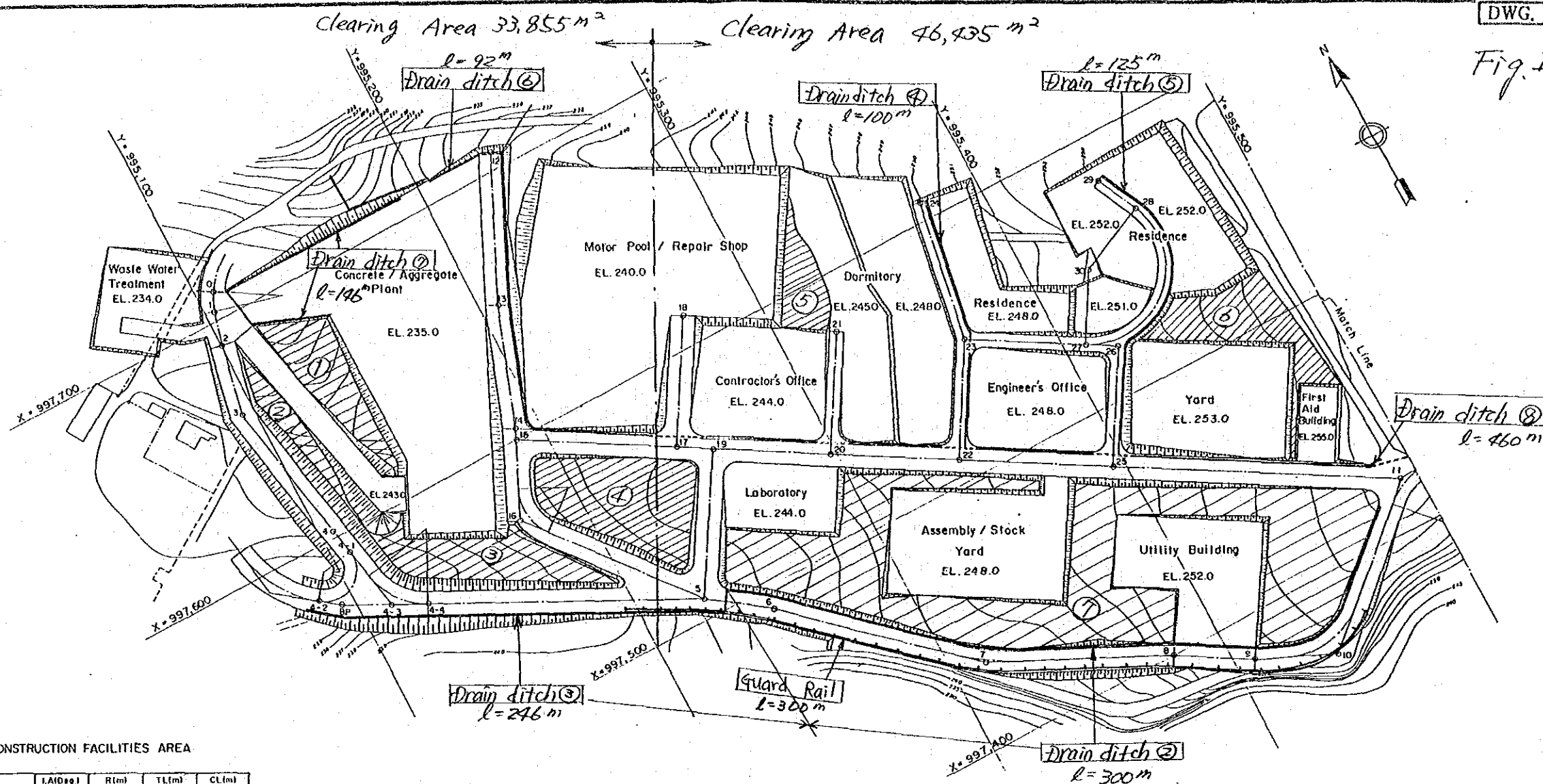
Item No.	Work	Unit	Quantity	Foregin Currency ( )		Local Currency (Rs)		Total Equivalent ( ) or Sub-clause	Ref.Clause
				Unit Price	Amount	Unit Price	Amount		
B PREPARATORY WORKS									
B1	Construction Facilities Area								
/01	Clearing and stripping	m2	70,000						T2.1
/02	Open-cut excavation, common	m3	101,420						T2.3
/03	Open-cut excavation, weathere rock	m3	21,550						T2.3
/04	Open-cut excavation, rock	m3	3,800						T2.3
/05	Embankment, excavated rock	m3	8,790						T2.5
/06	Surface course	m2	13,790						T5.2.3
/07	Subbase course	m2	13,790						T5.2.2
/08	Drain ditch	m	1,700						T2.9
/09	Guard rail	m	300						T5.2.6
Subtotal of Item B1									

Working Division: Construction Facilities Area

Description	Calculation Details	Unit	Quantity	Remarks
Clearing and stripping	by Planimeter			
	⑦ $46,435 + 33,855 + 2,850 =$	$m^2$	83,140	Refer Fig. III-1
	⑧ $1,360 + 400 + ③ 1,075 + 2,080$			
	⑨ $1,750 + ⑥ 620 + ⑦ 6,220$	$m^2$	13,505	
	Total	$m^2$	69,635	
		$\approx m^2$	70,000	
Surface and subbase course				Refer Fig. III-1
	1) 10m road			
	point 0 ~ 4-2 L = 150.33 m			
	4-2 ~ 11 478.72			
	12 ~ 16-3 194.66			
	5 ~ 19 5967-10 = 49.67			
	15 ~ 32 605.87-5 = 60.87			
	17 ~ 18 52.5-5 = 47.2			
	total length 1519.45 m			
	$A = 1519.45 \times 8 = 12,155.6$	$m^2$	12,156	
	2) 6m road			
	point 20 ~ 21 49.0-5 = 44.0 m			
	24 ~ 29 198.92 m			
	22 ~ 23 48.0-(5-3) = 40.0			
	25 ~ 26 48.0-5 = 43.0			

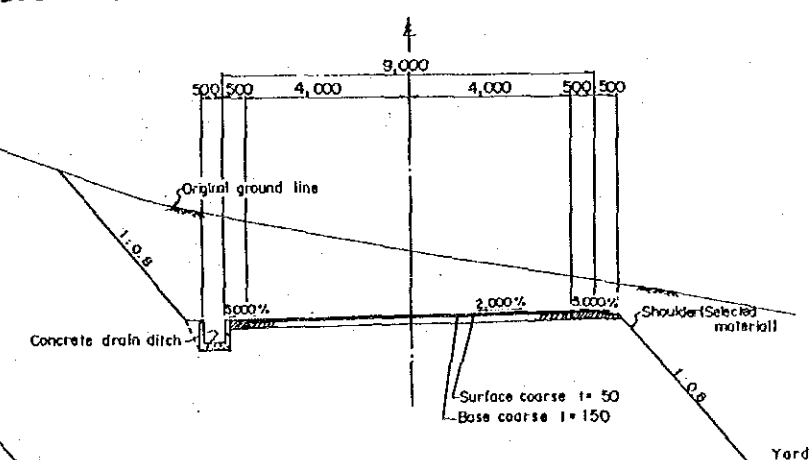
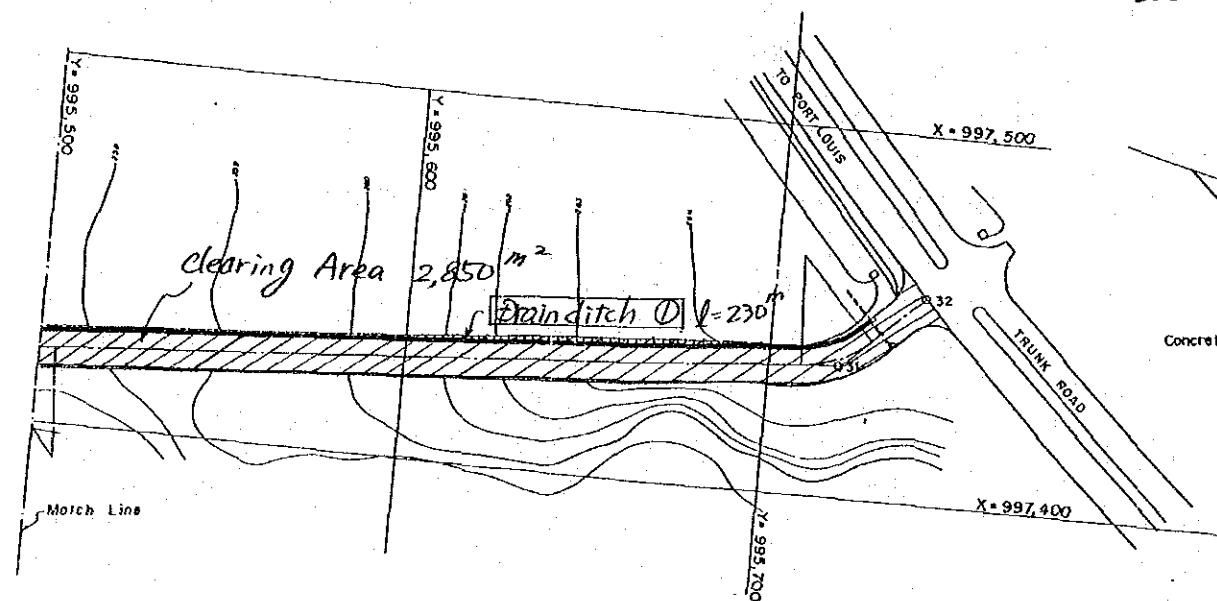
Refer Fig. III-1

Fig. III-1



CO-ORDINATE FOR CONSTRUCTION FACILITIES AREA

STA. No.	X	Y	L (m)	R (m)	T (m)	CL (m)
0	997,112.325	995,112.365	116.000	30.000		8.378
1	997,704.708	995,109.432				
2	997,692.000	995,106.600				
3	997,663.500	995,100.600				
4	997,605.115	995,111.375				
4-1	997,594.472	995,113.339	138.535	12.248	32.358	29.614
4-2	997,582.610	995,093.740				
4-3	997,577.000	995,100.900				
4-4	997,568.039	995,118.219	52.152	30.000	14.665	27.312
5	997,510.600	995,229.100				
6	997,494.500	995,259.999				
7	997,435.000	995,315.200	16.067	100.000	14.113	28.041
8	997,401.700	995,381.500				
9	997,384.600	995,409.500				
10	997,370.600	995,439.500	68.088	30.000	20.269	35.651
11	997,420.800	995,493.200	39.233	30.000	10.692	20.942
12	997,709.424	995,237.715				
13	997,653.088	995,212.044				
14	997,605.047	995,194.631				
15	997,602.100	995,192.800				
16	997,573.000	995,179.309	63.480	20.000	12.372	22.159
17	997,569.029	995,247.594				
18	997,613.721	995,274.556				
19	997,561.659	995,259.807				
20	997,537.327	995,300.123				
21	997,579.279	995,325.441				
22	997,510.974	995,343.789				
23	997,532.070	995,369.590				
24	997,608.200	995,378.511				
25	997,479.454	995,396.014				
26	997,520.550	995,420.815				
27	997,527.267	995,409.685				
28	997,565.101	995,452.616				
29	997,581.559	995,445.327				
30	997,522.952	995,425.186	145.001	30.000	93.151	75.922
31	997,436.000	995,719.800	39.187	30.000	10.679	20.519
32	997,455.600	995,740.800				



TYPICAL SECTION OF ROAD



PREPARATORY WORKS  
CONSTRUCTION FACILITIES AREA  
GRADING PLAN

GOVERNMENT OF MAURITIUS  
PORT LOUIS WATER SUPPLY PROJECT  
JAPAN INTERNATIONAL COOPERATION AGENCY



# WORK QUANTITY FOR CONSTRUCTION YARD (1)

EL.(m)	AREA(m2)	MEAN A(m2)	HEIGHT(m)	VOLUME(m3)
1) Concrete / Aggregate Plant Yard				
-Embankment				
235.0	1,727.5			
234.0	718.8	1,223.2	1.0	1,223.2
233.0	91.3	405.1	1.0	405.1
232.5	0.0	30.4	0.5	15.2
				<u>1,643.4</u>
-Excavation				
242.3	0.0			
242.0	235.0	78.3	0.3	23.5
241.0	2,192.5	1,213.8	1.0	1,213.8
240.0	3,310.0	2,751.3	1.0	2,751.3
239.0	4,240.0	3,775.0	1.0	3,775.0
238.0	5,040.0	4,640.0	1.0	4,640.0
237.0	5,740.0	5,390.0	1.0	5,390.0
236.0	6,200.0	5,970.0	1.0	5,970.0
235.0	6,872.5	6,536.3	1.0	6,536.3
				<u>30,299.8</u>

## 2) Waste Water Treatment Yard

-Embankment				
-Excavation				
236.5	0.0			
236.0	165.0	55.0	0.5	27.5
235.0	1,410.0	787.5	1.0	787.5
234.0	1,505.0	1,457.5	1.0	1,457.5
				<u>2,272.5</u>

## 3) Contractor's Office

-Embankment				
-Excavation				
244.0	425.0			
243.0	220.0	322.5	1.0	322.5
242.0	50.0	135.0	1.0	135.0
241.5	0.0	16.7	0.5	8.3
				<u>465.8</u>
				<u>2,025.0</u>



EL.(m)	AREA(m2)	MEAN A(m2)	HEIGHT(m)	VOLUME(m3)
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EL.(m)	AREA(m <sup>2</sup> )	MEAN A(m <sup>2</sup> )	HEIGHT(m)	VOLUME(m <sup>3</sup> )
<b>-Excavation</b>				
245.0	0.0			
244.0	705.0	235.0	1.0	235.0
243.0	1,942.5	1,323.8	1.0	1,323.8
242.0	3,252.5	2,597.5	1.0	2,597.5
241.0	4,325.0	3,788.8	1.0	3,788.8
240.0	5,385.0	4,855.0	1.0	4,855.0
				12,800.0

### -Excavation

247.5	0.0				
247.0	115.0	38.3	0.5	19.2	
246.0	615.0	365.0	1.0	365.0	
245.0	1,145.0	880.0	1.0	880.0	
244.0	1,165.0	1,155.0	1.0	1,155.0	

### -Excavation

252.0	0.0		
251.0	670.0	223.3	1.0
250.0	1,345.0	1,007.5	1.0
249.0	2,100.0	1,722.5	1.0
248.0	2,100.0	2,100.0	1.0
			5,053.3

WORK QUANTITY FOR CONSTRUCTION YARD (3)

EL.(m)	AREA(m2)	MEAN A(m2)	HEIGHT(m)	VOLUME(m3)
7) Dormitory				
-Embankment				
247.0	272.5			
246.5	0.0	90.8	0.5	45.4
				<u>45.4</u>
-Excavation (1)				
248.4	0.0			
248.0	90.0	30.0	0.4	12.0
247.0	460.0	275.0	1.0	275.0
246.0	1,360.0	910.0	1.0	910.0
245.0	2,040.0	1,700.0	1.0	1,700.0
				<u>2,897.0</u>

-Excavation (2)				
249.5	0.0			
249.0	230.0	76.7	0.5	38.3
248.0	1,397.5	813.8	1.0	813.8
247.0	2,285.0	1,841.3	1.0	1,841.3
				<u>2,693.3</u>

8) Assembly / Stock yard

-Embankment				
248.0	288.8			
247.1	0.0	96.3	0.9	86.6
				<u>86.6</u>
-Excavation				
251.3	0.0			
251.0	250.0	83.3	0.3	25.0
250.0	1,220.0	735.0	1.0	735.0
249.0	2,153.8	1,686.9	1.0	1,686.9
248.0	2,567.5	2,360.7	1.0	2,360.7
				<u>4,807.6</u>

# WORK QUANTITY FOR CONSTRUCTION YARD (4)

EL.(m)	AREA(m2)	MEAN A(m2)	HEIGHT(m)	VOLUME(m3)
9) Residence "A" & "B"				
-Embankment				
252.0	45.0			
251.7	0.0	15.0	0.3	4.5
				4.5
-Excavation (1)				
253.9	0.0			
253.0	195.0	65.0	0.9	58.5
252.0	495.0	345.0	1.0	345.0
251.0	515.0	505.0	1.0	505.0
				908.5

-Excavation (2)				
257.2	0.0			
257.0	30.0	10.0	0.2	2.0
256.0	475.0	252.5	1.0	252.5
255.0	1,390.0	932.5	1.0	932.5
254.0	2,305.0	1,847.5	1.0	1,847.5
253.0	2,583.8	2,444.4	1.0	2,444.4
252.0	2,911.3	2,747.6	1.0	2,747.6
				8,226.5

## 10) Residence "C"

-Embankment				
251.8	0.0			
251.0	272.5	90.8	0.8	72.7
250.0	412.5	342.5	1.0	342.5
249.0	1,207.5	810.0	1.0	810.0
248.0	1,347.5	1,277.5	1.0	1,277.5
				2,502.7

# WORK QUANTITY FOR CONSTRUCTION YARD (5)

EL.(m)	AREA(m2)	MEAN A(m2)	HEIGHT(m)	VOLUME(m3)	EL.(m)	AREA(m2)	MEAN A(m2)	HEIGHT(m)	VOLUME(m3)
11) Yard									
-Embankment									
253.0	170.0				-Excavation				
252.3	0.0	56.7	0.7	39.7	256.2	0.0			
					256.0	25.0	8.3	0.2	1.7
					255.0	660.0	342.5	1.0	342.5
				<u>39.7</u>	254.0	1,755.0	1,207.5	1.0	1,207.5
					253.0	2,475.0	2,115.0	1.0	2,115.0
									<u>3,666.7</u>

# 12) Utility Building

-Embankment									
252.0	80.0				-Excavation				
251.4	0.0	26.7	0.6	16.0	255.2	0.0			
					255.0	55.0	18.3	0.2	3.7
					254.0	705.0	380.0	1.0	380.0
				<u>16.0</u>	253.0	1,835.0	1,270.0	1.0	1,270.0
					252.0	2,287.5	2,061.3	1.0	2,061.3
									<u>3,714.9</u>

# 13) First Aid Building

-Embankment									
-Excavation									
					256.9	0.0			
					256.0	432.0	144.0	0.9	129.6
					255.0	450.0	441.0	1.0	441.0
									<u>570.6</u>

# WORK QUANTITY FOR CONSTRUCTION YARD (6)

EL.(m)	AREA(m2)	MEAN A(m2)	HEIGHT(m)	VOLUME(m3)
14) Transition Area to Dam site				
-Embankment				
-Excavation				
239.0	0.0			
238.0	60.0	20.0	1.0	20.0
237.0	152.5	106.3	1.0	106.3
236.0	540.0	346.3	1.0	346.3
235.0	612.5	576.3	1.0	576.3
234.0	637.5	625.0	1.0	625.0
233.0	637.5	637.5	1.0	637.5
232.0	637.5	637.5	1.0	637.5
231.0	637.5	637.5	1.0	637.5
230.0	637.5	637.5	1.0	637.5
				<u>4.223.8</u>

GRAND TOTAL      6,279.8      GRAND TOTAL      89,081.2

# WORK QUANTITY FOR ROAD IN CONSTRUCTION YARD (1)

SEC.	AREA(m2)	MEAN A(m2)	DIST.(m)	VOLUME(m3)	SEC.	AREA(m2)	MEAN A(m2)	DIST.(m)	VOLUME(m3)
-Excavation (1)					-Excavation (2)				
0	0.0				15-1	27.5			
2	16.5	8.3	21.398	176.5	17-1	10.5	19.0	44.001	836.0
3	60.8	38.7	29.125	1,125.7	20-1	35.0	22.8	74.354	1,691.6
4-1	69.3	65.1	70.194	4,566.1	22-1	14.3	24.7	45.002	1,109.3
				<u>5,868.3</u>	25-1	51.8	33.1	67.000	2,214.4
4-4	127.5				25-2	10.0	30.9	70.000	2,163.0
5-1	24.0	75.8	80.000	6,060.0	11	0.0	5.0	40.514	202.6
				<u>6,060.0</u>					<u>8,216.8</u>
5-1,16-3	72.8	36.4			18	10.0			
5-2	54.0	63.4	40.186	2,547.8	17-2	10.0	10.0	42.200	422.0
7-1	36.0	45.0	90.586	4,076.4					<u>422.0</u>
7-2	1.8	18.9	28.041	530.0	20-2	19.0			
				<u>7,154.1</u>	21	0.0	9.5	39.000	370.5
8	0.0								<u>370.5</u>
9	15.4	7.7	32.809	252.6	24	10.2			
10-2	2.8	9.1	48.488	441.2	23	7.2	8.7	57.000	495.9
11-1	0.0	1.4	42.549	59.6	27	9.6	8.4	48.000	403.2
				<u>753.4</u>	27-1	12.6	11.1	25.000	277.5
13	60.0				28	0.0	6.3	50.922	320.8
14	25.0	42.5	50.160	2,131.8					<u>1,497.4</u>
16-1	18.7	21.9	24.058	525.7	5-3	43.8			
16-2	9.0	13.9	22.159	306.9	19-1	11.0	27.4	40.000	1,096.0
16-3	48.8	28.9	37.279	1,077.4					<u>1,096.0</u>
				<u>4,041.7</u>					

# WORK QUANTITY FOR ROAD IN CONSTRUCTION YARD (2)

SEC.	AREA(m2)	MEAN A(m2)	DIST.(m)	VOLUME(m3)	SEC.	AREA(m2)	MEAN A(m2)	DIST.(m)	VOLUME(m3)
-Excavation (3)					-Embankment				
11	0				0	0.0			
11-3	11	5.5	10.692	58.8	7-2	4.0	2.0	14.000	28.0
+137.8	14.6	12.8	137.8	1,763.8	8	2.0	3.0	60.080	180.2
+163.8	0	7.3	26	189.8	0	0.0	1.0	5.000	5.0
				<u>2,012.4</u>					<u>213.2</u>
Approach road					Approach road				
0	11				0	0.0			
1	0	5.5	35	192.5	1	46.0	23.0	45.000	1,035.0
				<u>192.5</u>					
TOTAL OF EXCAVATION					El.243	232.5			
				<u>37,685.3</u>	El.238.5	330.0	281.3	4.500	1,265.6
									<u>2,300.6</u>
					TOTAL OF EMBANKMENT				
									<u>2,513.9</u>

# SUMMARY OF WORK QUANTITY FOR CONSTRUCTION YARD (EARTH WORK)

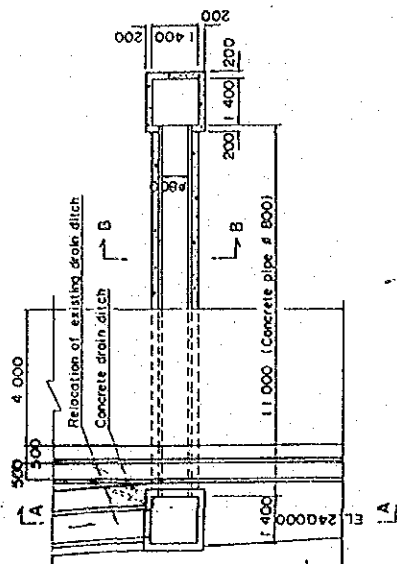
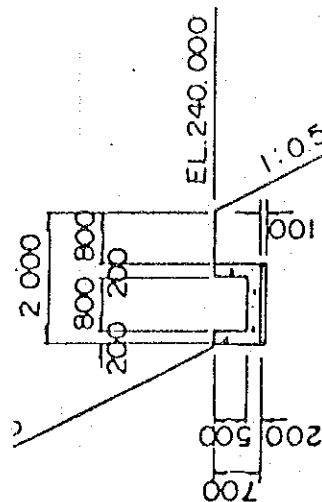
-EXCAVATION	<u>126.770</u>
COMMON	101,420
WEATHERED ROCK	21,550
ROCK	3,800
-EMBANKMENT	<u>8.790</u>

Item No.	Work	Unit	Quantity	Foreign Currency ( )		Local Currency (Rs)		Total Equivalent ( )	Ref.Clause
				Unit Price	Amount	Unit Price	Amount		
B7	Haul Road to Quarry Site								G5.3
/01	Clearing and stripping	m2	21,030						T2.1
/02	Open-cut excavation, common	m3	0						T2.3
/03	Open-cut excavation, weathered rock	m3	145,000						T2.3
/04	Embankment, excavated rock	m3	19,470						T2.5
/05	Concrete, type-E	m3	2,460						T4.1
/06	Concrete drain pipe (dia. 1.0m)	m	480						T2.9
/07	Reinforcement bar	kg	17,040						T4.1
/08	Surface course	m2	10,700						T5.2.3
/09	Subbase course	m2	10,700						T5.2.2
/10	Drain ditch	m	1,030						T2.9
/11	Guard rail	m	290						T5.2.6
/12	Relocation of existing drain ditch	m	250						
Subtotal of Item B7									

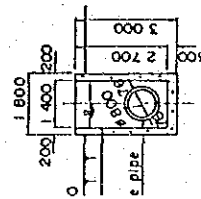


# Working Division: Relocation of Existing drain ditch in detail for Lump Sum

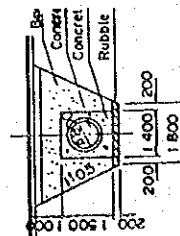
Description	Calculation Details	Unit	Quantity	Remarks
<b>I drain ditch</b>				
(1) Excavation (Weathered rock)				
	$A = 0.8 \times 1.2 = 0.96 \text{ m}^2$			
	$V = 0.96 \times 24.5 \text{ m} = 23.5.2 \text{ m}^3$	$\text{m}^3$	240.0	
(2) Drain ditch (Length)				
	$L = 24.5 \text{ m}$	$\text{m}$	245	
	in detail			
	1) concrete			
	$A = 0.2 \times 2.2 = 0.44 \text{ m}^2$			
	$V = 0.44 \times 24.5 = 107.8 \text{ m}^3 \approx 110 \text{ m}^3$			
<b>II Pipe Siphon</b>				
(1) Excavation (Sec. A-A)				
	$V (1.8^2 + 1.8 \times 4) \frac{1}{2} \times 3.0 \times 2 +$			
	$(1.8 + 4.0) \frac{1}{2} \times 2.7 \times 10.6 = 72.8$	$\text{m}^3$	73	
	(Sec. B-B)			
(2) Concrete				
	$(1.8^2 \times 0.3 + 6.8 \times 0.2 \times 2.7 - 0.1 - 0.12) \times 2 +$			
	$(1.5 \times 1.4 - 0.5) \times 10.6 = 21.38$	$\text{m}^3$	21.4	
(3) Rubble stone bedding				
	$0.2 \times 11.0 = 2.2$	$\text{m}^3$	2.2	
(4) Concrete pipe $\phi 800$				
	$L = 11.0 \text{ m}$	$\text{m}$	11.0	
(5) Backfill (Sec. B-B)				
	$(1.8 \times 4 \times 2 \frac{1}{2} - 1.5 \times 1.4) \times 10.6 = 54.06$	$\text{m}^3$	54	



PLAN OF PIPE SIPHON



SECTION A-A



SECTION B-B

Working Division: New Access Road (Haul Road from Quarry Site)

No. 1

Section No.	Distance	Excavation (weathered rock)			Embankment			Remarks
		Sectional Area	Mean	Volume	Sectional Area	Mean	Volume	
0	0	36.4						Refer
1	50	28.4	32.4	1,620				DWG. NO. C-022~026
2	50	42.8	35.6	1,780				& NO. C-027~030
3	50	33.2	38.0	1,900				
4	50	22.0	27.6	1,380				
4+45.0m	45	0	11.0	495				
5	0				0			
5+40.0m	40				142.4	71.2	2,848	
6	10				142.4	142.4	1,424	
7	50				143.6	143.0	7,150	
7+30	30				143.6	143.6	4,308	
8	20				29.2	86.8	1,728	
8+40	40				0	14.6	584	
9	0							
9+70	0	0	0					
9+270	20	150	75	1,500				
10	23	197.2	173.6	3,993				
11	50	439.6	318.4	15,920				
11+20	20	536.0	487.8	9,756				
12	30	114.6	325.3	9,759				
13	50	253.4	184	9,200				
13+33.5	33.5	594.7	424.1	14,205				
Sec. A	0	675.2	0					
Sec. A+20	20	837.2	756.2	15,124				
Sec. A+44	24	0	418.6	10,046				
Sub total				96,678			18,092	

61.8.

N. K. Form No. 2312

Working Division: New Access road

No. 2

Section No.	Distance	Excavation			Embankment			Remarks
		Sectional Area	Mean	Volume	Sectional Area	Mean	Volume	
EC6+7.50	0	m <sup>2</sup>	m <sup>2</sup>	m <sup>3</sup>	m <sup>2</sup>	m <sup>2</sup>	m <sup>3</sup>	
15	28	68.0	68.4	1.915				
16	50	68.8	68.4	1.915				
BC 8	15	115.6	92.2	4.610				
16+30	15	136	125.8	1.887				
Submergeable bridge	15	0	68	1.020				
17+20	0	0	0	0				
17+39	19	40	20	380				
18	11	40.8	40.4	444				
19	50	85.8	63.3	3,165				
20	50	202	143.9	3,195				
21	50	182.4	192.2	9,610				
22	50	135.0	158.7	7,935				
23	50	85.8	110.4	5,520				
24	50	28.8	52.3	2,865				
25	50	25.2	27.0	1,350				
25+25	25	0	12.6	315				
25	0				0			
25+25	25				15.0	71.5	188	
26	25				31.6	23.3	583	
26+35	35	0			0	15.8	553	
27	15	8.0	4.0	60				
End point	16	0	4.0	64				
Sub Total				48,335			1,324	
Grand Total				145,013			19,366	

61.8

N. K. Form No. 2312

Section No.	Distance	Clearing and Shipping				Remarks	
		Sectional Area	Mean	Volume	Sectional Area		Mean
	m	m <sup>2</sup>	m	m <sup>3</sup>	m <sup>2</sup>	m <sup>3</sup>	
0	0	13	0				Refer
1	50	13.5	13.25	662.5			DWG No C-027
2	50	14.0	13.75	687.5			~030
3	50	13.5	13.25	687.5			
4	50	12	12.75	637.5			
5	50	11	11.5	575			
9+7	0	11	0	(3,250)			
10	43	25	18	774			
11	50	33	29	1450			
12	50	28	30.5	1525			
13	50	33	30.5	1525			
13+33.5	33.5	40	36.5	1222			
				(6490)			
Sec A	0	48	0				
Sec A+20	20	48	48	960			
Sec A+44	24	0	24	576			
EC 6+71.5	0	10					
15	28	15	12.5	350			
16	50	19	17.0	850			
BC 8	15	25	22	330			
16+30	15	25	25	375			
				(3441)			

**Working Division:**

61.8.

Section No.	Distance	Surface & Subbase Courses				Volume	Sectional Area	Mean	Volume	Remarks
		Sectional Area	Mean	Volume	Sectional Area					
No. 0	0	8	8	0	0	0	0	0	Refer	
No. 13+33.5	683.5	8	8	5.468					DWG. NO. C-024	
Sec. A	0	23	0							
Sec. A+19	19	23	23	4.37						
EC6+7.5	0	8								
16+30	108	8	8	864						
17+25	0	8								
End point	491	8	8	3,928						
Total				10,627						

Submersible bridge

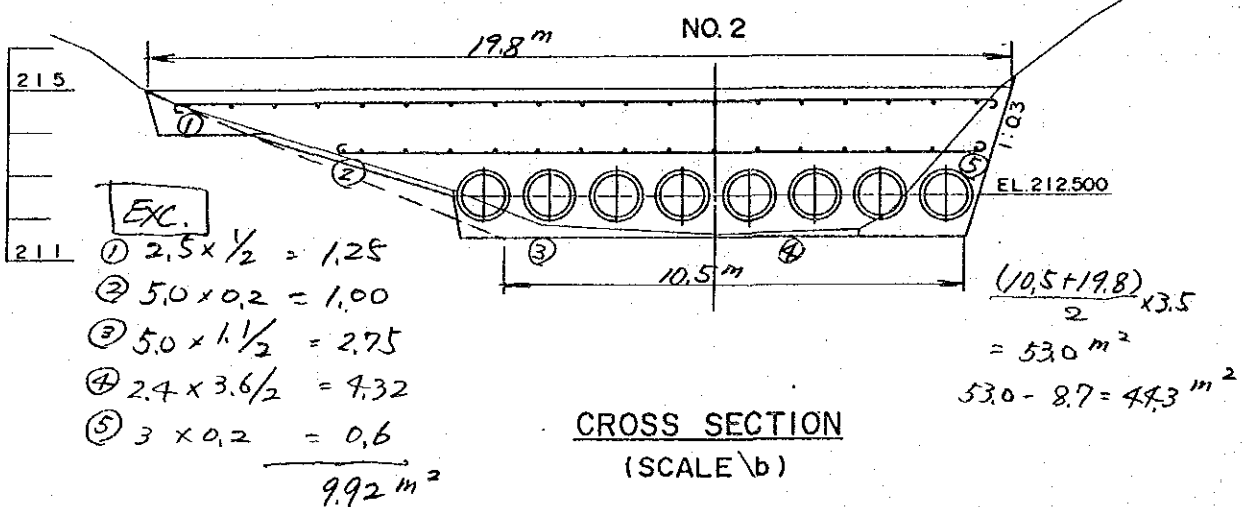
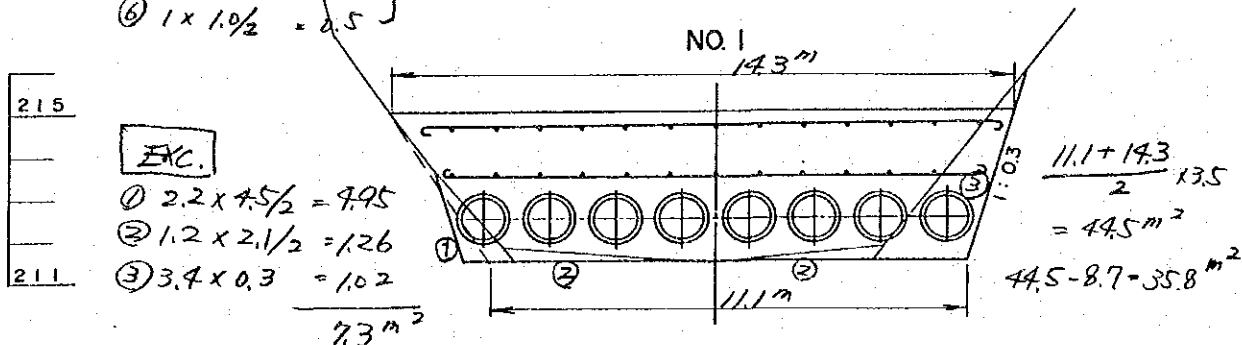
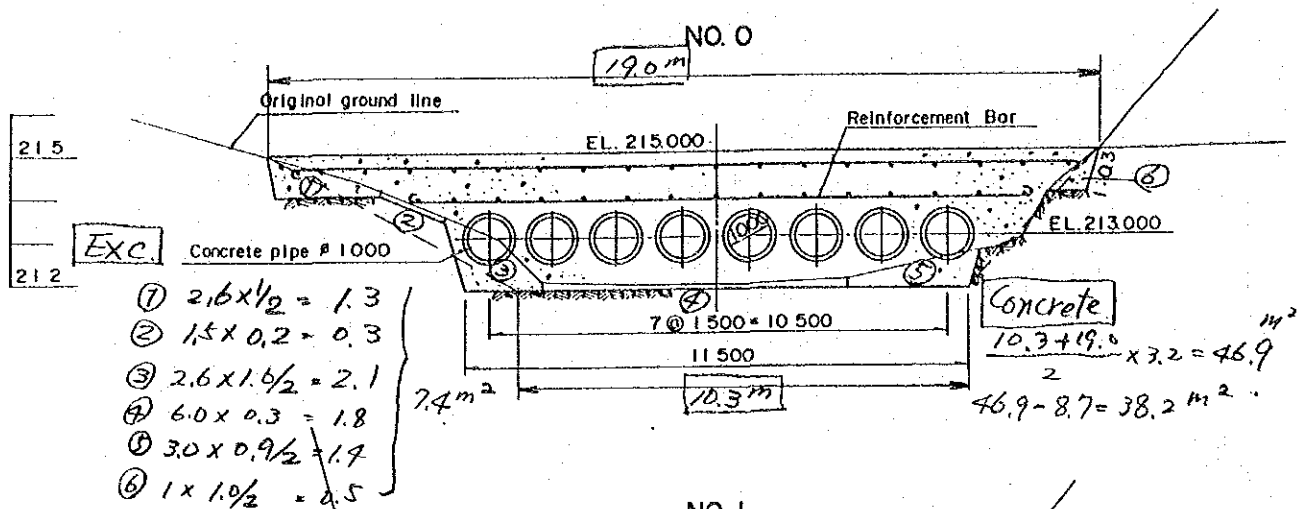
111-19

Working Division:

Submersible bridge

[illegible]





$\phi 100 \text{ sec. area}$   
 $0.59^2 \pi \times 8^{nos.} = 8.7 \text{ m}^2$

SCALE a : 0 10 20 30 m

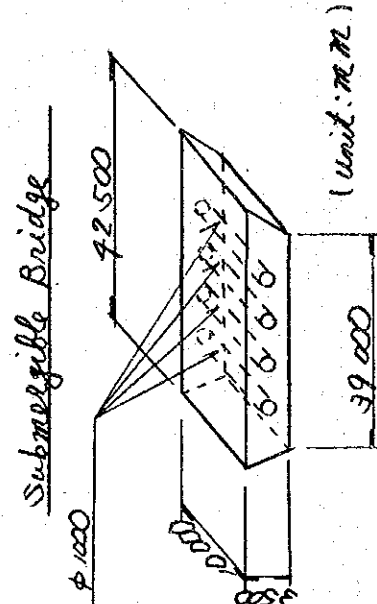
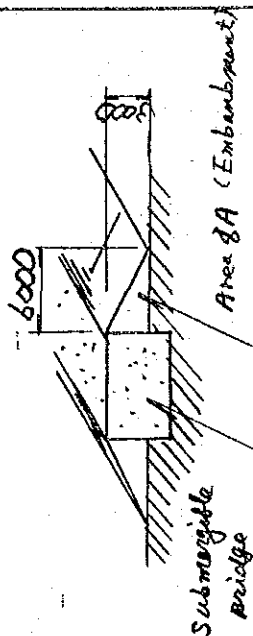
SCALE b : 0 5 10 m

Fig. III-2

Item No.	Work	Unit	Quantity	Foregin Currency ( )		Local Currency (Rs)		Total Equivalent(Rs)	Ref.Clause or Sub-clause
				Unit Price	Amount	Unit Price	Amount		
B8 ACCESS ROAD AROUND DAM SITE									
G5.3									
/01	Clearing and stripping	m2	480,130						T2.1
/02	Open-cut excavation, common	m3	50,930						T2.3
/03	Open-cut excavation, weathard rock	m3	367,940						T2.3
/04	Embankment, excavated rock	m3	1,050						T2.5
/05	Concrete, class E	m3	1,370						T4.1
/06	Concrete drain pipe (dia. 1.0m)	m	40						T2.9
/07	Reinforcing bar	kg	1,790						T4.1
/08	Shotcrete concrete	m2	7,180						T4.2
/09	Surface course	m2	15,780						T5.2.3
/10	Subbase course	m2	15,780						T5.2.2
/11	Drain ditch	m	2,190						T5.2.2
/12	Guard rail	m	540						T2.9
/13	Concrete block	m2	13						T5.2.6
Subtotal of Item B8									

Working Division:

Description	Calculation Details	Unit	Quantity	Remarks
2.3	ACCESS ROAD AROUND DAM SITE			
1 01	Clearing and stripping	m <sup>2</sup>	980.130	Refer DWG. NO. G-050 to G-053 and Table in Page III-23.
1 02	Open-cut excavation, common	m <sup>3</sup>	50.930	Refer "
1 03	Open-cut excavation, weathered rock	m <sup>3</sup>	367.940	Refer "
1 04	Embankment, excavated rocks	m <sup>3</sup>	1.050	
	$A = \frac{1}{2} \times 6.0 \text{ m} \times 3.0 \text{ m} = 9.0 \text{ m}^2$			
	$V = A \cdot L$			
	$= 9.0 \text{ m}^2 \times 116 \text{ m}$			
	$= 1089 \text{ m}^3$			
1 05	Concrete, Type-F	m <sup>3</sup>	1.370	
	$V = \frac{1}{2} \times (42.5 + 39.0) \times 3.5 \times 10.0$			
	$- \frac{1}{2} \times 10 \times 10^3 \times 10.0 \times 7$			
	$= 1363.$			



Section No.	Distance	Excavation (Common)			Excavation (weathered rock)			Cleaning and stripping			Shotcrete concrete		
		Sectional Area	Mean	Volume	Sectional Area	Mean	Volume	Sectional Length	Mean	Area	Sectional Length	Mean	Area
	m	m <sup>2</sup>	m <sup>2</sup>	m <sup>3</sup>	m <sup>2</sup>	m <sup>2</sup>	m <sup>3</sup>	m	m	m <sup>2</sup>	m	m	m <sup>2</sup>
BP	0.000	79.0	0.0					21.4			0.0		
NO1	50.000	128.7	103.85	5192.5	82.4	31.20	1580.0	27.9	24.85	1232.5	11.0	5.50	275.0
NO2	50.000	181.5	155.10	7755.0	183.2	122.80	6140.0	35.7	31.80	1590.0	25.0	18.00	900.0
NO3	50.000	190.6	168.05	8402.5	186.9	125.05	6252.5	35.0	35.35	1267.5	21.0	23.00	1150.0
NO4	50.000	191.7	191.15	9557.5	192.4	125.05	6252.5	35.0	50.00	2500.0	24.5	22.75	1137.5
NO5	50.000	190.5	143.90	7195.0	193.8	125.05	6252.5	35.0	57.50	2875.0	24.5	24.50	1225.0
NO6	50.000	190.5	143.90	7195.0	193.8	125.05	6252.5	35.0	65.35	3267.5	34.0	29.25	1462.5
NO7	50.000	0.0	95.25	4762.5	48.4	53.00	2665.0	5.1	42.90	2145.0	7.5	20.75	1037.5
NO8	50.000				133.5	80.95	4547.5	17.1	11.10	555.0			
NO9	50.000				346.2	239.85	11992.5	24.0	20.55	1027.5			
NO10	50.000				1175.9	781.05	38052.5	42.5	33.25	1682.5			
NO11	50.000				67.4	821.65	31082.5	7.0	24.75	1237.5			
NO12	50.000				112.4	89.90	4495.0	21.1	14.05	702.5			
NO13	50.000				52.7	82.55	4127.5	21.0	21.05	1052.5			
NO14	50.000				432.6	242.65	12132.5	41.7	31.35	1567.5			
NO15	50.000				69.5	251.05	12552.5	20.3	31.00	1550.0			
NO16	50.000				48.2	58.85	2942.5	17.7	19.00	950.0			
NO17	50.000				151.4	99.80	4990.0	32.4	25.05	1252.5			
NO18	50.000				380.5	255.95	12797.5	45.1	38.75	1937.5			
NO19	50.000				238.6	289.55	14977.5	24.8	34.95	1747.5			
NO20	50.000				73.8	156.20	7810.0	20.5	22.85	1132.5			
NO21	50.000				54.3	64.05	3202.5	18.0	19.25	962.5			
NO22	50.000				42.4	48.35	2417.5	16.2	17.10	855.0			
NO23	50.000				79.5	60.95	3047.5	18.8	17.50	875.0			
NO24	50.000				89.0	84.25	4212.5	20.8	19.80	990.0			
NO25	50.000				90.1	88.55	4477.5	20.5	20.65	1032.5			
NO26	50.000				0.0	45.05	2252.5	0.0	10.25	512.5			
NO27	50.000				94.8	47.40	2370.0	27.2	13.60	680.0			
NO28	50.000				142.0	118.40	5920.0	28.8	28.50	1425.0			
NO29	50.000				93.4	117.70	5885.0	27.7	28.75	1437.5			
NO30	50.000				129.7	111.55	5577.5	26.1	26.80	1345.0			
NO31	50.000				127.0	128.80	6440.0	25.8	23.95	1297.5			
NO32	50.000				124.3	126.10	6305.0	21.3	23.55	1177.5			
NO33	50.000				125.7	125.00	6250.0	24.5	22.90	1145.0			
NO34	50.000				49.4	87.55	4377.5	16.5	20.50	1025.0			
NO35	50.000				24.9	37.15	1857.5	13.2	14.85	742.5			
EP	24.270				20.7	22.80	559.4	12.1	12.65	307.0			
SUB TOTAL	1774.270			50930.0			358675.9			477931.9			7187.5
NO.0+17.00	0.000				0.0			0.0					
NO.1	33.000				49.7	24.85	820.1	15.7	7.85	259.1			
NO.2	50.000				44.8	47.25	2382.5	15.4	15.55	777.5			
NO.3	50.000				46.2	45.50	2275.0	14.9	15.15	757.5			
NO.4	50.000				69.4	57.80	2890.0	16.0	15.45	772.5			
EP	14.215				58.9	84.15	911.9	15.8	15.80	224.6			
SUB TOTAL	197.215			9250.4						2791.1			
TOTAL	1971.485			50930.0			367935.3			480123.1			7187.5

Working Division:

Description	Calculation Details	Unit	Quantity	Remarks
1 06	Concrete drain pipe (dia 1.0 m)	m	40	
	$L = 2 \times \pi = 10.0^m \times 4 = 40.0^m$			
1 07	Reinforcement bar	kg	1790	
	D13			
	Bar Length (m.m)	Unit weight (kg/m)	Bar nos	Total weight (kg)
	44 500	0.995	11	787
	43 600	0.995	11	477
	10 000	0.995	83	826
	TOTAL			1790 kg
1 08	Shotcrete concrete	m <sup>2</sup>	7180	

Refer DWG. NO. G-050  
and Table in Page III-23.

Working Division:

Description	Calculation Details	Unit	Quantity	Remarks
1 09	Surface course	m <sup>2</sup>	15.780	Refer DWG. NO. C-041 to C-049 1000 B = 8000 1000
	$A = L \times B$			
	$= 1971.5^m \times 8^m$			
	where L: Length of the road			
	B: width			
1 10	Subbase course	m <sup>2</sup>	15.780	
	$A = L \times B$			
	$= 1971.5^m \times 8^m$			
	$= 15,772.0 m^2$			
1 11	Drain ditch	m	2190	Refer DWG. NO. C-041 to C-042.
	drain ditch along road			
	BP ~ 10.25+10 1221.7			
	EC.23 ~ EP 440.5			
	EC.1' ~ EP' 163.8			
	Subtotal 1826.0			
	drain ditch in beam 285.0 <sup>m</sup>			
	pipe culvert			
	$L = 10.0^m \times 7 = 70.0$			
	TOTAL 2181.0			

**Working Division:**

Description	Calculation Details	Unit	Quantity	Remarks
1 12	Guard rail	m	590	Refer DWG. No. C-041 and C-042
	NO. 15 ~ BC. 16		79	
	NO. 20 ~ NO. 22 + 30		128	
	NO. 24 + 30 ~ BC. 22		26	
	NO. 30 + 20 ~ NO. 31 + 20		51	
	Bridge (up stream side)		50	
	BC. 22 ~ EP		29	
	BP ~ BC 3'		168	
	<u>TOTAL</u>		<u>591</u>	
1 13	Concrete block	m <sup>2</sup>	13	
	$A = \frac{1}{2} \times (3.5 + 0.5) \times 6.2^m = 12.4 \text{ m}^2$			

Item No.	Work	Unit	Quantity	Foreign Currency ( )		Local Currency (Rs)		Total Equivalent ( ) or Sub-clause	Ref.Clause
				Unit Price	Amount	Unit Price	Amount		
B9	Access Road along Transmission Pipe Line							G5.3	
/01	Clearing and stripping	m2	12,600					T2.1	
/02	Excavation, common	m3	3,200					T2.3	
/03	Excavation, weatherd rock	m3	2,200					T2.3	
/04	Embankment, excavated rock	m3	7,100					T2.5	
/05	Concrete, type-E	m3	260					T4.1	
/06	Concrete drain pipe (dia. 1.0m)	m	100					T2.9	
/07	Reinforcement bar	ton	14					T4.1	
/08	Gravel metalling	m2	7,230					T2.5	
/09	Subbase course	m2	7,230					T5.2.2	
/10	Drain ditch	m	1,810					T2.9	
/11	Guard rail	m	500					T5.2.6	
<b>Subtotal of Item B9</b>									



Excavation Common (1/3)

Sec.No.	Dis. (m)	Area (m2)	Means (m2)	Volume (m3)
Sta. 0	0.000	0.000	0.000	0.000
Sta. 0+ 7.60	7.600	0.000	0.000	0.000
Sta. 1+ 7.60	20.000	0.000	0.000	0.000
Sta. 2+ 8.70	21.100	0.000	0.000	0.000
Sta. 3+ 2.90	14.200	2.220	1.110	15.762
Sta. 3+ 8.40	5.500	1.080	1.650	9.075
Sta. 4+ 8.80	20.400	4.680	2.880	58.752
Sta. 5+ 1.30	12.500	6.930	5.805	72.563
Sta. 5+13.70	12.400	9.060	7.995	99.138
Sta. 5+17.30	3.600	11.000	10.030	36.108
Sta. 7+ 6.40	20.000	5.760	12.600	252.000
Sta. 8+ 6.40	20.000	1.400	3.580	71.600
Sta. 9+ 6.40	20.000	1.400	1.400	28.000
Sta.10+ 6.40	20.000	0.000	0.700	14.000
Sta.10+14.10	7.700	0.000	0.000	0.000
Sta.11+11.70	17.600	0.000	0.000	0.000
Sta.12+11.90	20.200	0.000	0.000	0.000
Sta.13+12.80	20.900	0.000	0.000	0.000
Sta.14+13.40	20.600	0.000	0.000	0.000
Sta.15+13.50	20.100	0.000	0.000	0.000
Sta.16+13.60	20.100	0.000	0.000	0.000
Sta.17+12.17	18.570	0.000	0.000	0.000
Sta.17+13.60	1.430	0.000	0.000	0.000
Sta.18+13.60	20.000	0.000	0.000	0.000
Sta.19+13.60	20.000	0.000	0.000	0.000
Sta.20+13.70	20.100	0.000	0.000	0.000
Sta.21+13.70	20.000	0.000	0.000	0.000
Sta.22+13.70	20.000	0.000	0.000	0.000
Sta.23+13.70	20.000	0.000	0.000	0.000
Sta.24+13.70	20.000	0.000	0.000	0.000
Sta.25+13.70	20.000	0.000	0.000	0.000
Sta.26+ 1.89	8.190	0.000	0.000	0.000
Sta.26+13.70	11.810	0.000	0.000	0.000
Sta.27+13.50	19.800	0.000	0.000	0.000
Sta.28+ 1.34	7.840	0.000	0.000	0.000
Sta.28+13.50	12.160	0.000	0.000	0.000
Sta.29+13.50	20.000	0.000	0.000	0.000
Sta.30+13.50	20.000	0.000	0.000	0.000
Sta.31+13.33	19.830	0.000	0.000	0.000
Sta.32+13.40	20.070	0.000	0.000	0.000
Sta.33+13.60	20.200	0.000	0.000	0.000
Sta.33+14.84	1.240	0.000	0.000	0.000
Sta.34+12.80	17.960	0.000	0.000	0.000
Sta.35+12.80	20.000	0.000	0.000	0.000
Sta.36+12.79	19.990	0.000	0.000	0.000

(Refer DWG. NO. C-061 to C-082)

Excavation Common (2/3)

Sec.No.	Dis. (m)	Area (m2)	Means (m2)	Volume (m3)
Sta.37+12.90	20.110	0.000	0.000	0.000
Sta.38+12.90	20.000	0.000	0.000	0.000
Sta.39+12.90	20.000	0.000	0.000	0.000
Sta.40+12.90	20.000	0.000	0.000	0.000
Sta.41+12.90	20.000	0.000	0.000	0.000
Sta.42+10.10	17.200	0.000	0.000	0.000
Sta.42+15.12	5.020	0.000	0.000	0.000
Sta.50+ 8.30	0.000	2.660	1.330	0.000
Sta.50+10.00	1.700	3.210	2.935	4.990
Sta.51+ 9.80	19.800	1.400	2.305	45.639
Sta.52+ 9.80	20.000	0.000	0.700	14.000
Sta.52+18.50	8.700	0.000	0.000	0.000
Sta.53+ 9.54	10.950	0.000	0.000	0.000
Sta.54+ 9.78	20.330	3.300	1.650	33.544
Sta.55+ 9.80	20.020	3.840	3.570	71.471
Sta.56+ 9.80	20.000	4.080	3.960	79.200
Sta.57+ 9.70	19.900	2.800	3.440	68.456
Sta.58+ 9.80	20.100	4.750	3.775	75.878
Sta.59+ 9.80	20.000	4.250	4.500	90.000
Sta.60+10.00	20.200	9.860	7.055	142.511
Sta.60+13.17	3.170	9.860	9.860	31.256
Sta.61+ 9.61	16.440	0.300	5.080	83.515
Sta.62+ 9.80	20.190	1.390	0.845	17.061
Sta.63+ 9.80	20.000	1.690	1.540	30.800
Sta.64+ 9.80	20.000	1.740	1.715	34.300
Sta.65+ 9.80	20.000	0.000	0.870	17.400
Sta.65+19.63	9.830	0.000	0.000	0.000
Sta.66+ 9.60	9.970	0.000	0.000	0.000
Sta.67+ 9.60	20.000	0.000	0.000	0.000
Sta.68+ 9.53	19.930	0.000	0.000	0.000
Sta.69+ 9.77	20.240	0.000	0.000	0.000
Sta.70+ 9.61	19.840	0.000	0.000	0.000
Sta.71+ 9.80	20.190	0.000	0.000	0.000
Sta.72+ 9.62	19.820	4.650	2.325	46.082
Sta.73+ 9.80	20.180	2.390	3.520	71.034
Sta.73+11.42	21.620	1.870	2.130	46.051
Sta.74+ 9.40	17.980	0.860	1.365	24.543
Sta.75+ 9.40	20.000	7.320	4.090	81.800
Sta.76+ 6.53	17.130	6.700	7.010	120.081
Sta.76+ 9.00	2.470	2.740	4.720	11.658
Sta.77+ 8.79	19.790	4.030	3.385	66.989
Sta.78+ 8.80	20.010	4.160	4.095	81.941
Sta.79+ 8.79	19.990	8.250	6.205	124.038
Sta.80+ 8.90	20.110	12.610	10.430	209.747
Sta.80+17.66	28.760	13.200	12.905	371.148
Sta.81+ 8.80	11.140	2.360	7.780	86.669

Excavation Common (3/3)

Sec.No.	Dis. (m)	Area (m2)	Means (m2)	Volume (m3)
Sta.82+	8.80	20.000	5.180	3.770
Sta.83+	8.79	19.990	14.700	9.940
Sta.84+	8.80	20.010	12.960	13.830
Sta.85+	8.80	20.000	12.350	12.655
Sta.86+	8.80	20.000	13.290	12.820
Sta.87+	0.68	11.880	12.550	12.920
Sta.87+	8.50	7.820	24.050	18.300
Sta.88+	8.50	20.000	22.350	23.200
Sta.89+	8.40	19.900	11.830	17.090
Sta.89+	13.74	5.340	7.940	9.885
Sta.90+	6.68	12.940	5.780	6.860

Total volume = 5,279.881 (m3)

Common :  $5,279.881 \times 0.6 = 3,200 \text{ m}^3$

W. Rock :  $\quad \times 0.4 = 2,200 \text{ m}^3$

Embankment Volume (1/3)

Sec.No.	Dis. (m)	Area (m2)	Means (m2)	Volume (m3)
Sta. 0	0.000	0.000	0.000	0.000
Sta. 0+ 7.60	0.000	54.160	0.000	0.000
Sta. 1+ 7.60	20.000	24.750	39.455	789.100
Sta. 2+ 8.70	21.100	20.200	22.475	474.223
Sta. 3+ 2.90	14.200	0.000	10.100	143.420
Sta. 3+ 8.40	5.500	0.110	0.055	0.303
Sta. 4+ 8.80	20.400	0.000	0.055	1.122
Sta. 5+ 1.30	12.500	0.000	0.000	0.000
Sta. 5+13.70	12.400	0.000	0.000	0.000
Sta. 5+17.30	3.600	0.000	0.000	0.000
Sta. 6+ 6.40	9.100	0.000	0.000	0.000
Sta. 7+ 6.40	20.000	0.000	0.000	0.000
Sta. 8+ 6.40	20.000	0.000	0.000	0.000
Sta. 9+ 6.40	20.000	0.000	0.000	0.000
Sta.10+ 6.40	20.000	1.560	0.780	15.600
Sta.10+14.10	7.700	3.090	2.325	17.902
Sta.11+11.70	17.600	10.960	7.025	123.640
Sta.12+11.90	20.200	3.120	7.040	142.208
Sta.13+12.80	20.900	1.230	2.175	45.457
Sta.14+13.40	20.600	17.640	9.435	194.361
Sta.15+13.50	20.100	6.740	12.190	245.019
Sta.16+13.60	20.100	2.170	4.455	89.546
Sta.17+12.17	18.570	0.860	1.515	28.134
Sta.17+13.60	1.430	0.040	0.450	0.644
Sta.18+13.60	20.000	0.480	0.260	5.200
Sta.19+13.60	20.000	2.170	1.325	26.500
Sta.20+13.70	20.100	1.800	1.985	39.899
Sta.21+13.70	20.000	16.700	9.250	185.000
Sta.22+13.70	20.000	1.690	9.195	183.900
Sta.23+13.70	20.000	1.980	1.835	36.700
Sta.24+13.70	20.000	12.540	7.260	145.200
Sta.25+13.70	20.000	4.940	8.740	174.800
Sta.26+ 1.89	8.190	0.530	2.735	22.400
Sta.26+13.70	11.810	1.860	1.195	14.113
Sta.27+13.50	19.800	2.300	2.080	41.184
Sta.28+ 1.34	7.840	30.950	16.625	130.340
Sta.28+13.50	12.160	14.140	22.545	274.147
Sta.29+13.50	20.000	1.200	7.670	153.400
Sta.30+13.50	20.000	17.620	9.410	188.200
Sta.31+13.33	19.830	3.600	10.610	210.396
Sta.32+13.40	20.070	18.610	11.105	222.877
Sta.33+13.60	20.200	1.210	9.910	200.182
Sta.33+14.84	1.240	0.960	1.085	1.345
Sta.34+12.80	17.960	1.070	1.015	18.229
Sta.35+12.80	20.000	0.700	0.885	17.700
Sta.36+12.79	19.990	1.070	0.885	17.691

(Refer DWG. No. C-061 to C-082)

Embankment Volume (2/3)

Sec.No.	Dis. (m)	Area (m2)	Means (m2)	Volume (m3)
Sta.37+12.90	20.110	0.650	0.860	17.295
Sta.38+12.90	20.000	0.850	0.750	15.000
Sta.39+12.90	20.000	0.200	0.525	10.500
Sta.40+12.90	20.000	1.390	0.795	15.900
Sta.41+12.90	20.000	0.120	0.755	15.100
Sta.42+10.10	17.200	0.790	0.455	7.826
Sta.42+15.12	5.020	5.080	2.935	14.734
Sta.50+ 8.30	0.000	0.170	2.625	0.000
Sta.50+10.00	1.700	0.000	0.085	0.145
Sta.51+ 9.80	19.800	0.400	0.200	3.960
Sta.52+ 9.80	20.000	5.110	2.755	55.100
Sta.52+18.50	8.700	1.610	3.360	29.232
Sta.53+ 9.54	10.950	4.010	2.810	30.770
Sta.54+ 9.78	20.330	2.000	3.005	61.092
Sta.55+ 9.80	20.020	2.260	2.130	42.643
Sta.56+ 9.80	20.000	1.770	2.015	40.300
Sta.57+ 9.70	19.900	3.810	2.790	55.521
Sta.58+ 9.80	20.100	1.680	2.745	55.175
Sta.59+ 9.80	20.000	1.000	1.340	26.800
Sta.60+10.00	20.200	17.160	9.080	183.416
Sta.60+13.17	3.170	31.920	24.540	77.792
Sta.61+ 9.61	16.440	16.510	24.215	398.095
Sta.62+ 9.80	20.190	2.780	9.645	194.733
Sta.63+ 9.80	20.000	1.720	2.250	45.000
Sta.64+ 9.80	20.000	2.260	1.990	39.800
Sta.65+ 9.80	20.000	0.780	1.520	30.400
Sta.65+19.63	9.830	1.020	0.900	8.847
Sta.66+ 9.60	9.970	1.120	1.070	10.668
Sta.67+ 9.60	20.000	1.940	1.530	30.600
Sta.68+ 9.53	19.930	1.340	1.640	32.685
Sta.69+ 9.77	20.240	1.450	1.395	28.235
Sta.70+ 9.61	19.840	1.410	1.430	28.371
Sta.71+ 9.80	20.190	2.710	2.060	41.591
Sta.72+ 9.62	19.820	1.870	2.290	45.388
Sta.73+ 9.80	20.180	2.190	2.030	40.965
Sta.73+11.42	21.620	1.460	1.825	39.457
Sta.74+ 9.40	17.980	1.000	1.230	22.115
Sta.75+ 9.40	20.000	1.670	1.335	26.700
Sta.76+ 6.53	17.130	1.940	1.805	30.920
Sta.76+ 9.00	2.470	1.860	1.900	4.693
Sta.77+ 8.79	19.790	3.150	2.505	49.574
Sta.78+ 8.80	20.010	1.920	2.535	50.725
Sta.79+ 8.79	19.990	1.670	1.795	35.882
Sta.80+ 8.90	20.110	2.010	1.840	37.002
Sta.80+17.66	28.760	1.580	1.795	51.624
Sta.81+ 8.80	11.140	2.020	1.800	20.052

# Embankment Volume (3/3)

Sec.No.	Dis. (m)	Area (m2)	Means (m2)	Volume (m3)
Sta.82+ 8.80	20.000	3.360	2.690	53.800
Sta.83+ 8.79	19.990	1.820	2.590	51.774
Sta.84+ 8.80	20.010	1.580	1.700	34.017
Sta.85+ 8.80	20.000	0.780	1.180	23.600
Sta.86+ 8.80	20.000	1.040	0.910	18.200
Sta.87+ 0.68	11.880	13.150	7.095	84.289
Sta.87+ 8.50	7.820	1.960	7.555	59.080
Sta.88+ 8.50	20.000	1.270	1.615	32.300
Sta.89+ 8.40	19.900	0.290	0.780	15.522
Sta.89+13.74	5.340	0.060	0.175	0.935
Sta.90+ 6.68	12.940	1.430	0.745	9.640

Total volume = 7,105.657 (m3)

# INSPECTION ROAD FOR TRANSMISSION PIPE LINE

Description	Calculation	Unit	Quantity
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1. Concrete Works m<sup>3</sup> 449.930

1.1 Submerged Bridge (Refer DWG. No. C-084 to C-085)

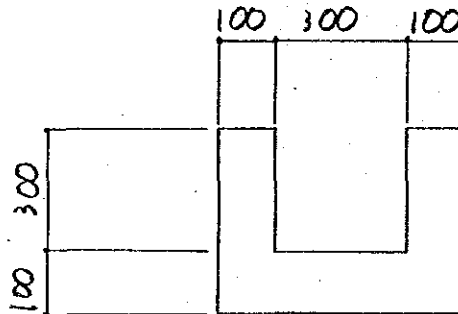
$$v_1 = 4.50 \times 101.07 \times 0.30 = 136.445 \text{ m}^3$$

$$v_2 = 0.50 \times 4.50 \times 1.00 \times 51 = 114.750 \text{ m}^3$$

$$\text{Sub-total volume } v_1 + v_2 = 251.195 \text{ m}^3$$

1.2 Drain ditch

$$v_3 = (0.50 \times 0.40 - 0.3 \times 0.3) \times 1,806.68 = 198.735 \text{ m}^3$$



$$\text{Total volume } v_1 + v_2 + v_3 = 449.930 \text{ m}^3$$

2. Reinforcement Bar ton 14.00

$$\text{ton} = 449.93 \times 0.03 = 13.5$$

3. Base coarse m<sup>3</sup> 1,445.344

$$a = 4.00 \times 0.20 = 0.80 \text{ m}^2$$

$$v = 0.80 \times 1,806.68 = 1,445.344 \text{ m}^3$$

4. Surface coarse m<sup>3</sup> 361.336

(Gravel metalling)

$$a = 4.00 \times 1,806.68 = 7,226.720 \text{ m}^2$$

$$v = 7,226.720 \times 0.05 = 361.336 \text{ m}^3$$

5. Concrete pipe, 1,000φ

m

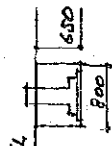
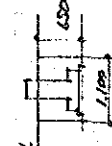
100.00  
90.00

$$L = 4.50 \times 20 = 90$$

5.00

100

Working Division: UTILITY BUILDING - A

Description	Calculation Details	Unit	Quantity	Remarks
B10.1/01				
D-1 Excavation	$F_1 = 133.0 \times 0.8 \times 0.65 = 69.16$			
	$F_2 = 1.1 \times 1.1 \times 0.65 = 0.79$	m <sup>3</sup>	69.95	1) - 1 F1  F2 
D-2				
Backfill	Excavation - disposal	m <sup>3</sup>	47.78	
D-3				
Disposal	Concrete class F			
	Concrete class A			
	(for foundation)			
	$\Delta 133.0 \times 0.19 \times 0.15 = 43.79$			
	$\Delta 0.19 \times 0.19 \times 0.15 = 0.01$	m <sup>3</sup>	22.17	
D-4				
Gravel bedding				
	Ground floor			
	$210.76 \times 0.15 = 31.61$			
	$\Delta 133.0 \times 0.19 \times 0.15 = 43.79$	m <sup>3</sup>	27.82	
2) - 1				
Concrete class F				
	$F_1 = 133.0 \times 0.5 \times 0.05 = 3.33$			
	$F_2 = 0.8 \times 0.8 \times 0.05 = 0.03$			
	from page 9 floor concrete 0.52 m <sup>3</sup>			
	" 12 roof " 12.07 m <sup>3</sup>			
		m <sup>3</sup>	15.95	

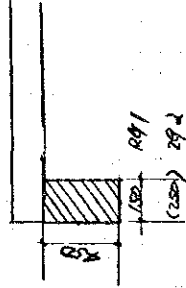
1) - 4 See, DWG. NO. A-002

2) - 1 See, DWG. NO. A-012 & A-014

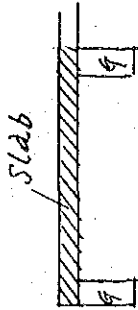


Description	Calculation Details	Unit	Quantity	Remarks
2)-2 Concrete class A				2)-2 Concrete class A
	$F_1 = 0.16.0$			See DWG No.A - 013. & A-014
	② 17.5			
	③ 5.5			
	⑧ $5.0 \times 3 = 15.0$			
	⑨ $6.5 \times 2 = 13.0$			
	⑩ $4.0 \times 4 = 16.0$			
	⑪ $15.0 \times 2 = 30.0$			
	⑫ 10.5			
	⑬ 4.5			
	⑭ $2.5 \times 2 = 5.0$			
	Total 133.0			
	$133.0 \times 0.9 \times 0.18 \times 1 = 9.58$			
	$133.0 \times 0.19 \times 0.57 \times 1 = 12.89$	m <sup>3</sup>	22.47	22.61
⑪	$F_2 = 0.7 \times 0.7 \times 0.25 \times 1 = 0.12$			
	$0.19 \times 0.19 \times 0.5 \times 1 = 0.02$	m <sup>3</sup>	0.14	
	$C_1 = 0.15 \times 0.15 \times 2.5 \times 2 = 0.11$	m <sup>3</sup>	0.11	
	$2\phi 1 = 0.40 \times 6 = 2.40$			
	② $4.5 \times 5 = 22.5$			
	③ $6.0 \times 3 = 18.0$			
	④ $2.5 \times 5 = 12.5$			

Description	Calculation Details	Unit	Quantity	Remarks
Concrete class A				
	$RG_1 = 0.50 \times 4 = 200$			
	② $40 \times 2 = 80$			
	③ $85$			
	④ $10.5 \times 2 = 21.0$			
	⑤ $2.5 \times 2 = 5.0$			
	⑥ $0.6 \times 4 = 2.4$			
	⑦ $1.0 \times 1 = 1.0$			
	total $142.9$ ( $291 + RG_1$ )			
	$142.9 \times 0.15 \times 0.45 \times 1 = 9.65$	m <sup>3</sup>	9.65	
	$292 = 10.5$			
	⑧ $16.0$			
	⑩ $5.0 \times 3 = 15.0$			
	⑪ $6.5 \times 2 = 13.0$			
	⑫ $40$			
	total $58.5$			
	$58.5 \times 0.25 \times 0.45 \times 1 = 6.58$	m <sup>3</sup>	6.58	
	$B_1 = 4.85 \times 0.3 \times 0.45 \times 2 = 1.31$	m <sup>3</sup>	1.31	
	$B_2 = 4.85 \times 0.35 \times 0.45 \times 1 = 0.76$	m <sup>3</sup>	0.76	
	$B_3 = 4.35 \times 0.18 \times 0.45 \times 1 = 0.35$	m <sup>3</sup>	0.35	



Description	Calculation Details	Unit	Quantity	Remarks
Concrete class A				
	$25 = 11.4 \times 6.88 = 78.93$			
	$3.5 \times 6.3 = 22.05$			
	$11.58 \times 5.15 = 59.64$			
	$8.65 \times 1.0 = 8.65$			
	$15 \times 15 = 225$			
	$RS = 9.4 \times 45 = 423$			
	$11.4 \times 5.9 = 67.26$			
	<u>total</u> 280.58			
	$280.58 \times 0.15 \times 1 = 42.09$	m <sup>3</sup>	42.09	
	$W/S = 11.0 \times 2.55 \times 0.15 \times 1 = 4.21$	m <sup>3</sup>	4.21	
Stair				
	$5.0 \times 1.4 \times 0.25 \times 1 = 1.75$			
	$1.4 \times 1.4 \times 0.15 \times 2 = 0.59$	m <sup>3</sup>	2.34	
Parapet 2F				
	$13.35 \times 0.5 \times 0.15 \times 1 = 1.0$			
	$13.35 \times 0.15 \times 0.12 \times 1 = 0.24$			
	$32.0 \times 0.5 \times 0.23 \times 1 = 3.68$			
	$32.0 \times 0.15 \times 0.12 \times 1 = 0.58$			
	$32.0 \times 0.45 \times 0.15 \times 1 = 2.16$			
	$215 \times 0.15 \times 0.12 \times 1 = 0.39$	m <sup>3</sup>	8.05	



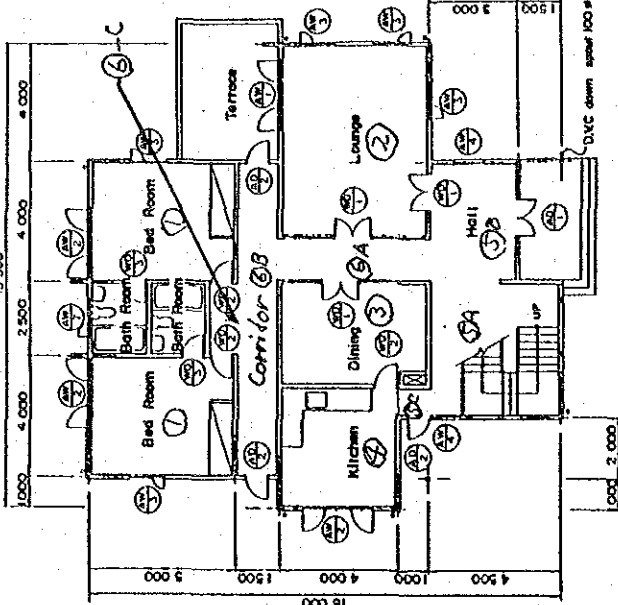
Description	Calculation Details	Unit	Quantity	Remarks
Concrete class A				
Parapet RF				
	$43.5 \times 0.5 \times 0.23 \times 1 = 5.0$			
	$43.5 \times 0.15 \times 0.12 \times 1 = 0.78$			
	$43.5 \times 0.45 \times 0.15 \times 1 = 2.94$	m <sup>3</sup>	8.72	
Ground floor				
	$10.65 \times 6.5 = 69.23$			
	$15.65 \times 5.15 = 80.6$			
	$8.65 \times 4.5 = 38.93$			
	$5.0 \times 3.5 = 17.5$			
	$4.5 \times 1.0 = 4.5$			
	total 210.76			
	$210.76 \times 0.15 \times 1 = 31.61$	m <sup>3</sup>	31.61	
Ground floor				
1) $15.5 \times 0.45 \times 0.15 \times 1 = 1.05$				
2) $5.5 \times 0.45 \times 0.2 \times 1 = 0.5$		m <sup>3</sup>	1.55	
Total of Concrete class A		m <sup>3</sup>	139.94	



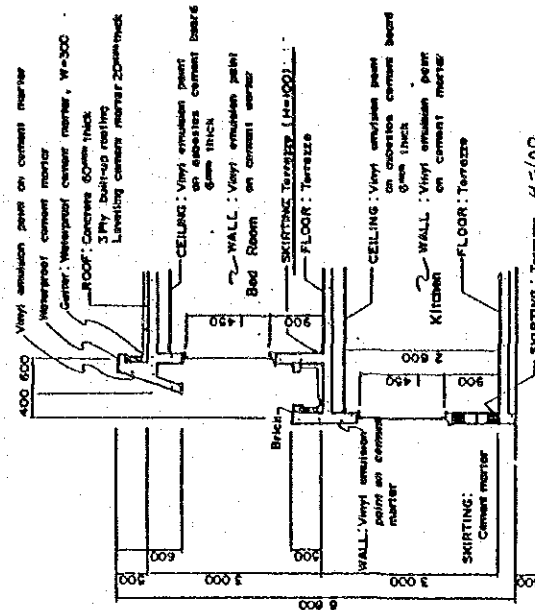
Working Division: UTILITY BUILDING - A6

Description	Calculation Details	Unit	Quantity	Remarks
2)-3 & -4 Form	$F_1 = 133.0 \times 1.5 \times 1 = 199.5$	m <sup>2</sup>	199.5	2)-3 & -4 Form See, DWG. NO A-012 & A-014
	$F_2 = 2.8 \times 0.25 \times 1 = 0.7$			
	$0.76 \times 0.5 \times 1 = 0.38$	m <sup>2</sup>	1.08	
	$C_1 = 0.6 \times 3.55 \times 2 = 3.06$	m <sup>2</sup>	3.06	
	241, R41 $142.9 \times 0.9 \times 1 = 128.61$	m <sup>2</sup>	128.61	
	242 $58.5 \times 0.9 \times 1 = 52.65$	m <sup>2</sup>	52.65	
	B1 $48.5 \times 0.9 \times 2 = 8.73$	m <sup>2</sup>	8.73	
	B2 $48.5 \times 0.9 \times 1 = 4.37$	m <sup>2</sup>	4.37	
	B3 $43.5 \times 0.9 \times 1 = 3.92$	m <sup>2</sup>	3.92	
	25, RS $280.58 \times 1 = 280.58$	m <sup>2</sup>	280.58	
	W15 $= 11.0 \times 5.1 \times 1 = 56.1$	m <sup>2</sup>	56.1	
	Stair $= 2.5 \times 1.7 \times 1 = 4.25$ $2.5 \times 2.0 \times 1 = 5.0$ $1.4 \times 1.7 \times 2 = 4.76$			
		m <sup>2</sup>	19.01	

Description	Calculation Details	Unit	Quantity	Remarks
Form	Parapet 2F			
	$13.35 \times 1.3 \times 1 = 17.36$			
	$32.0 \times 2.25 \times 1 = 72.0$			
	$21.5 \times 0.27 \times 1 = 5.81$	m <sup>2</sup>	95.17	
	Parapet RF			
	$43.5 \times 2.25 \times 1 = 97.88$	m <sup>2</sup>	97.88	
	Ground floor			
	$63.6 \times 0.15 \times 1 = 9.54$	m <sup>2</sup>	9.54	
	Ground floor			
	1) $15.5 \times 1.2 \times 1 = 18.6$			
	2) $5.5 \times 0.6 \times 1 = 3.3$	m <sup>2</sup>	21.9	
	Total of Form	m <sup>2</sup>	977.1	
2)-4	Exposed surface (from page 15) (exposed concrete)	m <sup>2</sup>	75.6	
2)-3	Plastering surface $977.1 - 75.61 = 901.49 \text{ m}^2$	m <sup>2</sup>	901.0	
2)-5 Reinforcing bar				
	$139.94 \times 0.12 = 16.8 \text{ ton}$			
	(715) for concrete block	1.1 ton	17.9	

Description	Calculation Details	Unit	Quantity	Remarks
<i>Interior finish (See DWG. NO. A-002)</i>				
<i>1) Terrace</i>				
① 5)-1 1F Bed room	$3.85 \times 4.85 \times 2 = 37.35$			 <p>GROUND FL. PLAN 1/100 SCALE A</p>
② Lounge	$6.35 \times 4.85 = 30.8$			
③ Dining	$3.35 \times 4.15 = 13.91$			
④ Kitchen	$3.85 \times 3.85 = 14.82$			
⑤-A Hall	$4.35 \times 4.35 = 18.92$			
⑤-B "	$4.0 \times 2.85 = 11.4$			
⑤-C "	$0.85 \times 1.15 = 0.98$			
⑥-A Corridor	$1.35 \times 5.15 = 6.95$			
⑥-B "	$0.35 \times 1.35 = 0.47$			
⑥-C "	$2.35 \times 1.0 = 2.35$			
	<u>153.79</u>			
<i>2F Bed room</i>				
Hall	$3.85 \times 4.85 \times 2 = 37.35$			
	$8.35 \times 1.0 = 8.35$			
	$2.35 \times 1.0 = 2.35$			
	<u><math>16 \times 1.5 = 2.4</math></u>			
	<u>50.45</u>			
<i>Stair</i>				
	$3.0 \times 3.3 = 9.9$			
	$4 \times 1.5 \times 0.4 = 2.4$			
	$1.4 \times 3.0 = 4.2$	m <sup>2</sup>	21.7	
<i>6)-1 2) Mosaic tile</i>				
	$2.35 \times 1.85 \times 4 = 17.39$	m <sup>2</sup>	17.39	

Description	Calculation Details	Unit	Quantity	Remarks
Floor	3) Base cement mortar, 2 ply built-up asphalt roofing			
4)-2	$2.35 \times 18.5 \times 2 = 8.7$	m <sup>2</sup>	8.7	Item 4)-2 $8.7 + 15.82 = 24.52$ m <sup>2</sup>
7)-1				Item 7)-1 $8.7 + 20.11 = 29.81$ m <sup>2</sup> (page 12)
4) Concrete				Item 2)-1 "Concrete class F"
	$2.35 \times 18.5 \times 0.06 \times 2 = 0.52$	m <sup>3</sup>	0.52	
Wall	2 ply built-up asphalt roofing			
4)-2	$8.8 \times 1.0 \times 2 = 16.8$			
	$\Delta 0.7 \times 0.7 \times 2 = 0.98$	m <sup>2</sup>	15.82	
Skirting	Terrazzo H=100			
5)-2	1F Bed room $17.4 \times 2 = 34.8$			
	Lounge 22.4			
	Dining 16.4			
	Kitchen 14.55			
	Hall 26.5			
	Corridor 34.35			
	$\Delta (12.46 + 0.8 \times 6 + 0.7 \times 2 + 2.6 + 0.8 \times 4) = 0.192$			
	129.8			
	2F Bed room $17.4 \times 2 = 34.8$			
	Hall 12.35			
	$\Delta (0.8 \times 4 + 0.7 \times 2) = 4.46$			
	42.55	m <sup>2</sup>	172.35	



SECTION DETAIL 1/50 SCALE



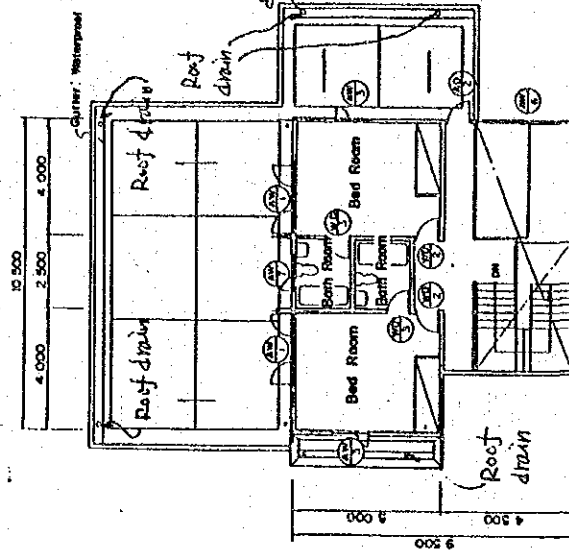
Description	Calculation Details	Unit	Quantity	Remarks
Wall	Cement VEP mortar			
7)-3	IF $1440 \times 2.5 = 37250$			
8)-3	2F $174 \times 2.5 \times 2 = 870$			
	$278 \times 2.5 = 695$			
	$1305 \times 0.5 = 653$			
	534.53			
	AW7			
	AW $= \Delta 5447 - 252 = \Delta 5195$			
	AD1 $= \Delta 26 \times 225 = \Delta 135$			
	AD2 $= \Delta 08 \times 20 \times 4 = \Delta 64$			
	WD1 $= \Delta 1.2 \times 2.0 \times 6 = \Delta 14.4$			
	WD2 $= \Delta 0.8 \times 2.0 \times 10 = \Delta 16.0$			
	WD3 $= \Delta 0.7 \times 2.0 \times 4 = \Delta 5.6$			
	WD1 L $= \Delta 3.5 \times 20 \times 2 = \Delta 140$			
	$\Delta 109.7$			
	IF wall $8.6 \times 0.58 = 4.99$			
	2F wall $6.7 \times 0.58 = 3.89$			
	8.88	m <sup>2</sup>	71	
			483	
Wall	Ceramic tile			
6)-2	$8.4 \times 2.4 \times 4 = 80.64$			
	AW7 $\Delta 252$			
	WD3 $\Delta 0.7 \times 2.1 \times 4 = \Delta 5.88$	m <sup>2</sup>	72	
			24	

Item 8)-3

$$433.71 + 13.26 + 358.37 + 75.61$$

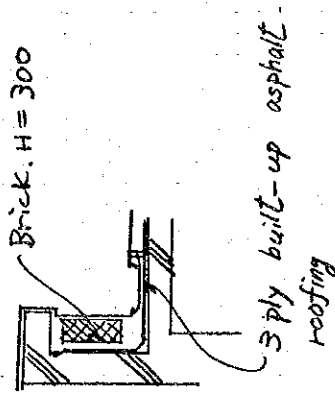
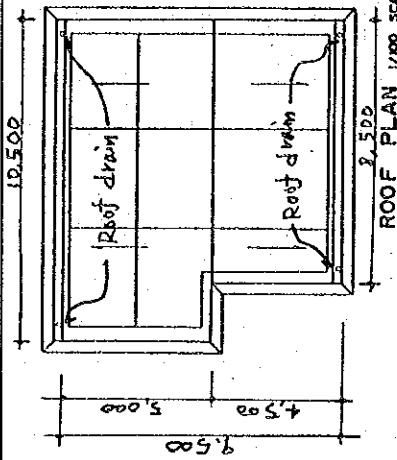
$$(page 11) (page 14)$$

$$= 880.95 \text{ m}^2$$



Description	Calculation Details	Unit	Quantity	Remarks
Ceiling	Asbestos cement board			
8)-4	Floor A 153.79			
8)-10)-1	" B 50.15			
	" C 17.39			
	1F Hall $4.35 \times 4.35 = 18.92$			
	" $4.40 \times 2.85 = 11.4$			
	2F $8.35 \times 4.25 = 36.32$	m <sup>2</sup>	227.63	
7)-5)-2) Vinyl emulsion paint on				
8)-3 cement mortar				
	$1.7 \times 7.8 = 13.26$	m <sup>2</sup>	13.26	
Kitchen sink	L = 4.2 m	10	1	
14)-2				
Steel handrail	SOP 18.5	m	18.5	Item 13)-2
13)-2 oil paint	$18.5 \times 0.3 = 5.55$	m <sup>2</sup>	5.55	Item 8)-1
Venetian blind box				
9)-1	$2.45 \times 3 + 2.45 \times 2 + 1.3 \times 7 = 21.35$	m <sup>2</sup>	21.35	
	oil paint $21.35 \times 0.6 = 12.81$	m <sup>2</sup>	12.81	Item 8)-2
Venetian blind				
14)-4 AW-1	$2.35 \times 2.35 \times 3 = 16.57$			
	-2 " $1.95 \times 2 = 6.82$			
	-3 $1.2 \times " \times 7 = 12.18$			
	35.57			
	$35.57 \times 1.15 = 40.91$	m <sup>2</sup>	40.91	

Description	Calculation Details	Unit	Quantity	Remarks
Exterior Roof	Finish (See DWG. NO. A-002)			
7)-1	Base cement mortar			
	RF $10.7 \times 5.2 = 55.64$			
8 7)-8	$8.7 \times 4.5 = 39.15$			
	<u>94.79</u>			
	2F $11.35 \times 6.85 = 77.75$			
	$3.85 \times 4.35 = 16.75$			
	$0.85 \times 4.85 = 4.12$			
	<u>106.32</u>	m <sup>2</sup>	20/11	to page 9.
	2) Concrete			
	① $20.11 \times 0.06 = 12.07$	m <sup>3</sup>	12/07	to page 1 Item 2)-1 concrete class F"
3)-2	3) Brick t=100			
	RF $40.8 \times 0.3 = 12.24$			
	2F $67.35 \times 0.3 = 20.21$		32/45	
4)-1	4) 3 ply built-up asphalt roofing			
	RF $2 \times 2F$ $108.15 \times 0.35 = 37.85$	m <sup>2</sup>	37/85	
7)-7	5) Waterproof cement mortar			
	RF $2 \times 2F$ $108.15 \times 0.7 = 75.71$			
	2F $0.15 \times 21.85 = 3.28$	m <sup>2</sup>	72/43	



Description	Calculation Details	Unit	Quantity	Remarks
Floor	1) Terraazzo			
5)-1	$4.8 \times 3.5 = 16.8$			
	$0.82 \times 0.15 = 0.12$			
	$4.0 \times 2.6 = 10.4$			
	$0.5 \times 1.1 = 0.55$			
	$0.93 \times 1.43 = 1.33$			
	$9.0 \times 0.4 = 3.6$			
	$8.0 \times " = 3.2$			
	$2.36 \times " = 0.94$	m <sup>2</sup>	36.94	Item 5)-1. $217.74 + 36.94 = 254.68 \text{ m}^2$ (Page 8)
7)-2	2) Cement mortar H=300			
	$15.65 \times 2 = 31.3$			
	$16.15 \times 2 = 32.3$			
	$\Delta (15.36 \times 1) = \Delta 15.36$			
	$10 \times 2 = 20$	m <sup>2</sup>	50.24	
Wall	Vinyl emulsion on cement mortar			
7)-4	$25.65 \times 2.85 = 73.1$			
8)-3	$8.5 \times 2.85 = 24.23$			
	$5.65 \times 3.5 = 19.78$			
	$6.15 \times " = 21.53$			
	$2.0 \times 2.85 = 5.7$			
	$1.0 \times " = 2.85$			
	$4.5 \times 3.0 = 13.5$			
	$4.65 \times " = 13.95$			
	$1.5 \times 2.85 = 5.78$			
	$4.0 \times " = 11.4$			
	$1.0 \times " = 2.85$			

Working Division: UTILITY BUILDING - A14

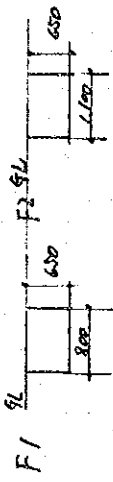
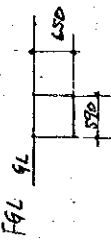
Description	Calculation Details	Unit	Quantity	Remarks
	$2.0 \times 3.0 = 6.0$			
	$0.8 \times " = 2.4$			
	<u>203.07</u>			
	$12.65 \times 2.35 = 29.73$			
	$5.15 \times " = 12.1$			
	$6.15 \times " = 14.45$			
	$2.0 \times 2.85 = 5.7$			
	$4.5 \times " = 12.83$			
	$8.65 \times " = 24.65$			
	$3.5 \times " = 9.98$			
	<u>109.44</u>			
	$35.65 \times 1.35 = 48.13$			
	$2.0 \times 0.75 = 1.5$			
	$5.5 \times " = 4.13$			
	$44.0 \times 1.35 = 59.4$			
	<u>113.16</u>			
	$\Delta 12.83$			
	$\Delta 54.47$	$m^2$	358.97	
Eaves	Vinyl emulsion paint on exposed			
8)-3	concrete			
	IF $29.0 \times 0.8 = 23.2$			
	$38.5 \times 0.85 = 32.7$			
	$48.5 \times 0.95 = 21.8$			

Description	Calculation Details	Unit	Quantity	Remarks
	$0.85 \times 2.85 = 2.42$			
	$3.85 \times 0.85 = 1.73$			
	$1.35 \times 3.85 = 5.2$			
	$5.35 \times 0.85 = 2.91$			
	<u>40.41</u>			
	2F $44.0 \times 0.8 = 35.2$	m <sup>2</sup>	75.61	
Roof drain 13)-1	100 $\phi$	nos	9	
Downspout (4)-1	100 $\phi$			
	RF ~ 2F $30 \times 2 = 60$			
	RF ~ GL $6.3 \times 2 = 12.6$			
	2F ~ GL $3.3 \times 5 = 16.5$	m	35.1	
Handrail		m	29.0	Item 13)-2
13)-2	oil paint $390 \times 0.3 = 11.7$	m <sup>2</sup>	11.7	Item 8)-1
Concrete block				
3)-1	IF 100.3			
	64.2			
	$164.5 \times 2.4 = 394.8$			
	$1.5 \times 4 \times 1.1 = 6.6$			
	$50 \times 1.1 = 55$			
	<u>484.1</u>	m <sup>3</sup>	322.80	
	Reinforcing bar			
	$322.8 \times 3.4 = 1098$	kg	1098	







Description	Calculation Details	Unit	Quantity	Remarks
Excavation	F1 $116.5 \times 0.8 \times 0.65 = 60.58$			
1)-1	F2 $1.1 \times 1.1 \times 0 = 11.8$			
	FG1 $42.2 \times 0.59 \times 0 = 16.18$	m <sup>3</sup>	88.58	
Backfill	Excavation - disposal			
1)-2	$88.58 - 30.76 = 57.8$	m <sup>3</sup>	57.8	
Disposal	Concrete class F			
1)-3	" " A			
	(for foundation)			
	$\Delta 116.5 \times 0.19 \times 0.15 = 3.332$			
	$\Delta 0.19 \times 0.19 \times 0.15 \times 15 = 0.08$			
	$\Delta 63.0 \times 0 \times 0 \times 0 = 0$	m <sup>3</sup>	30.76	
Gravel bedding				
1)-4	Ground floor			
	$372.6 \times 0.15 = 55.89$			
	$\Delta 116.5 \times 0.19 \times 0.15 = 3.332$			
	$\Delta 63.0 \times 0 \times 0 \times 0 = 0$	m <sup>3</sup>	50.77	
Concrete class F				
3)-1	F1 $116.5 \times 0.5 \times 0.05 = 2.91$			
	F2 $0.8 \times 0.8 \times 0 \times 15 = 0.88$			
	FG1 $510 \times 0.29 \times 0 = 0.74$			
	from page 29	m <sup>3</sup>	11.27	

1)-4 See. DWG. NO. A-003

2)-1 See. DWG. NO. A-012 &amp; A-014.

Description	Calculation Details	Unit	Quantity	Remarks
Concrete class A				Concrete class A
① F1	11.0			SEE, DWG. NO. A-012, & A-014
②	$70 \times 4 = 28.0$			
③	$40 \times 2 = 8.0$			
④	$20 \times 3 = 6.0$			
⑤	1.5			
⑥	16.0			
⑦	15.5			
⑧	10			
⑨	$25 \times 2 = 5.0$			
⑩	10.0			
⑪	6.0			
⑫	8.5			
	<u>116.5</u>			
	$116.5 \times 0.4 \times 0.18 \times 1 = 8.39$			
	" $\times 0.19 \times 0.57 \times 1 = 12.62$	m <sup>3</sup>	21.01	
⑬ F2	$0.7 \times 0.7 \times 0.25 \times 1.5 = 1.84$	m <sup>3</sup>	1.84	
F51	$630 \times 0.19 \times 0.75 \times 1 = 8.98$	m <sup>3</sup>	8.98	
C1	$0.15 \times 0.15 \times 2.2 \times 1.5 = 0.74$	m <sup>3</sup>	0.74	
291, R51				
①	19.0			
②	$30 \times 5 = 15.0$			
③	2.5			

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Description	Calculation Details	Unit	Quantity	Remarks
Concrete ④	$3.5 \times 3 = 10.5$			
class A ⑤	15.0			
⑥	10.0			
⑦	15.6			
⑧	2.0			
⑨	8.5			
⑩	$7.0 \times 4 = 28.0$			
⑪	6.0			
⑫	$1.0 \times 2 = 2.0$			
⑬	4.0			
⑭	5.0			
⑮	6.0			
	<u>149.1</u>			
	$149.1 \times 0.15 \times 0.45 \times 1 = 10.06$	m <sup>3</sup>	10.06	
	$16.2 \times 2 = 32.4$			
	$15.0 \times 2 = 30.0$			
	$11.0 \times 3 = 33.0$			
	$12.0 \times 1 = 12.0$			
	<u>107.4</u>			
	$107.4 \times 0.15 \times 0.6 \times 1 = 9.67$	m <sup>3</sup>	9.67	

Description	Calculation Details	Unit	Quantity	Remarks
Concrete				
class A				
	$3.5 \times 19.58 = 61.68$			
	$12.0 \times 3.65 = 43.8$			
	$0.5 \times 25 = 12.5$			
	$2.15 \times 16.2 = 34.83$			
	$5.25 \times 16.2 = 85.05$			
	$2.0 \times 10 = 20$			
	$75 \times 10 = 75$			
	<u>236.11</u>			
	$236.11 \times 0.15 \times 1 = 35.42$	m <sup>3</sup>	35.42	
Parapet	$65.0 \times 0.5 \times 0.15 \times 1 = 4.88$			
	" $\times 0.15 \times 0.12 \times 1 = 1.17$			
	$170 \times " \times " \times 1 = 0.31$	m <sup>3</sup>	6.36	
Ground floor				
	$3.0 \times 15.15 = 45.45$			
	$15.15 \times 3.5 = 53.03$			
	$11.15 \times 15.15 = 168.92$			
	$70 \times 14.15 = 990.5$			
	$6.15 \times 10 = 61.5$			
	<u>372.6</u>			
	$372.6 \times 0.15 \times 1 = 55.89$	m <sup>3</sup>	55.89	
Ground floor				
	$39.3 \times 0.45 \times 0.15 \times 1 = 2.65$	m <sup>3</sup>	2.65	
Total of concrete class A		m <sup>3</sup>	152.62	

Description	Calculation Details	Unit	Quantity	Remarks
Form	F1 $116.5 \times 1.5 \times 1 = 174.75$	m <sup>2</sup>	174.75	2)-4 Exposed surface
	F2 $2.8 \times 0.25 \times 1.5 = 10.5$	m <sup>2</sup>	10.50	page 27 $36.48 \text{ m}^2$
	FG1 $63.0 \times 1.5 \times 1 = 94.5$	m <sup>2</sup>	94.5	27 $7.70$
	C1 $0.6 \times 2.2 \times 1.5 = 19.8$	m <sup>2</sup>	19.80	31 $125.35$
	291, RG1 $149.1 \times 0.9 \times 1 = 134.19$ $107.4 \times 1.2 \times 1 = 128.88$	m <sup>2</sup>	263.07	<u><math>169.53 \text{ m}^2</math></u> 2)-3 plastering surface
	RY25 $236.11 \times 1 = 236.11$	m <sup>2</sup>	236.11	$945.27 - 169.53 = 775.74 \text{ m}^2$
	Parapet $65.0 \times 1.3 \times 1 = 84.5$ $17.0 \times 0.27 \times 1 = 4.59$	m <sup>2</sup>	89.09	Form See DWG. No. A-012 & A-014
	Ground floor $68.6 \times 0.15 \times 1 = 10.29$ $39.3 \times 1.2 \times 1 = 47.16$	m <sup>2</sup>	57.45	
	Total of Form	m <sup>2</sup>	945.27	
Reinforcing bar	$152.62 \times 0.12 = 18.3$ from page 32 $1.965 \text{ kg}$	ton	19.9	



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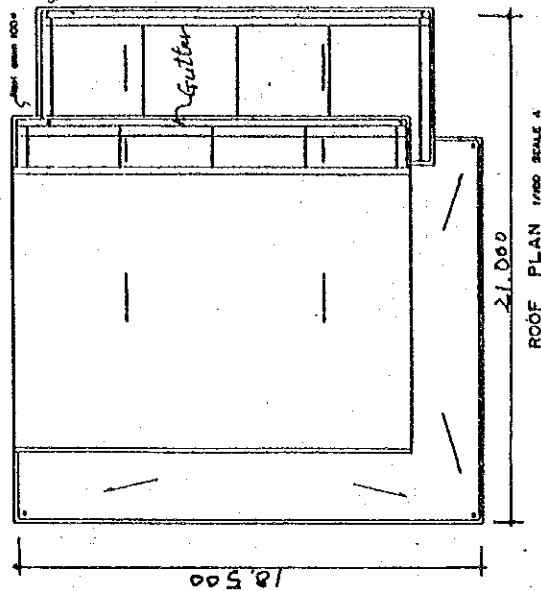


Description	Calculation Details	Unit	Quantity	Remarks
Wall	Bar $74 \times 2.5 = 18.5$			Item 9)-2 $282.46 + 325.84 + 125.35$ (page 31) (page 31) $= 733.25 \text{ m}^2$
8)-5	" $23.4 \times 2.5 = 58.5$			
9)-2	Kitchen $18.4 \times 2.5 = 46.0$			
	AW1 $23.75 \times 2.25 \times 3 = 158.4375$			
	" $23.75 \times 2.3 \times 3 = 162.375$			
	AW2 $17.5 \times 2.25 \times 4 = 157.5$			
	" $17.5 \times 2.3 \times 4 = 161$			
	AW3 $15.44$			
	AW4 $12 \times 14.5 \times 4 = 696$			
	WD1 $12 \times 20 \times 2 = 48$			
	WD2 $0.8 \times 20 \times 2 = 3.2$			$m^2$ 282.46
	AD1 $0.8 \times 20 = 16$			
	open $1.9 \times 20 = 38$			
	" $1.4 \times 20 = 28$			
	" $1.2 \times 20 = 24$			
	<u>282.46</u>			
7)-2 z) Ceramic tile				$m^2$ 115.44
Lavatory				
	$(21.4 + 22.0 + 7.4) \times 50.8 \times 2.4 = 121.92$			
	AD2 $0.7 \times 2.1 = 1.47$			
	AW5 $1.02$			
	AW6 $1.47$			
	open $1.2 \times 2.1 = 2.52$			
	<u>115.44</u>			





Description	Calculation Details	Unit	Quantity	Remarks
Exterior finish (See DWG. NO. A - 003)				
Roof 9)-3) DACB VEP	$11.5 \times 16.2 = 186.3$			Item 11)-2 186.3 m <sup>2</sup>
10)-2	$186.3 \times 1.2 = 223.56$	m <sup>2</sup>	223.56	To page 27
5)-1 2) 3 ply asphalt roofing				
8)-2	$1.9 \times 15.85 = 37.72$			Item 5)-1
8)-10	$5.0 \times 15.85 = 79.25$			$118.97 + 28.42 = 147.39$ m <sup>2</sup>
	$2.0 \times 1.0 = 2.0$			(parapet)
	$\textcircled{A} 118.97$	m <sup>2</sup>	118.97	
2)-1 3) Concrete				
	$\textcircled{A} 118.97 \times 0.06 = 7.14$	m <sup>3</sup>	7.14	Item 2)-1 Concrete "Class F"
Parapet 1) CB 100	$35.5 \times 0.3 = 10.65$			
4)-2	$45.7 \times 0.3 = 13.71$			
	$24.36$	m <sup>2</sup>	24.36	
5)-1 2) 3 ply asphalt roofing				
	$81.2 \times 0.35 = 28.42$	m <sup>2</sup>	28.42	
8)-8 3) Waterproof Cement mortar				
	$35.5 \times 0.7 = 24.85$			
	$28.7 \times 0.7 = 20.09$			
	$17.0 \times 0.55 = 9.35$			
	$40.5 \times 0.35 = 14.18$			
	$68.47$	m <sup>2</sup>	68.47	



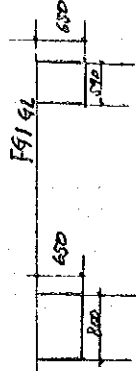


Description	Calculation Details	Unit	Quantity	Remarks
Wall	$4.37 \times 2.8 = 12.436$			
	$3.7 \times 0.65 = 2.41$			
	total $325.44$	m <sup>2</sup>	325.44	
Ceiling	Exposed VEP concrete			
9)-2	$2.85 \times 16.0 = 45.6$			
	$3.35 \times 15.35 = 51.42$			
	$40.5 \times 0.25 = 10.13$			
	$2.7 \times 14.0 = 37.8$			
	$1.0 \times 1.0 = 1.0$			
	$2.0 \times 3.7 = 7.4$	m <sup>2</sup>	125.35	Item 2)-4
Gutter		m	16.2	
Roof drain		m	7	
4)-1				
Downspout	$3.1 \times 3 = 9.3$			
15)-1	$3.8 \times 2 = 7.6$			
	$5.8 \times 2 = 11.6$			
	$4.5 \times 2 = 9.0$	m	37.5	
Cement mortar	$H = 300$	m <sup>2</sup>	43.3	
8)-4				
Concrete block	$t = 150$			
4)-1	$16.5 \times 3.6 = 58.14$			
	$7.5 \times 2.4 = 18.0$			
	$15.0 \times 5.25 = 78.75$			
	$22.0 \times 4.43 = 97.46$			

Description	Calculation Details	Unit	Quantity	Remarks
Concrete block	$6.5 \times 5.1 = 33.15$			
	$5.0 \times 5.2 \times 2 = 52.0$			
	$2.0 \times 5.0 = 10.0$			
	$0.5 \times 5.2 \times 2 = 5.2$			
	$1.2 \times 3.4 = 4.08$			
	$5.0 \times 3.3 \times 5 = 82.5$			
	$7.5 \times 2.9 = 21.75$			
	$4.5 \times 2.9 = 13.05$			
	$10.0 \times 3.3 = 33.0$			
	$2.0 \times 3.1 = 6.2$			
	$4.3.2 \times 2.1 = 46.72$			
	$475.77$			
	Total 430.79	m <sup>3</sup>	430.79	
Reinforcing bar				
	$430.79 \times 3.8 = 1,965$	kg	1,965	Item 21-5
Door & Windows				See DWG, NO. A-003
12)-3 AD-1	$0.8 \times 2.1 \times 2 = 3.36$			
AD-2	$0.7 \times 2.1 \times 1 = 1.47$	m <sup>2</sup>	83	
12)-4 AW-1	$3.75 \times 2.35 \times 3 = 26.44$			
-2	$1.75 \times 2.35 \times 4 = 16.45$			
-3	$3.75 \times 1.75 \times 1 = 5.94$			
-4	$1.2 \times 1.85 \times 3 = 5.22$			
-5	$0.7 \times 1.85 \times 1 = 1.02$			
-6	" $\times 1.05 \times 2 = 1.47$	m <sup>2</sup>	66	





Description	Calculation Details	Unit	Quantity	Remarks
Excavation	F1 $1020 \times 0.8 \times 0.65 = 53.04$			1) - 1 F1 9L 
1) - 1	F91 $32 \times 0.59 \times 0.65 = 1.23$			
"	" $1.7 \times " \times " = 0.65$	m <sup>3</sup>	54.92	
Backfill	Excavation - disposal			
1) - 2	54.92 - 18.85 = 36.07	m <sup>3</sup>	36.07	
Disposal	Level concrete 2.67			
1) - 3	Foundation concrete 19.26			
"	$\approx 108.12 \times 0.19 \times 0.15 = 3.08$	m <sup>3</sup>	18.85	
Gravel bedding				
1) - 4	Floor $1430.5 \times 0.15 = 213.1$			1) - 4 SEE DWG. NO. A-004
"	$30 \times 0.45 \times 0.15 = 0.2$			
"	$\approx 108.12 \times 0.19 \times 0.15 = 3.08$	m <sup>3</sup>	18.43	
Level concrete				
2) - 1	F1 $1020 \times 0.5 \times 0.05 = 2.55$			2) - 1 SEE DWG. NO. A-012 & A-014
"	F91 $6.12 \times 0.39 \times " = 0.12$			
"	from page 40 0.26 m <sup>3</sup>			
"	" 95 8.52 m <sup>3</sup>			
"	$2.55 + 0.12 + 0.26 + 8.52 = 11.45$	m <sup>3</sup>	11.45	

Description	Calculation Details	Unit	Quantity	Remarks
Concrete				
2)-2	$80 \times 4 = 320$			
	$120 \times 2 = 240$			
	$30 \times 3 = 90$			
	(4) $10.5 \times 1 = 10.5$			
	$40 \times 2 = 80$			
	$25 \times 3 = 75$			
	$60 \times 1 = 60$			
	$50 \times 1 = 50$			
	<u>1020</u>			
	$1020 \times 0.9 \times 0.18 \times 1 = 737$			
	" $\times 0.19 \times 0.57 \times 1 = 110.5$	m <sup>3</sup>	18.39	
	F41 $(381 + 231) \times 0.19 \times 0.75 \times 1 = 0.87$	m <sup>3</sup>	0.87	
	G1			
	241 ① 80			
	② $40 \times 9 = 360$			
	③ $25 \times 2 = 50$			
	④ 50			
	⑤ 105			
	⑥ 46			
	⑦ 60			
	⑧ $30 \times 2 = 60$			
	⑨ $0.6 \times 2 = 1.2$			
	R41 ① $120 \times 2 = 240$			
	② $40 \times 4 = 160$			
	③ 80			

2)-2 concrete class A  
see DWG. NO. A-012 & A-014

Working Division: RESIDENCE TYPE-A

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Description	Calculation Details	Unit	Quantity	Remarks
Concrete	G1, R G1			
	⑤			
	6.0			
	2.0			
	<u>138.3</u>			
	$138.3 \times 0.15 \times 0.95 \times 1 = 9.34$	m <sup>3</sup>	9.34	
① G2, R G2	4.0			
②	$12.0 \times 2 = 24.0$			
	<u>28.0</u>			
	$28.0 \times 0.25 \times 0.95 \times 1 = 3.15$	m <sup>3</sup>	3.15	
S1, 2 S1	$12.15 \times 8.15 = 99.02$			
	$8.15 \times 2.5 = 20.38$			
	$3.0 \times 6.15 = 18.45$			
	$8.15 \times 0.53 = 4.32$			
	$5.65 \times 0.53 = 2.99$			
R S1	$9.3 \times 5.2 = 48.36$			
	$5.3 \times 7.2 = 38.16$			
	$4.12 \times 3.2 = 13.184$			
	<u>227.84</u>			
	$227.84 \times 0.15 \times 1 = 34.18$	m <sup>3</sup>	34.18	
W15	$70 \times 2.4 \times 0.15 \times 1 = 2.52$			
	$1.2 \times 30 \times 4 \times 1 = 0.54$	m <sup>3</sup>	0.54	
Handrail				
	$3.7 \times 1.1 \times 0.15 \times 1 = 0.61$	m <sup>3</sup>	0.61	

Description	Calculation Details	Unit	Quantity	Remarks
Concrete Stair	$1.5 \times 1.1 \times 0.23 \times 2 = 0.76$	m <sup>3</sup>	0.76	
Parapet 2F	$14.0 \times 0.9 \times 0.25 = 3.15$			
	$15.0 \times 0.5 \times 0.15 = 1.13$			
	$12.0 \times 0.3 \times \text{"} = 0.54$			
	$29.0 \times 0.15 \times 0.12 = 0.52$			
RF	$48.0 \times 0.5 \times 0.15 = 3.6$			
	$\text{"} \times 0.15 \times 0.12 = 0.86$	m <sup>3</sup>	9.80	
Bow window	$0.53 \times 5.5 \times 0.15 \times 1 = 0.84$			
	$0.68 \times 2.0 \times \text{"} \times 1 = 0.81$	m <sup>3</sup>	0.85	
Floor	$12.15 \times 8.15 = 99.02$			
	$8.15 \times 2.5 = 20.38$			
	$3.0 \times 8.15 = 24.45$			
	$4.30 \times 0.6 = 2.58$			
	$142.05 \times 0.15 \times 1 = 21.31$	m <sup>3</sup>	21.31	
Floor	$6.0 \times 0.3 \times 0.15 \times 1 = 0.27$			
	$3.0 \times 0.45 \times 0.2 \times 1 = 0.27$	m <sup>3</sup>	0.54	
Wall	$43.2 \times 0.45 \times 0.15 = 2.92$			
	$0.15 \times 1.2 \times 0.15 = 0.39$	m <sup>3</sup>	3.31	

Description	Calculation Details	Unit	Quantity	Remarks
Concrete				
	Total of concrete	m <sup>3</sup>	106.17	2)-3 & -4
				Form SEE DWG. NO, A-012 & A-014
Form	F1 1020 x 1.5 x 1 = 153.0	m <sup>2</sup>	153.00	
2)-3 & -4				
	FG1 6.12 x 1.81 x 1 = 11.08	m <sup>2</sup>	11.08	2)-4 Exposed surface
				from page 43 155.17 m <sup>2</sup>
	G1 138.3 x 0.9 x 1 = 124.47	m <sup>2</sup>	124.47	" 48 21.99
				227.16 m <sup>2</sup>
	G2 280 x 0.9 x 1 = 25.2	m <sup>2</sup>	25.20	2)-3 Plastering surface
				787.93 - 227.16 = 560.77 m <sup>2</sup>
	S1 227.84 x 1.0 = 227.84			
	97.9 x 0.15 = 14.69	m <sup>2</sup>	242.53	
	W15 70 x 4.8 x 1 = 33.6			
	1.2 x 4.0 x 1 = 7.2	m <sup>2</sup>	40.80	
	Handrail 3.7 x 2.2 x 1 = 8.14	m <sup>2</sup>	8.14	
	Stair 1.5 x 1.1 x 2 = 3.3	m <sup>2</sup>	3.30	
	Parapet, 2F 140 x 1.95 x 1 = 27.3			
	150 x 1.15 x 1 = 17.25			
	120 x 0.6 x 1 = 7.2			
	RF 480 x 1.15 x 1 = 55.2	m <sup>2</sup>	106.95	

Description	Calculation Details	Unit	Quantity	Remarks
<u>Form</u>				
	<u>Bow window</u>			
	$106 \times 5.5 \times 1 = 583$			
	$135 \times 2.0 \times 2 = 54$	m <sup>2</sup>	11.23	
	<u>Floor</u>			
	$51.6 \times 0.15 \times 1 = 7.74$			
	$8.5 \times 0.9 \times 1 = 7.65$			
	$3.0 \times 0.6 \times 1 = 1.8$	m <sup>2</sup>	17.19	
	<u>Wall</u>			
	$43.2 \times 0.9 \times 1 = 38.88$			
	$2.15 \times 2.4 \times 1 = 5.16$	m <sup>2</sup>	44.04	
	<u>Total of Form</u>	m <sup>2</sup>	787.93	
<u>Reinforcing bar</u>				
2)-5	$106.17 \times 0.12 = 12.8$			
	from page 49	ton	13.7	
<u>Interior Finish</u>				
<u>Floor</u>				
①	52-1 IF Living $485 \times 3.85 = 1867$			
	" $0.15 \times 4.3 = 0.65$			
②	Dining $3.85 \times 3.85 = 14.82$			
	" $0.15 \times 1.8 = 0.27$			
③	Hall $2.85 \times 2.0 = 5.7$			
	" $5.35 \times 1.35 = 7.22$			
	" $3.85 \times 2.5 = 9.63$			
④	Bed room $3.85 \times 3.85 = 14.82$			

(See DWG. NO. A-004.)  
 Item 5)-1  
 $147.91 + 6.84 = 154.75 \text{ m}^2$

GROUND FL PLAN 1/100 SCALE A

Item 4)-2  
 $435 + 791 = 1226^{m-2}$   
 (page 41)  
 to page 45  
 to page 38





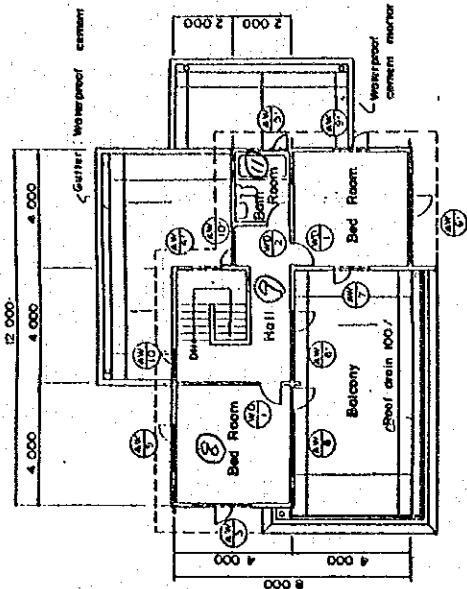
Description	Calculation Details	Unit	Quantity	Remarks
Wall	1) Ceramic tile			
6)-2	1F Bath room $8.4 \times 2.75 = 23.1 \text{ m}^2$			
	Toilet $6.4 \times 1 = 6.4$			
	2F Bath room $8.4 \times 2.35 = 19.74$			
	WD2 $10.5 \times 2.1 \times 3 = 66.15$			
	AW4 $10.7 \times 0.85 = 9.195$			
	AW5 $11.1 \times 1 = 11.1$			
	AW5' $11.1 \times 0.95 = 10.545$			
	53.67	m <sup>2</sup>	53.67	
7)-3 2) Cement mortar VEP				
8)-3 1F	$92.1 \times 2.75 = 255.275 \text{ m}^2$			
	$13.35 \times 1.1 = 14.69$			
2F Bed room	$15.2 \times 3.05 = 46.37$			
	$15.4 \times 2.45 = 37.73$			
Hall	$3.85 \times 3.35 = 12.9$			
	$8.0 \times 3.65 = 29.2$			
	$0.5 \times 2.75 = 1.38$			
	$1.85 \times 2.6 = 4.81$			
	$1.35 \times 2.7 \times 2 = 7.29$			
	$2.35 \times 4.05 = 9.52$			
	$4.0 \times 1.0 = 4.0$			
	$4.0 \times 1.25 = 5.0$			
	$1.2 \times 3.1 \times 2 = 7.44$			
Wall	$1.35 \times 2.0 = 2.7$			
AD1	$2.75 \times 2.25 = 6.19$			
AD2	$2.97 \times 2.25 = 6.68$			

Item 8)-3

$$363.07 + 155.17 + 71.99 + 339.91$$

$$(742) (742) (742) (742)$$

$$= 929.64 \text{ m}^2$$



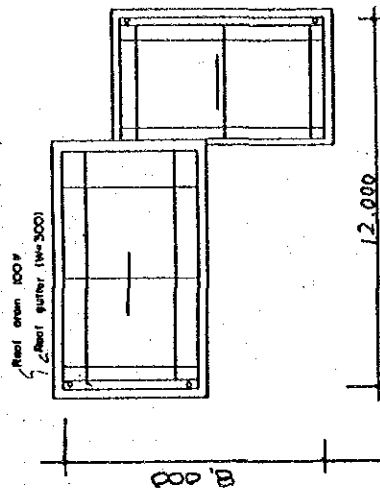
1st Floor Plan

Description	Calculation Details	Unit	Quantity	Remarks
Wall				
	AW1			557.23
	AW6 $2.7 \times 0.1 = 0.27$			
	AW4 $0.7 \times 0.85 = 0.6$			
	AW5 $1.1 \times 0.85 = 0.94$			
	AW5' $1.1 \times 0.45 = 0.5$			
	WD1 $40.85 \times 2.0 \times 1/2 = 40.85$			
	WD2 $40.85 \times 2.0 \times 3 = 245$			
		m <sup>2</sup>	363.07	
Ceiling	Exposed concrete			
2)-4 IF Floor @		m <sup>2</sup>		
8)-3	$42.4 \times 2.4 = 101.76$			
	Bath room $2.35 \times 1.85 = 4.35$			
	Toilet $1.85 \times 1.35 = 2.5$			
	2F Bed room $3.9 \times 3.85 \times 2 = 30.03$			
	Bath room $3.75 \times 1.85 = 6.94$			
	Hall $3.9 \times 3.85 = 15.02$			
	$3.0 \times 2.4 = 7.2$			
		m <sup>2</sup>	155.17	
Coping				
5)-6	Terrazzo W=150 mm	m	6.50	
13)-2 Sink		set	1	
Blind box	AW1 5.9 m			
9)-1	AW2 2.4			
	AW3 $1.2 \times 4 = 4.8$			
	AW6 2.4			

To page 38



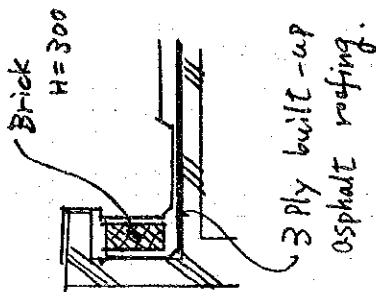
Description	Calculation Details	Unit	Quantity	Remarks
Exterior Finish				(See DWG. No. A-004)
Roof	Base Cement mortar 3 ply asphalt			
4)-1 roofing				
7)-1 RF	$8.68 \times 4.9 = 42.53$			Item 4)-1 $142.04 + 36.2 = 178.24 \text{ m}^2$
7)-8	$4.45 \times 7.2 = 32.04$			Item 7)-1 $142.04 + 4.35 = 146.39 \text{ m}^2$
	2F $8.68 \times 4.68 = 40.62$			Item 7)-8 $142.04 + 23.53 = 165.57 \text{ m}^2$
	$0.75 \times 0.93 = 0.7$			
	$7.85 \times 4.35 = 34.15$			
	$4.40 \times 2.0 = 8.80$			
	⑤ 142.04	m <sup>2</sup>	142.04	
2)-1 Concrete trawel finish				
	④ $142.04 \times 0.06 = 8.52$	m <sup>3</sup>	8.52	to page 34
Parapet	1) Concrete block $t=100$			
3)-2 RF	$27.16$			
	$23.3$	m <sup>2</sup>	31.4	
2F	$28.58$			
	$24.4$			
4)-1 2) 3 ply asphalt roofing waterproof				
RF & 2F	$103.44 \times 0.35 = 36.2$	m <sup>2</sup>	36.2	



ROOF PLAN 1/100 SCALE A

Description	Calculation Details	Unit	Quantity	Remarks
71-6	Waterproof cement mortar plaster			
	RF & 2F $103.44 \times 0.7 = 72.41$			
	RF $40.15 \times 3.0 = 120.45$			
	2F $40.15 \times 13.54 = 542.03$			
	Eaves $12.0 \times 0.45 = 5.4$			
	" $6.0 \times 0.3 = 1.8$			
	<u>77.13</u>	m <sup>2</sup>	77.13	
71-7	Waterproof cement mortar plaster for floor			
	Eaves $2.85 \times 5.85 = 16.67$	m <sup>2</sup>	16.67	
Floor	Concrete trowel finish			
71-8	Garage $28.5 \times 6.15 = 175.3$			
	" $3.0 \times 2.0 = 6.0$	m <sup>2</sup>	23.53	
71-2	Cement mortar plaster to exterior skirting H=300			
	$(15.15 + 10.65) \times 2 = 51.6$			
	<u>42.85</u>	m	42.85	
71-4	Cement mortar plaster to wall			
81-3	IF Garage $6.45 \times 3.0 = 19.35$ m <sup>2</sup>			
	" $6.15 \times 2.55 = 15.68$			
	Parapet $2.85 \times 1.0 \times 2 = 5.7$			
	Right $10.65 \times 3.0 = 31.95$			
	" $4.5 \times 0.5 = 2.25$			
	" <u>44.00</u> $44.00 \times 0.45 = 19.8$			

to page 45





Description	Calculation Details	Unit	Quantity	Remarks
Eaves Exposed concrete VEP				
2)-4 2F	$1.1 \times 14.0 = 15.4$			
8)-3	$2.85 \times 2.0 = 5.7$			
	$" \times 6.75 = 19.24$			
RF	$1.1 \times 9.5 = 10.45$			
	$0.8 \times 26.5 = 21.2$			
	$71.99 \text{ m}^2$	$\text{m}^2$	71.99	to page 38
Floor				
5)-1	Terrazzo $2.85 \times 2.0 = 5.7 \text{ m}^2$			
	" $\times 0.4 = 1.14$	$\text{m}^2$	6.84	to page 39
12)-1	Roof drain $\phi 100$ 11 nos.	nos	11	
13)-1	Downspout $\phi 100$			
	$(6.3 + 5.7) \times 2 = 24.0 \text{ m}$			
	$3.0 \times 17 = 51.0$	$\text{m}$	45.00	
12)-3	Stainless steel door mat	no	1	
12)-2	Steel pipe handrail 13.0 m	m	13.00	
3)-1	Concrete block wall $t=150$			
	1F $81.2 \times 2.4 = 194.88 \text{ m}^2$			
	2F $4.0 \times 2.4 = 9.6$			
	$4.0 \times 3.0 = 12.0$			
	$2.5 \times 3.6 = 9.0$			
	$8.0 \times 3.0 \times 2 = 48.0$			

Description	Calculation Details	Unit	Quantity	Remarks
3)-1	$5.0 \times 2.4 = 12.0$			
	$4.0 \times 2.1 \times 3 = 25.2$			
	$2.0 \times 2.2 = 4.4$			
	$6.0 \times 1.8 = 10.8$			
	open $480.78$			
	$8.2 \times 1.1 = 9.02$			
	$254/2 \text{ m}^2$	$\text{m}^2$	254	
2)-5	Reinforcing bar			
	$254/2 \times 3.4 = 864.79$	kg	864	
10) Doors and Windows				
10)-1 Wooden door leaves				
	WD-1 $0.85 \times 2.1 \times 6 = 10.71 \text{ m}^2$			
	WD-2 $0.75 \times 2.1 \times 3 = 4.73$	$\text{m}^2$	15	
10)-2 Aluminium doors				
	AD-1 $2.75 \times 2.35 = 6.46 \text{ m}^2$			
	AD-2 $0.7 \times 2.35 = 1.65$	$\text{m}^2$	8	
10)-3 Aluminium windows				
	AW-1 $5.8 \times 1.55 = 8.99 \text{ m}^2$			
	-2 $2.3 \times 4 = 3.57$			
	-3 $1.1 \times 4 \times 4 = 6.82$			
	-3' $1.1 \times 1.15 \times 2 = 2.53$			
	-4 $0.7 \times 0.85 = 0.6$			
	-4' $0.9 \times 1.55 = 1.4$			
	-5 $1.1 \times 0.85 = 0.94$			

to page 39

(See DWG. NO. A-004)



Description	Calculation Details	Unit	Quantity	Remarks
10)-3	AW-5' $1.1 \times 0.45 = 0.5$			
	-6 $2.3 \times 2.35 = 5.41$			
	-6' $2.3 \times 1.35 = 3.11$			
	-7 $1.1 \times 2.35 = 2.59$			
	-8 $2.3 \times 2.75 = 6.33$			
	-8' $2.3 \times 3.13 = 7.2$			
	-9 $1.1 \times 1.88 = 2.07$			
	-9' $1.1 \times 0.9 = 0.99$			
	-10 $1.1 \times 2.3 = 2.53$			
	-10' $1.1 \times 1.5 = 1.65$			
	<u>57.23</u>	m <sup>2</sup>	57.23	
8)-2	Wooden surface oil paint			
	WD-1 $0.85 \times 2.1 \times 2.5 \times 6 = 26.78$ m <sup>2</sup>			
	WD-2 $0.85 \times 2.1 \times 2.5 \times 3 = 13.39$ m <sup>2</sup>	m <sup>2</sup>	40.17	
11)-1	Plate glass 5mm			
	AW-1 $5.8 \times 1.55 = 8.99$ m <sup>2</sup>			
	-2 $2.3 \times " = 3.57$			
	-3 $1.1 \times " \times 4 = 6.82$			
	-3' $1.1 \times 1.15 \times 2 = 2.53$			
	-4' $0.9 \times 1.55 = 1.4$			
	-6 $2.3 \times 2.35 = 5.41$			
	-6' $2.3 \times 1.35 = 3.11$			
	-7 $1.1 \times 2.35 = 2.59$			
	-8 $2.3 \times 2.75 = 6.33$			
	-8' $2.3 \times 3.13 = 7.2$			
	-9 $1.1 \times 1.88 = 2.07$			

Item 8)-2  
 $15.06 + 40.17 = 55.23$  m<sup>2</sup>  
 (page 44)



Description	Calculation Details	Unit	Quantity	Remarks
B10.4/01	Building works			
1)-1	Excavation			
	F1 $9.5 \times 0.8 \times 0.65 = 5.174 \text{ m}^3$			
	FG1 $12 \times 0.59 \times 0.65 \times 3 = 1.38$	$\text{m}^3$	53.12	1)-1 F1 9L FG1 9L
1)-2	Backfill			
	Excavation - disposal			
	$53.12 - 18.57 = 34.59 \text{ m}^3$	$\text{m}^3$	34.59	
1)-3	Disposal			
	Level conc. $2.63 \text{ m}^2$			
	Found. conc. $18.93$			
	$\Delta 10.6 \times 0.19 \times 0.15 = \Delta 2.9$			
	$\Delta 181 \times 0.19 \times 0.15 \times 3 = \Delta 0.15$			
	$18.57$	$\text{m}^3$	18.57	
1)-4	Gravel bedding			
	Floor $147.3 \times 0.15 = 22.1 \text{ m}^3$			
	$\Delta 10.6 \times 0.19 \times 0.15 = \Delta 2.9$			
	$\Delta 181 \times " \times " \times 3 = \Delta 0.15$			
	$19.05$	$\text{m}^3$	19.05	
2)-1	Leveling concrete (class F)			
	F1 $10.6 \times 0.5 \times 0.05 = 2.54 \text{ m}^3$			
	FG1 $1.5 \times 0.39 \times " \times 3 = 0.09$			
	$2.63$			
	$2.63 + 7.2 = 9.83 \text{ m}^3$	$\text{m}^3$	9.83	
	(P.60)			

1)-4 see, DWG NO. A-005.

2)-1 see, DWG NO. A-012 &amp; A-014.

Working Division: RESIDENCE TYPE-B53

Description	Calculation Details	Unit	Quantity	Remarks
2)-2	Concrete class A			2)-2 concrete class A
①	F1 $4.4 \times 4 = 17.6$			
②	$8.4 \times 2 = 16.8$			
③	$3.4 \times 2 = 6.8$			
④	6.4			
⑤	$5.4 \times 2 = 10.8$			
⑥	8.8			
⑦	8.2			
⑧	4.4			
⑨	7.4			
⑩	$3.6 \times 2 = 7.2$			
⑪	5.1			
	99.5			
	$99.5 \times 0.4 \times 0.18 \times 1 = 7.16 \text{ m}^3$			
F61	$4.19 \times 4 = 16.76$			
	$8.19 \times 2 = 16.38$			
	$3.19 \times 2 = 6.38$			
	$6.19 \times 1 = 6.19$			
	$5.19 \times 2 = 10.38$			
	9.43			
	2.67			
	5.24			
	8.24			
	$3.81 \times 2 = 7.62$			
	5.31			
	10.6			
	$10.6 \times 0.19 \times 0.57 \times 1 = 11.0 \text{ m}^3$			

111-88

Working Division: RESIDENCE TYPE-B

55

Description	Calculation Details	Unit	Quantity	Remarks
2)-2	Concrete class A			
	Floor $4.5 \times 10.15 = 45.675$			
	$5.0 \times 8.15 = 40.75$			
	$3.0 \times 6.65 = 19.95$			
	$3.0 \times 8.15 = 24.45$			
	$5.15 \times 2.2 = 11.33$			
	$3.0 \times 2.9 = 8.7$			
	<u>149.3</u>			
	$149.3 \times 0.15 = 22.395$	m <sup>3</sup>		
	Floor $10.0 \times 0.45 \times 0.15 = 0.675$			
	$8.5 \times 0.3 \times 0.15 = 0.3825$			
	$3.0 \times 0.45 \times 0.2 = 0.27$			
	<u>133 m<sup>3</sup></u>			
	Total of Concrete class A	m <sup>3</sup>	84.06	
2)-3 & -4	Form			
	F1 $99.5 \times 0.36 = 35.82$ m <sup>2</sup>			
	F41 $101.6 \times 1.14 = 115.82$			
	" $1.81 \times 2.04 \times 3 = 11.08$			
	G1 $102.0 \times 0.9 = 91.8$			
	N1 $147.96 \times 1.0 = 147.96$			
	" $79.95 \times 0.15 = 11.99$			
	Parapet $11.5 \times 0.6 = 6.9$			
	" $37.6 \times 1.2 = 45.12$			
	$49.3 \times 1.15 = 56.695$			
	$18.0 \times 0.4 = 7.2$			

2)-3 &amp; -4

Form See, DWG. No. A-102 &amp; A-104.