

2.3 Gallery

GALLERY - CONCRETE AND EXCAVATION

Block No.	Concrete			Excavation		
	Distance (m)	Area (m ²)	Volume (m ³)	Distance (m)	Area (m ²)	Volume (m ³)
Left Entrance			12.158			0.000
1	9.000	16.495	148.455	9.000	21.156	190.404
2	9.000	16.495	148.455	9.000	21.156	190.404
3	9.000	16.495	148.455	9.000	21.156	190.404
4	9.000	16.495	148.455	9.000	21.156	190.404
5	6.034		100.182	6.034	21.156	127.655
6	6.000	16.495	98.970	6.000	21.156	126.936
7	6.000	16.495	98.970	6.000	21.156	126.936
8	6.000	16.495	98.970	6.000	21.156	126.936
9	5.905		96.240	5.905	21.156	124.926
10	5.000	16.495	82.475	5.000	21.156	105.780
11	6.000	16.495	98.970	6.000	21.156	126.936
12	6.000	16.495	98.970	6.000	21.156	126.936
13	6.000		112.752	6.000	21.156	126.936
14	6.305		109.274	6.305	21.156	133.389
15	6.000	16.495	98.970	6.000	21.156	126.936
16	6.000	16.495	98.970	6.000	21.156	126.936
17	6.000	16.495	98.970	6.000	21.156	126.936
18	6.000	16.495	98.970	6.000	21.156	126.936
19	6.000	16.495	98.970	6.000	21.156	126.936
20	6.000	16.495	98.970	6.000	21.156	126.936
21	5.583		90.723	5.583	21.156	118.114
22	6.000	16.495	98.970	6.000	21.156	126.936
23	6.000		120.459	6.000	21.156	126.936
24	5.583		90.723	5.583	21.156	118.114
25	6.000	16.495	98.970	6.000	21.156	126.936
26	6.000	16.495	98.970	6.000	21.156	126.936
27	6.000	16.495	98.970	6.000	21.156	126.936
28	6.000	16.495	98.970	6.000	21.156	126.936
29	6.000	16.495	98.970	6.000	21.156	126.936
30	6.000	16.495	98.970	6.000	21.156	126.936
31	6.305		109.274	6.305	21.156	133.389
32	6.000		112.752	6.000	21.156	126.936
33	6.000	16.495	98.970	6.000	21.156	126.936
34	6.000	16.495	98.970	6.000	21.156	126.936
35	6.000	16.495	98.970	6.000	21.156	126.936
36	6.000	16.495	98.970	6.000	21.156	126.936
37	6.492		107.465	6.492	21.156	137.345
38	6.000	16.495	98.970	6.000	21.156	126.936
39	6.000	16.495	98.970	6.000	21.156	126.936
40	6.000	16.495	98.970	6.000	21.156	126.936
41	6.000	16.495	98.970	6.000	21.156	126.936
42	6.000	16.495	98.970	6.000	21.156	126.936
43	5.000	16.495	82.475	5.000	21.156	105.780
44	5.000	16.495	82.475	5.000	21.156	105.780
45			156.611			200.865
46			87.131			111.752
47	5.500	14.646	80.553	5.500	19.307	106.189
48	5.500	14.646	80.553	5.500	19.307	106.189
49	5.500	14.646	80.553	5.500	19.307	106.189
50	5.928		96.314	5.928	19.307	114.452
51	5.500	14.646	80.553	5.500	19.307	106.189
52	6.784		94.826		19.307	0.000
Total			5,332.531			6,631.789
		x 1.05 =	5,600		x 1.05 =	7,000

TYPE OF WORK : Production and Construction of concrete (Type B)
 LOCATION : Gallery

CALCULATION	RESULT
(B5)	
$A_1 = \frac{1}{2} \times (6.640 + 3.200) \times 4.300 - \left\{ \frac{1}{4} \times 2.00^2 \times \frac{1}{2} + (1.50 \times 2.00) + (0.30 \times 0.30) \right\}$	$= 16.495 \text{ m}^2$
$V = A_1 \times (6.895 + 5.252) \times \frac{1}{2}$	$= 100.182 \text{ m}^3$
(B9)	
$A_1 = 16.495 \text{ m}^2$ (refer to "B5")	
$V = A_1 \times (6.754 + 4.915) \times \frac{1}{2}$	$= 96.240 \text{ m}^3$
(B13)	
$A_1 = 16.495 \text{ m}^2$ (refer to "B5")	
$A_2 = \frac{1}{2} \times (7.350 + 3.200) \times 5.188 - \left\{ \frac{1}{4} \times 2.00^2 \times \frac{1}{2} + (1.50 \times 2.00) + (0.30 \times 0.30) \right\}$	$= 22.706 \text{ m}^2$
$V_1 = A_1 \times 1.562$	$= 25.765 \text{ m}^3$
$V_2 = \frac{1}{2} \times (A_1 + A_2) \times 4.438$	$= 86.987 \text{ m}^3$
$\Sigma V = V_1 + V_2$	$= 112.752 \text{ m}^3$
(B14)	
$A_1 = 16.495 \text{ m}^2$ (refer to "B5")	
$V_1 = A_1 \times (3.076 + 1.347) \times \frac{1}{2}$	$= 36.479 \text{ m}^3$
$A_2 = 22.706 \text{ m}^2$ (refer to "B13")	
$V_2 = (A_1 + A_2) \times \frac{1}{2} \times 2.00$	$= 39.201 \text{ m}^3$
$V_3 = A_2 \times \frac{1}{2} \times 2.959$	$= 33.594 \text{ m}^3$
$\Sigma V = V_1 + V_2 + V_3$	$= 109.274 \text{ m}^3$
(B21)	
$A_1 = 16.495 \text{ m}^2$ (refer to "B5")	
$V = A_1 \times (3.719 + 7.281) \times \frac{1}{2}$	$= 90.723 \text{ m}^3$
(B37)	
$A_1 = 16.495 \text{ m}^2$ (refer to "B5")	
$V = A_1 \times (6.993 + 6.037) \times \frac{1}{2}$	$= 107.465 \text{ m}^3$

TYPE OF WORK : Production and Construction of concrete (Type B)
 LOCATION : Gallery

CALCULATION	RESULT
(B.23)	
$A_1 = 6.00 \times 6.64 + 5.78 \times 0.18 = 40.880 \text{ m}^2$	
$A_2 = 6.00 \times 4.92 + 5.78 \times 0.18 = 30.560 \text{ m}^2$	
$V_1 = \frac{1}{2} \times (A_1 + A_2) \times 4.30 = 153.596 \text{ m}^3$	
$V_2 = \frac{1}{2} \times (1.840 + 2.200) \times 0.60 \times 6.00 = 7.272 \text{ m}^3$	
$V_3 = - \left(\frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00 \right) \times 6.00 = -27.425 \text{ m}^3$	
$V_4 = - 0.30 \times 0.30 \times 6.00 = -0.540 \text{ m}^3$	
$V_5 = - \left(\frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00 \right) \times 2.50 = -11.427 \text{ m}^3$	
$V_6 = - 0.30 \times 0.30 \times 2.50 = -0.225 \text{ m}^3$	
$V_7 = - 0.30 \times 0.30 \times 2.00 = -0.180 \text{ m}^3$	
$V_8 = - 0.60 \times 0.60 \times 1.70 = -0.612 \text{ m}^3$	
$\Sigma V = V_1 + V_2 + V_3 + V_4 + V_5 + V_6 + V_7 + V_8 = 120.459 \text{ m}^3$	120.459 m ³
(B.45)	
$A_1 = \frac{1}{2} \times (6.640 + 3.200) \times 4.300 - \left\{ \left(\frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00 \right) + (0.30 \times 0.30) \right\} = 16.495 \text{ m}^2$	16.495 m ²
$V_1 = A_1 \times (2.212 + 0.992) \times \frac{1}{2} = 26.425 \text{ m}^3$	26.425 m ³
$V_2 = A_1 \times (4.824 + 3.604) \times \frac{1}{2} + (0.30 \times 0.30 \times 1.70) = 69.663 \text{ m}^3$	69.663 m ³
$A_2 = \frac{1}{2} \times (6.640 + 3.200) \times 4.200 = 21.156 \text{ m}^2$	21.156 m ²
$V_3 = A_2 \times (2.320 + 0.60) \times \frac{1}{2} = 30.888 \text{ m}^3$	30.888 m ³
$A_3 = \frac{1}{2} \times (6.640 + 3.200) \times 4.300 - \left\{ (2.50 \times 2.00 - \frac{1}{2} \times 0.20^2 \times 2) + (0.30 \times 0.30) \right\} = 16.106 \text{ m}^2$	16.106 m ²
$V_4 = A_3 \times (0.68 + 3.00) \times \frac{1}{2} = 29.635 \text{ m}^3$	29.635 m ³
$\Sigma V = V_1 + V_2 + V_3 + V_4 = 156.611 \text{ m}^3$	156.611 m ³

TYPE OF WORK : Production and Construction of concrete (Type B)
 LOCATION : Gallery

CALCULATION	RESULT
(B46)	
$A_1 = \frac{1}{2} \times (6.640 + 3.200) \times 4.300 - \left\{ (2.50 \times 2.00 - \frac{1}{2} \times 0.20^2 \times 2) + (0.30 \times 0.30) \right\}$	$= 16.106 \text{ m}^2$
$V_1 = A_1 \times (1.840 + 2.631) \times \frac{1}{2}$	$= 36.005 \text{ m}^3$
$A_2 = (2.60 \times 3.60) - \left\{ (2.50 \times 2.00 - \frac{1}{2} \times 0.20^2 \times 2) + (0.30 \times 0.30) \right\}$	$= 4.310 \text{ m}^2$
$V_2 = A_2 \times (4.384 + 5.657) \times \frac{1}{2}$	$= 21.638 \text{ m}^3$
$A_3 = (0.20 + 1.82) \times \frac{1}{2} \times 3.80$	$= 4.028 \text{ m}^2$
$A_4 = (0.45 + 0.60) \times \frac{1}{2} \times 0.50$	$= 0.263 \text{ m}^2$
$V_3 = \frac{1}{2} \times (A_3 + A_4) \times 4.376 \times 2$	$= 18.863 \text{ m}^3$
$A_5 = (2.60 \times 3.40) - \left\{ (2.50 \times 2.00 - \frac{1}{2} \times 0.20^2 \times 2) + (0.30 \times 0.30) \right\}$	$= 3.790 \text{ m}^2$
$V_4 = A_5 \times (3.560 + 1.869) \times \frac{1}{2}$	$= 10.288 \text{ m}^3$
$V_5 = \frac{1}{2} \times 0.50 \times 0.15 \times (3.500 + 3.800) \times \frac{1}{2}$	$= 0.137 \text{ m}^3$
$\Sigma V = V_1 + V_2 + V_3 + V_4 + V_5 + 0.50 \times 0.20 \times 2.00$	$= 87.131 \text{ m}^3$
(B50)	
$A_1 = \frac{1}{2} \times (5.780 + 2.840) \times 4.900 - \left\{ (\frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00) + (0.30 \times 0.30) \right\}$	$= 16.458 \text{ m}^2$
$V_1 = A_1 \times (3.220 + 4.685) \times \frac{1}{2} - \left\{ (0.30 \times 0.60 \times 2.00 \times 2) + (1.200 \times 1.300 \times 1.00) \right\}$	$= 62.770 \text{ m}^3$
$A_2 = \frac{1}{2} \times (2.420 + 2.840) \times 0.70$	$= 1.841 \text{ m}^2$
$V_2 = A_2 \times (2.180 + 2.685) \times \frac{1}{2}$	$= 4.478 \text{ m}^3$
$A_3 = \frac{1}{2} \times (5.780 + 3.200) \times 4.300 - \left\{ (\frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00) + (0.30 \times 0.30) \right\}$	$= 14.646 \text{ m}^2$
$V_3 = A_3 \times (0.90 + 3.10) \times \frac{1}{2}$	$= 29.292 \text{ m}^3$
$V_4 = -\frac{1}{4} \times 0.20^2 \times (3.30 + 0.30) \times 2$	$= -0.226 \text{ m}^3$
$\Sigma V = V_1 + V_2 + V_3 + V_4$	$= 96.314 \text{ m}^3$

TYPE OF WORK : Production and Construction of concrete (Type B)
 LOCATION : Gallery

CALCULATION	RESULT
(B52)	
$V_1 = (3.404 + 3.818) \times \frac{1}{2} \times 1.00 \times 3.800 = 13.722 \text{ m}^3$	
$V_2 = (4.436 + 4.850) \times \frac{1}{2} \times 1.00 \times 3.800 = 17.643 \text{ m}^3$	
$V_3 = 0.90 \times 3.30 \times 3.800 - \frac{\pi}{4} \times 0.60^2 \times 0.90 = 11.032 \text{ m}^3$	
$V_4 = \frac{1}{2} \times (3.404 + 2.037) \times 3.300 \times 0.90 \times 2 = 16.160 \text{ m}^3$	
$V_5 = \frac{1}{2} \times (3.536 + 2.169) \times 3.300 \times 0.90 \times 2 = 16.944 \text{ m}^3$	
$V_6 = \frac{1}{2} \times (2.037 + 3.500) \times 2.000 \times 0.80 - (0.30 \times 0.30 \times 3.500) = 4.115 \text{ m}^3$	
$V_7 = 1.60 \times 2.00 \times 2.169 - \left\{ (1.00 \times 0.80 \times 1.00) + \frac{1}{2} \times 0.469^2 \times 1.00 \right\} = 6.031 \text{ m}^3$	6.941
$V_8 = \left\{ \frac{1}{2} \times 0.99 \times 3.285 + \frac{1}{2} \times 0.18 \times 0.600 \right\} \times \frac{1}{2} \times 4.48 \times 2 = 7.528 \text{ m}^3$	
$V_9 = \frac{1}{2} \times 0.18 \times 0.600 \times 3.069 \times 2 = 0.331 \text{ m}^3$	
$V_{10} = \frac{1}{2} \times 1.60 \times 0.48 \times (4.16 + 3.20) \times \frac{1}{2} - \frac{\pi}{4} \times 0.60^2 \times 0.330 = 1.320 \text{ m}^3$	
$\sum V = V_1 + \dots + V_{10} = 94.826 \text{ m}^3$	94.826 m ³
(Entrance) : EL + 156.100 m above	
$V_1 = \frac{1}{2} \times (0.990 + 5.734) \times 3.100 \times 0.30 = 3.587 \text{ m}^3$	
$V_2 = \frac{1}{2} \times (1.414 + 5.734) \times 2.800 \times 0.30 = 3.002 \text{ m}^3$	
$V_3 = \frac{1}{2} \times (3.560 + 2.400) \times 2.800 \times 0.30 \times 2 = 5.006 \text{ m}^3$	
$V_4 = 0.50 \times 0.20 \times 2.00 = 0.200 \text{ m}^3$	
$V_5 = \frac{1}{2} \times 0.20 \times 0.20 \times (3.360 + 5.734) \times 2 = 0.363 \text{ m}^3$	
$\sum V = V_1 + \dots + V_5 = 12.158 \text{ m}^3$	12.158 m ³

TYPE OF WORK : Formwork
 LOCATION : Gallery

CALCULATION	RESULT
(B.5)	
$A_1 = \frac{1}{2} \times (6.640 + 3.200) \times 4.300 - \left\{ \frac{1}{4} \times 2.00^2 \times \frac{1}{2} + (1.50 \times 2.00) + (0.30 \times 0.30) \right\}$	$= 16.50 \text{ m}^2$
$A_2 = \left\{ 1.5 \times 2.00 \times \frac{1}{2} + 1.50 \times 2 + 0.30 \times 2 \right\} \times (6.895 + 5.252) \times \frac{1}{2}$	$= 40.95 \text{ m}^2$
$\Sigma A = A_1 \times 2 + A_2 + (2.054 \times 6.640) + (1.393 \times 2.00)$	$= 90.33 \text{ m}^2$
(B.9)	
$A_1 = 16.50 \text{ m}^2$ (refer to "B.5")	
$A_2 = \left\{ 1.5 \times 2.00 \times \frac{1}{2} + 1.50 \times 2 + 0.30 \times 2 \right\} \times (6.754 + 4.915) \times \frac{1}{2}$	$= 39.33 \text{ m}^2$
$\Sigma A = A_1 \times 2 + A_2 + (1.924 \times 6.640) + (1.252 \times 2.00)$	$= 87.61 \text{ m}^2$
(B.13)	
$A_1 = 16.50 \text{ m}^2$ (refer to "B.5")	
$A_2 = \frac{1}{2} \times (7.350 + 3.200) \times 5.188 - \left\{ \frac{1}{4} \times 2.00^2 \times \frac{1}{2} + (1.50 \times 2.00) + (0.30 \times 0.30) \right\}$	$= 22.71 \text{ m}^2$
$A_3 = \left\{ 1.5 \times 2.00 \times \frac{1}{2} + 1.50 \times 2 + 0.30 \times 2 \right\} \times 6.00$	$= 40.50 \text{ m}^2$
$A_4 = 4.526 \times (7.350 + 6.640) \times \frac{1}{2}$	$= 31.66 \text{ m}^2$
$A_5 = 6.640 \times 1.562$	$= 10.37 \text{ m}^2$
$A_6 = 2.00 \times 6.00$	$= 12.00 \text{ m}^2$
$\Sigma A = A_1 + \dots + A_6$	$= 133.74 \text{ m}^2$
(B.14)	
$A_1 = 16.50 \text{ m}^2$ (refer to "B.5")	
$A_2 = 22.71 \text{ m}^2$ (refer to "B.13")	
$A_3 = \left\{ 1.5 \times 2.00 \times \frac{1}{2} + 1.50 \times 2 + 0.30 \times 2 \right\} \times 6.305$	$= 42.51 \text{ m}^2$
$A_4 = 2.00 \times 6.305$	$= 12.61 \text{ m}^2$
$A_5 = 6.640 \times 3.076$	$= 20.42 \text{ m}^2$
$A_6 = \frac{1}{2} \times (7.350 + 6.640) \times 2.695$	$= 18.85 \text{ m}^2$
$\Sigma A = A_1 + \dots + A_6$	$= 133.60 \text{ m}^2$

TYPE OF WORK : Formwork
LOCATION : Gallery

CALCULATION	RESULT
(B 21)	
$A_1 = 16.50 \text{ m}^2$ (refer to "B5")	
$A_2 = \left\{ \pi \times 2.00 \times \frac{1}{2} + 1.50 \times 2 + 0.30 \times 2 \right\} \times (4.547 + 6.619) \times \frac{1}{2}$ $= 37.64 \text{ m}^2$	
$A_3 = 6.690 \times 1.219$	$= 8.09 \text{ m}^2$
$A_4 = 2.00 \times 2.669$	$= 5.34 \text{ m}^2$
$\Sigma A = A_1 + \sim + A_4$	$= 67.57 \text{ m}^2$
(B 37)	
$A_1 = 16.50 \text{ m}^2$ (refer to "B5")	
$A_2 = \left\{ \pi \times 2.00 \times \frac{1}{2} + 1.50 \times 2 + 0.30 \times 2 \right\} \times 6.491$	$= 43.76 \text{ m}^2$
$A_3 = 6.690 \times (2.003 + 4.990)$	$= 46.43 \text{ m}^2$
$A_4 = 2.00 \times (1.607 + 4.593)$	$= 12.40 \text{ m}^2$
$\Sigma A = A_1 + \sim + A_4$	$= 119.09 \text{ m}^2$

TYPE OF WORK : Formwork
 LOCATION : Gallery

CALCULATION	RESULT
(B.23)	
$A_1 = \frac{1}{2} \times (6.820 + 5.100) \times 4.300 + \frac{1}{2} \times (1.840 + 2.200) \times 0.60$ $- \left\{ \left(\frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00 \right) + (0.30 \times 0.30) \right\}$ $= 22.18 \text{ m}^2$	
$A_2 = 1.50 \times 6.00 = 9.00 \text{ m}^2$	
$A_3 = 1.50 \times (2.00 \times 2 + 2.50 \times 2) = 13.50 \text{ m}^2$	
$A_4 = \frac{1}{2} \times 2.00 \times (6.00 + 2.50) = 26.70 \text{ m}^2$	
$A_5 = 0.30 \times (6.00 + 5.70 + 2.50 \times 2) = 5.01 \text{ m}^2$	
$A_6 = 0.30 \times (1.70 + 0.60 \times 2 + 1.70) = 1.38 \text{ m}^2$	
$A_7 = 6.00 \times 4.30 - \left(\frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00 \right) + (0.30 \times 0.30)$ $= 21.14 \text{ m}^2$	
$\Sigma A = A_1 \times 2 + A_2 + \dots + A_7 = 121.09 \text{ m}^2$	
(B.45)	
$A_1 = \frac{1}{2} \times (6.640 + 3.200) \times 4.30 - \left\{ \left(\frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00 \right) + (0.30 \times 0.30) \right\}$ $= 16.50 \text{ m}^2$	
$A_2 = \left(\frac{1}{2} \times 2.00 + 1.50 \times 2 \right) \times (1.574 + 4.186) \times \frac{1}{2}$ $- (2.50 \times 2.00) = 12.69 \text{ m}^2$	
$A_3 = (2.30 \times 2 + 0.283 \times 2 + 1.80) \times 2.50 = 14.92 \text{ m}^2$	
$A_4 = 0.30 \times (3.35 + 2.50 \times 2 + 0.30) = 2.595 \text{ m}^2$	
$A_5 = \frac{1}{2} \times (6.640 + 3.200) \times 4.300 - (2.50 \times 2.00) = 16.16 \text{ m}^2$	
$\Sigma A = A_1 + \dots + A_5 = 62.87 \text{ m}^2$	
(B.46)	
$A_1 = \frac{1}{2} \times (6.080 + 3.200) \times 3.600 - (2.50 \times 2.00) = 11.70 \text{ m}^2$	
$A_2 = \frac{1}{2} \times (1.264 + 2.300) \times 2.50 \times 2 = 8.91 \text{ m}^2$	
$A_3 = \frac{1}{2} \times (5.374 + 5.388) \times 2.50 \times 2 = 26.91 \text{ m}^2$	
$A_4 = \frac{1}{2} \times (3.436 + 2.400) \times 2.50 \times 2 = 14.59 \text{ m}^2$	
$A_5 = (1.264 + 5.374 + 3.436) \times 2.00 = 20.15 \text{ m}^2$	
$A_6 = 5.388 \times 2.00 = 10.78 \text{ m}^2$	
$A_7 = 0.30 \times (2.30 + 5.388 + 0.900 + 0.300) = 2.67 \text{ m}^2$	
$A_8 = 0.50 \times 2.00 \times 2 = 2.00 \text{ m}^2$	
$A_9 = \frac{1}{2} \times (6.460 + 3.560) \times 2.90 \times 2 = 29.06 \text{ m}^2$	
$A_{10} = 2.60 \times 2.90 - (2.50 \times 2.00) = 2.54 \text{ m}^2$	
$\Sigma A = A_1 + \dots + A_{10} = 129.31 \text{ m}^2$	

TYPE OF WORK : Formwork
 LOCATION : Gallery

CALCULATION	RESULT
(B.50)	
$A_1 = \frac{1}{2} \times (4.745 + 4.048) \times 1.50 \times 2$	$= 13.19 \text{ m}^2$
$A_2 = \frac{1}{2} \times (2.314 + 1.692) \times 1.50 \times 2$	$= 6.01 \text{ m}^2$
$A_3 = \frac{1}{2} \times (3.634 + 4.048) \times \frac{1}{2} \times 2.00$	$= 12.07 \text{ m}^2$
$A_4 = \frac{1}{2} \times (1.692 + 1.278) \times \frac{1}{2} \times 2.00$	$= 4.67 \text{ m}^2$
$A_4 = \frac{1}{2} \times (5.780 + 2.840) \times 4.90 - \left\{ \frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00 + (0.30 \times 0.30) \right\}$	$= 16.46 \text{ m}^2$
$A_5 = \frac{1}{2} \times (5.780 + 3.200) \times 4.30 - \left\{ \frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00 + (0.30 \times 0.30) \right\}$	$= 14.65 \text{ m}^2$
$A_6 = 1.30 \times 1.20 \times 2$	$= 3.12 \text{ m}^2$
$A_7 = 1.30 \times 1.00 \times 2$	$= 2.60 \text{ m}^2$
$A_8 = 0.60 \times 2.00 \times 4$	$= 4.80 \text{ m}^2$
$A_9 = 2.30 \times 2.00$	$= 4.60 \text{ m}^2$
$\Sigma A = A_1 + \dots + A_9$	$= 82.17 \text{ m}^2$
(B.52)	
$A_1 = \frac{1}{2} \times (5.780 + 3.200) \times 4.300 - \left\{ \frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00 + (0.30 \times 0.30) \right\}$	$= 14.65 \text{ m}^2$
$A_2 = \left(\frac{1}{2} \times 2.00 \times \frac{1}{2} + 1.50 \times 2 \right) \times (2.837 + 3.404) \times \frac{1}{2}$	$= 14.26 \text{ m}^2$
$A_3 = \left(\frac{1}{2} \times 2.00 \times \frac{1}{2} + 0.50 \times 2 \right) \times (3.536 + 2.169) \times \frac{1}{2}$	$= 7.33 \text{ m}^2$
$A_4 = \left(\frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 0.50 \times 2.00 \right) + (1.00 \times 0.80)$	$= 3.37 \text{ m}^2$
$A_5 = 1.00 \times 0.80 \times 2 + 0.80 \times 1.00$	$= 2.40 \text{ m}^2$
$A_6 = 3.50 \times 2.00$	$= 7.00 \text{ m}^2$
$A_7 = \frac{1}{2} \times (7.550 + 4.850) \times 2.700 \times 2$	$= 33.48 \text{ m}^2$
$A_8 = 3.80 \times 2.70$	$= 10.26 \text{ m}^2$
$A_9 = 3.818 \times 3.80$	$= 14.51 \text{ m}^2$
$\Sigma A = A_1 + \dots + A_9$	$= 107.26 \text{ m}^2$

21.119
19.307

17.307

TYPE OF WORK : Scaffolding
 LOCATION : Gallery

CALCULATION	RESULT
(B 5)	
$A_1 = 6.640 \times 4.300 \times 2 = 57.10 \text{ m}^2$	
$A_2 = \{ \pi \times 2.00 \times \frac{1}{2} + 1.50 \times 2 \} \times (6.895 + 5.252) \times \frac{1}{2} = 37.30 \text{ m}^2$	
$\Sigma A = A_1 + A_2 =$	94.40 m ²
(B 9)	
$A_1 = 57.10 \text{ m}^2$ (refer to "B 5")	
$A_2 = \{ \pi \times 2.00 \times \frac{1}{2} + 1.50 \times 2 \} \times (6.754 + 4.915) \times \frac{1}{2} = 35.83 \text{ m}^2$	
$\Sigma A = A_1 + A_2 =$	92.93 m ²
(B 13)	
$A_1 = 6.640 \times 4.300 = 28.55 \text{ m}^2$	
$A_2 = 7.350 \times 5.188 = 38.13 \text{ m}^2$	
$A_3 = \{ \pi \times 2.00 \times \frac{1}{2} + 1.50 \times 2 \} \times 6.00 = 36.85 \text{ m}^2$	
$\Sigma A = A_1 + A_2 + A_3 =$	103.53 m ²
(B 14)	
$A_1 = 6.640 \times 4.300 = 28.55 \text{ m}^2$	
$A_2 = 7.350 \times 5.188 = 38.13 \text{ m}^2$	
$A_3 = \{ \pi \times 2.00 \times \frac{1}{2} + 1.50 \times 2 \} \times 6.305 = 38.72 \text{ m}^2$	
$\Sigma A = A_1 + A_2 + A_3 =$	105.40 m ²
(B 21)	
$A_1 = 6.640 \times 4.300 = 28.55 \text{ m}^2$	
$A_2 = \{ \pi \times 2.00 \times \frac{1}{2} + 1.50 \times 2 \} \times (2.15 + 3.431) = 34.28 \text{ m}^2$	
$\Sigma A = A_1 + A_2 =$	62.83 m ²
(B 37)	
$A_1 = 6.640 \times 4.300 = 28.55 \text{ m}^2$	
$A_2 = \{ \pi \times 2.00 \times \frac{1}{2} + 1.50 \times 2 \} \times 6.491 = 39.87 \text{ m}^2$	
$\Sigma A = A_1 + A_2 =$	68.42 m ²

TYPE OF WORK : Scaffolding
 LOCATION : Gallery

CALCULATION	RESULT
(B23)	
$A_1 = \frac{1}{2} \times (6.820 + 5.100) \times 4.30 \times 2$	$= 51.26 \text{ m}^2$
$A_2 = 6.00 \times 4.30$	$= 25.80 \text{ m}^2$
$A_3 = 2.50 \times (6.00 + 2.00 \times 2 + 2.50 \times 2)$	$= 37.50 \text{ m}^2$
$\Sigma A = A_1 + A_2 + A_3$	$= 114.56 \text{ m}^2$
(B45)	
$A_1 = \frac{1}{2} \times (6.640 + 3.200) \times 4.30 \times 2$	$= 42.31 \text{ m}^2$
$A_2 = 2.50 \times (1.574 \times 2 + 4.185 + 3.00 + 5.00)$	$= 38.33 \text{ m}^2$
$\Sigma A = A_1 + A_2$	$= 80.64 \text{ m}^2$
(B46)	
$A_1 = \frac{1}{2} \times (6.080 + 3.200) \times 4.30$	$= 19.95 \text{ m}^2$
$A_2 = \frac{1}{2} \times (1.264 + 2.300) \times 2.50 \times 2$	$= 8.91 \text{ m}^2$
$A_3 = \frac{1}{2} \times (5.374 + 5.388) \times 2.50 \times 2$	$= 26.91 \text{ m}^2$
$A_4 = \frac{1}{2} \times (3.436 + 2.400) \times 2.50 \times 2$	$= 14.59 \text{ m}^2$
$A_5 = \frac{1}{2} \times (6.460 + 3.560) \times 2.90 \times 2$	$= 29.06 \text{ m}^2$
$A_6 = 2.60 \times 2.90$	$= 7.54 \text{ m}^2$
$\Sigma A = A_1 + \dots + A_6$	$= 106.96 \text{ m}^2$
(B50)	
$A_1 = \frac{1}{2} \times (5.780 + 2.840) \times 4.90$	$= 21.12 \text{ m}^2$
$A_2 = \frac{1}{2} \times (5.780 + 3.200) \times 4.300$	$= 19.31 \text{ m}^2$
$A_3 = \frac{1}{2} \times (4.745 + 3.634) \times 2.50 \times 2$	$= 20.95 \text{ m}^2$
$A_4 = \frac{1}{2} \times (2.314 + 1.278) \times 2.50 \times 2$	$= 8.98 \text{ m}^2$
$\Sigma A = A_1 + \dots + A_4$	$= 70.36 \text{ m}^2$
(B52)	
$A_1 = \frac{1}{2} \times (5.780 + 3.200) \times 4.30$	$= 19.31 \text{ m}^2$
$A_2 = \frac{1}{2} \times (2.837 + 3.404) \times 2.50 \times 2$	$= 15.60 \text{ m}^2$
$A_3 = \frac{1}{2} \times (7.550 + 4.850) \times 2.70 \times 2$	$= 33.48 \text{ m}^2$
$A_4 = 3.80 \times 2.70$	$= 10.26 \text{ m}^2$
$\Sigma A = A_1 + \dots + A_4$	$= 78.65 \text{ m}^2$

TYPE OF WORK :
 LOCATION :

Supporting
 Gallery

CALCULATION	RESULT
(B5)	
$A = \left\{ \frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00 + 0.30 \times 0.30 \right\} = 4.66 \text{ m}^2$	
$V_1 = A \times (6.895 + 5.252) \times \frac{1}{2} = 28.30 \text{ m}^3$	
$V_2 = \frac{1}{2} \times 4.300 \times 1.795 \times 6.640 = 25.63 \text{ m}^3$	
$\Sigma V = V_1 + V_2 =$	50.93 m ³
(B9)	
$A = 4.66 \text{ m}^2$ (refer to "B5")	
$V_1 = A \times (6.754 + 4.915) \times \frac{1}{2} = 27.19 \text{ m}^3$	
$V_2 = \frac{1}{2} \times 4.300 \times 1.784 \times 6.640 = 25.47 \text{ m}^3$	
$\Sigma V = V_1 + V_2 =$	52.66 m ³
(B13)	
$A = 4.66 \text{ m}^2$ (refer to "B5")	
$V_1 = A \times 6.00 = 27.96 \text{ m}^3$	
$V_2 = \frac{1}{2} \times 5.188 \times 5.188 \times 7.350 = 98.91 \text{ m}^3$	
$\Sigma V = V_1 + V_2 =$	126.87 m ³
(B14)	
$A = 4.66 \text{ m}^2$ (refer to "B5")	
$V_1 = A \times 6.305 = 29.38 \text{ m}^3$	
$V_2 = \frac{1}{2} \times 4.30 \times 4.30 \times 6.640 = 61.39 \text{ m}^3$	
$\Sigma V = V_1 + V_2 =$	90.77 m ³
(B21)	
$A = 4.66 \text{ m}^2$ (refer to "B5")	
$V = A \times (2.151 + 3.431) =$	26.01 m ³
(B37)	
$A_1 = 4.66 \text{ m}^2$ (refer to "B5")	
$V_1 = A_1 \times 6.491 = 30.25 \text{ m}^3$	
$V_2 = \frac{1}{2} \times 4.30 \times 4.30 \times 6.640 = 61.39 \text{ m}^3$	
$\Sigma V = V_1 + V_2 =$	91.64 m ³

TYPE OF WORK : Supporting
 LOCATION : Gallery

CALCULATION	RESULT
(B.23)	
$V = (\frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00) \times (6.00 + 2.50)$	= 38.85 m ³
(B45)	
$V_1 = (\frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00) \times (1.574 + 4.185)$	= 26.32 m ³
$V_2 = 2.50 \times 3.00 \times 2.00$	= 15.00 m ³
$V_3 = \frac{1}{2} \times 4.30 \times 2.071 \times (6.640 + 3.200) \times \frac{1}{2}$	= 21.91 m ³
$\sum V = V_1 + V_2 + V_3$	= 63.23 m ³
(B46)	
$V_1 = \frac{1}{2} \times (1.264 + 2.300) \times 2.50 \times 2.00$	= 8.91 m ³
$V_2 = \frac{1}{2} \times (5.374 + 5.388) \times 2.50 \times 2.00$	= 26.91 m ³
$V_3 = \frac{1}{2} \times (3.436 + 2.400) \times 2.50 \times 2.00$	= 14.59 m ³
$\sum V = V_1 + V_2 + V_3$	= 50.41 m ³
(B50)	
$V_1 = (\frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00) \times (4.190 + 1.796)$	= 27.36 m ³
(B52)	
$V_1 = (\frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 1.50 \times 2.00) \times (3.500 + 3.404) \times \frac{1}{2}$	= 15.78 m ³
$V_2 = (\frac{1}{4} \times 2.00^2 \times \frac{1}{2} + 0.50 \times 2.00) \times (3.536 + 1.700) \times \frac{1}{2}$	= 6.73 m ³
$\sum V = V_1 + V_2$	= 22.51 m ³

TYPE OF WORK :

LOCATION :

Gallery

CALCULATION	RESULT
(Entrance) : EL+156.100m above	
(Formwork)	
$A_1 = \frac{1}{2} \times (0.990 + 5.734) \times 3.100 \times 2 = 20.84 \text{ m}^2$	
$A_2 = \frac{1}{2} \times (1.414 + 5.734) \times 2.800 \times 2 = 20.01 \text{ m}^2$	
$A_3 = \frac{1}{2} \times (3.560 + 2.400) \times 2.800 \times 2 \times 2 = 33.38 \text{ m}^2$	
$A_4 = 0.50 \times 2.00 \times 2 = 2.00 \text{ m}^2$	
$A_5 = 0.20 \times 2.00 = 0.40 \text{ m}^2$	
$A_6 = 0.283 \times (3.360 + 5.734) \times 2 = 5.15 \text{ m}^2$	
$\Sigma A = A_1 + \dots + A_6 = 81.78 \text{ m}^2$	81.78 m ²
(Scaffolding)	
$A_1 = 20.84 \text{ m}^2$	
$A_2 = 20.01 \text{ m}^2$	
$A_3 = 33.38 \text{ m}^2$	
$A_4 = 2.60 \times 2.80 = 7.28 \text{ m}^2$	
$\Sigma A = A_1 + \dots + A_4 = 81.51 \text{ m}^2$	81.51 m ²
(Supporting)	
$V_1 = \frac{1}{2} \times (1.414 + 5.734) \times 2.800 \times 2.00 = 20.01 \text{ m}^3$	
$V_2 = \frac{1}{2} \times (3.560 + 2.400) \times 2.800 \times 2.00 = 16.69 \text{ m}^3$	
$\Sigma V = V_1 + V_2 = 36.70 \text{ m}^3$	36.70 m ³

GALLERY - STEEL REINFORCEMENT BAR

Block No.	Distance (m)	Volume (kg)
Left Entrance		7,088
1	9.000	5,230
2	9.000	5,230
3	9.000	5,230
4	9.000	5,230
5	6.034	3,559
6	6.000	3,477
7	6.000	3,477
8	6.000	3,477
9	5.905	3,518
10	5.000	2,892
11	6.000	4,069
12	6.000	4,069
13	6.000	4,380
14	6.305	4,344
15	6.000	4,996
16	6.000	4,996
17	6.000	4,996
18	6.000	4,996
19	6.000	4,996
20	6.000	4,996
21	5.583	4,821
22	6.000	4,996
23	6.000	6,915
24	5.583	4,821
25	6.000	4,996
26	6.000	4,996
27	6.000	4,996
28	6.000	4,996
29	6.000	4,996
30	6.000	4,996
31	6.305	4,344
32	6.000	4,380
33	6.000	4,069
34	6.000	4,069
35	6.000	3,477
36	6.000	3,477
37	6.492	3,799
38	6.000	3,477
39	6.000	3,477
40	6.000	3,477
41	6.000	3,477
42	6.000	3,477
43	5.000	2,892
44	5.000	2,892
45		4,913
46		3,673
47	5.500	4,521
48	5.500	4,521
49	5.500	4,521
50	5.928	5,202
51	5.500	4,521
52	6.784	8,114
Total		237,545
	x 1.06 =	252,000

TYPE OF WORK
LOCATION

: Furnishing and Installing Deformed Reinforcing bar
: Gallery

	CALCULATION	RESULT
(B 5)		
	(Refer to drawing) $W = 3559 \text{ kg}$	3.56 ton ✓
(B 9)		
	(Refer to drawing) $W = 3518 \text{ kg}$	3.52 ton ✓
(B 13)		
	(Refer to drawing) $W = 4380 \text{ kg}$	4.38 ton ✓
(B 14)		
	(Refer to drawing) $W = 4344 \text{ kg}$	4.34 ton ✓
(B 21)		
	(Refer to drawing) $W = 4821 \text{ kg}$	4.82 ton ✓
(B 31)		
	(Refer to drawing) $W = 4344 \text{ kg}$	4.34 ton ✓
(B 32)		
	(Refer to drawing) $W = 4380 \text{ kg}$	4.38 ton ✓
(B 37)		
	(Refer to drawing) $W = 3799 \text{ kg}$	3.80 ton ✓
(B 24)		
	(Refer to drawing) $W = 4821 \text{ kg}$	4.82 ton ✓

TYPE OF WORK : Furnishing and Installing Deformed Reinforcing Bars
 LOCATION :

CALCULATION	RESULT
(B23)	
$W = 6,915 \text{ kg}$ (refer to drawing)	6.92 ton
(B45)	
$W = 4,913 \text{ kg}$ (refer to drawing)	4.91 ton
(B46)	
$W = 3,673 \text{ kg}$ (refer to drawing)	3.67 ton
(B50)	
$W = 5,202 \text{ kg}$ (refer to drawing)	5.20 ton
(B52)	
$W = 8,114 \text{ kg}$ (refer to drawing)	8.11 ton
(Entrance at Left side)	
$W = 7,088 \text{ kg}$	7.09 ton
(Upstream Portal of Diversion Facility)	
$W = 30,636 \text{ kg}$	30.64 ton
(Inclined Intake Structure)	
$W_1 = 344 \text{ kg}$	
$W_2 = 3311 \text{ kg}/5.0\text{m} \times (23.377 - 0.10) = 15414 \text{ kg}$	
$W_3 = (0.56 \times 1.58 \text{ kg/m} \times 90) \times 3 = 239 \text{ kg}$	
$W_4 = 1847 \text{ kg}/5.0\text{m} \times 37.85 = 13982 \text{ kg}$	
$W_5 = 1847 \text{ kg}/5.0\text{m} \times \frac{1}{2} \times (1.376 + 4.690) = 1120 \text{ kg}$	
$W_6 = (0.56 \times 1.58 \text{ kg/m} \times 74) \times 4 = 262 \text{ kg}$	
$W_7 = 9250 \text{ kg}$	
$\Sigma W = W_1 + \dots + W_7 =$	40.61 ton

GALLERY STAIRS - CONCRETE

Block No.	Gradient	Distance (m)	1 Step (m)	Number of Steps (No.)	Volume per Step (m3)	Volume (m3)
Spillway L3	1 : 1	23.094	0.353	65.4	0.067	4.36
Spillway L4-1	1 : 1	23.094	0.353	65.4	0.067	4.36
1						0.00
2						0.00
3						0.00
4						0.00
5	1 : 2.396	1.373	0.400	3.4	0.061	0.21
6	1 : 2.396	6.000	0.400	15.0	0.061	0.91
7	1 : 2.396	6.000	0.400	15.0	0.061	0.91
8	1 : 2.396	6.000	0.400	15.0	0.061	0.91
9	1 : 2.396	4.158	0.400	10.4	0.061	0.63
	1 : 1	1.253	0.353	3.5	0.067	0.24
10	1 : 1	5.000	0.353	14.2	0.067	0.94
11	1 : 1	6.000	0.353	17.0	0.067	1.13
12	1 : 1	6.000	0.353	17.0	0.067	1.13
13	1 : 1	6.000	0.353	17.0	0.067	1.13
14	1 : 1	4.305	0.353	12.2	0.067	0.81
15	1 : 1	6.000	0.353	17.0	0.067	1.13
16	1 : 1	6.000	0.353	17.0	0.067	1.13
17	1 : 1	6.000	0.353	17.0	0.067	1.13
18	1 : 1	6.000	0.353	17.0	0.067	1.13
19	1 : 1	6.000	0.353	17.0	0.067	1.13
20	1 : 1	6.000	0.353	17.0	0.067	1.13
21	1 : 1	2.669	0.353	7.6	0.067	0.50
22						0.00
23						0.00
24	1 : 1	2.669	0.353	7.6	0.067	0.50
25	1 : 1	6.000	0.353	17.0	0.067	1.13
26	1 : 1	6.000	0.353	17.0	0.067	1.13
27	1 : 1	6.000	0.353	17.0	0.067	1.13
28	1 : 1	6.000	0.353	17.0	0.067	1.13
29	1 : 1	6.000	0.353	17.0	0.067	1.13
30	1 : 1	6.000	0.353	17.0	0.067	1.13
31	1 : 1	4.305	0.353	12.2	0.067	0.81
32	1 : 1	6.000	0.353	17.0	0.067	1.13
33	1 : 1	6.000	0.353	17.0	0.067	1.13
34	1 : 1	6.000	0.353	17.0	0.067	1.13
35	1 : 1	6.000	0.353	17.0	0.067	1.13
36	1 : 1	6.000	0.353	17.0	0.067	1.13
37	1 : 1	1.607	0.353	4.6	0.067	0.30
	1 : 1.62	4.593	0.400	11.5	0.084	0.96
38	1 : 1.62	6.000	0.400	15.0	0.084	1.26
39	1 : 1.62	6.000	0.400	15.0	0.084	1.26
40	1 : 1.62	6.000	0.400	15.0	0.084	1.26
41	1 : 1.62	6.000	0.400	15.0	0.084	1.26
42	1 : 1.62	6.000	0.400	15.0	0.084	1.26
43	1 : 1.62	5.000	0.400	12.5	0.084	1.05
44	1 : 1.62	5.000	0.400	12.5	0.084	1.05
45	1 : 1.62	1.219	0.400	3.0	0.084	0.26
46	1 : 1	5.374	0.353	15.2	0.067	1.01
47						0.00
48						0.00
49						0.00
50	1 : 1	2.314	0.353	6.6	0.067	0.44
51	1 : 1	5.500	0.353	15.6	0.067	1.04
52	1 : 1	3.500	0.353	9.9	0.067	0.66
Total					x 1.02 =	51.817
						50.0

GALLERY STAIRS - STEEL REINFORCEMENT BAR

Block No.	Gradient	Distance (m)	1 Step (m)	Number of Steps (No.)	Weight per Step (kg)	Volume (kg)
Spillway L3	1 : 1	23.094	0.353	65.4	9.776	639.57
Spillway L4-1	1 : 1	23.094	0.353	65.4	9.776	639.57
1						0.00
2						0.00
3						0.00
4						0.00
5	1 : 2.396	1.373	0.400	3.4	9.776	33.56
6	1 : 2.396	6.000	0.400	15.0	9.776	146.64
7	1 : 2.396	6.000	0.400	15.0	9.776	146.64
8	1 : 2.396	6.000	0.400	15.0	9.776	146.64
9	1 : 2.396	4.158	0.400	10.4	9.776	101.62
	1 : 1	1.253	0.353	3.5	9.776	34.70
10	1 : 1	5.000	0.353	14.2	9.776	138.47
11	1 : 1	6.000	0.353	17.0	9.776	166.16
12	1 : 1	6.000	0.353	17.0	9.776	166.16
13	1 : 1	6.000	0.353	17.0	9.776	166.16
14	1 : 1	4.305	0.353	12.2	9.776	119.22
15	1 : 1	6.000	0.353	17.0	9.776	166.16
16	1 : 1	6.000	0.353	17.0	9.776	166.16
17	1 : 1	6.000	0.353	17.0	9.776	166.16
18	1 : 1	6.000	0.353	17.0	9.776	166.16
19	1 : 1	6.000	0.353	17.0	9.776	166.16
20	1 : 1	6.000	0.353	17.0	9.776	166.16
21	1 : 1	2.669	0.353	7.6	9.776	73.92
22						0.000
23						0.000
24	1 : 1	2.669	0.353	7.6	9.776	73.92
25	1 : 1	6.000	0.353	17.0	9.776	166.16
26	1 : 1	6.000	0.353	17.0	9.776	166.16
27	1 : 1	6.000	0.353	17.0	9.776	166.16
28	1 : 1	6.000	0.353	17.0	9.776	166.16
29	1 : 1	6.000	0.353	17.0	9.776	166.16
30	1 : 1	6.000	0.353	17.0	9.776	166.16
31	1 : 1	4.305	0.353	12.2	9.776	119.22
32	1 : 1	6.000	0.353	17.0	9.776	166.16
33	1 : 1	6.000	0.353	17.0	9.776	166.16
34	1 : 1	6.000	0.353	17.0	9.776	166.16
35	1 : 1	6.000	0.353	17.0	9.776	166.16
36	1 : 1	6.000	0.353	17.0	9.776	166.16
37	1 : 1	1.607	0.353	4.6	9.776	44.50
	1 : 1.62	4.593	0.400	11.5	9.776	112.25
38	1 : 1.62	6.000	0.400	15.0	9.776	146.64
39	1 : 1.62	6.000	0.400	15.0	9.776	146.64
40	1 : 1.62	6.000	0.400	15.0	9.776	146.64
41	1 : 1.62	6.000	0.400	15.0	9.776	146.64
42	1 : 1.62	6.000	0.400	15.0	9.776	146.64
43	1 : 1.62	5.000	0.400	12.5	9.776	122.20
44	1 : 1.62	5.000	0.400	12.5	9.776	122.20
45	1 : 1.62	1.219	0.400	3.0	9.776	29.79
46	1 : 1	5.374	0.353	15.2	9.776	148.83
47						0.00
48						0.00
49						0.00
50	1 : 1	2.314	0.353	6.6	9.776	64.08
51	1 : 1	5.500	0.353	15.6	9.776	152.32
52	1 : 1	3.500	0.353	9.9	9.776	96.93
Total					x 1.06 =	7,363.272
						7,800.0

GALLERY - WATER STOP 300 mm IN WIDTH

Joint No.	1 (m)	2 (m)	3 (m)	4 (m)	5 (m)	Total (m)
Spillway 1	9.694	5.754	4.084	4.000	2.794	26.326
0	9.694	5.754	4.084	4.000	2.794	26.326
1	9.694	5.754	4.084	4.000	2.794	26.326
2	9.694	5.754	4.084	4.000	2.794	26.326
3	9.694	5.754	4.084	4.000	2.794	26.326
4	9.694	5.754	4.084	4.000	2.794	26.326
5	9.694	5.754	4.084	4.000	2.794	26.326
6	9.694	5.754	4.084	4.000	2.794	26.326
7	9.694	5.754	4.084	4.000	2.794	26.326
8	9.694	5.754	4.084	4.000	2.794	26.326
9	9.694	5.754	4.084	4.000	2.794	26.326
10	9.694	5.754	4.084	4.000	2.794	26.326
11	9.694	5.754	4.084	4.000	2.794	26.326
12	9.694	5.754	4.084	4.000	2.794	26.326
13	9.694	5.754	4.084	4.000	2.794	26.326
14	9.694	5.754	4.084	4.000	2.794	26.326
15	9.694	5.754	4.084	4.000	2.794	26.326
16	9.694	5.754	4.084	4.000	2.794	26.326
17	9.694	5.754	4.084	4.000	2.794	26.326
18	9.694	5.754	4.084	4.000	2.794	26.326
19	9.694	5.754	4.084	4.000	2.794	26.326
20	9.694	5.754	4.084	4.000	2.794	26.326
21	9.694	5.754	4.084	4.000	2.794	26.326
22	9.694	5.754	4.084	4.000	2.794	26.326
23	9.694	5.754	4.084	4.000	2.794	26.326
24	9.694	5.754	4.084	4.000	2.794	26.326
25	9.694	5.754	4.084	4.000	2.794	26.326
26	9.694	5.754	4.084	4.000	2.794	26.326
27	9.694	5.754	4.084	4.000	2.794	26.326
28	9.694	5.754	4.084	4.000	2.794	26.326
29	9.694	5.754	4.084	4.000	2.794	26.326
30	9.694	5.754	4.084	4.000	2.794	26.326
31	9.694	5.754	4.084	4.000	2.794	26.326
32	9.694	5.754	4.084	4.000	2.794	26.326
33	9.694	5.754	4.084	4.000	2.794	26.326
34	9.694	5.754	4.084	4.000	2.794	26.326
35	9.694	5.754	4.084	4.000	2.794	26.326
36	9.694	5.754	4.084	4.000	2.794	26.326
37	9.694	5.754	4.084	4.000	2.794	26.326
38	9.694	5.754	4.084	4.000	2.794	26.326
39	9.694	5.754	4.084	4.000	2.794	26.326
40	9.694	5.754	4.084	4.000	2.794	26.326
41	9.694	5.754	4.084	4.000	2.794	26.326
42	9.694	5.754	4.084	4.000	2.794	26.326
43	9.694	5.754	4.084	4.000	2.794	26.326
44	9.694	5.754	4.084	4.000	2.794	26.326
45	9.694	5.754	4.084	4.000	2.794	26.326
46	9.694	5.754	4.084	4.000	2.794	26.326
47	9.396	4.974	4.084	4.000	2.754	25.208
48	9.396	4.974	4.084	4.000	2.754	25.208
49	9.396	4.974	4.084	4.000	2.754	25.208
50	9.396	4.974	4.084	4.000	2.754	25.208
51	9.396	4.974	4.084	4.000	2.754	25.208
52	9.396	4.974	4.084	4.000	2.754	25.208
Total					x 1.05 =	1,388.570 1,500

GALLERY - IGAS

Joint No.	Area (cm ²)	Distance (cm)	Total	
			(cm ³)	(litter)
0				
1				
2				
3				
4				
5	200.0	664.0	132,800	132.8
6	200.0	664.0	132,800	132.8
7	200.0	664.0	132,800	132.8
8	200.0	664.0	132,800	132.8
9	200.0	664.0	132,800	132.8
10	200.0	664.0	132,800	132.8
11	200.0	664.0	132,800	132.8
12	200.0	664.0	132,800	132.8
13	200.0	664.0	132,800	132.8
14	200.0	664.0	132,800	132.8
15	200.0	664.0	132,800	132.8
16	200.0	664.0	132,800	132.8
17	200.0	664.0	132,800	132.8
18	200.0	664.0	132,800	132.8
19	200.0	664.0	132,800	132.8
20	200.0	664.0	132,800	132.8
21	200.0	664.0	132,800	132.8
22	200.0	664.0	132,800	132.8
23	200.0	664.0	132,800	132.8
24	200.0	664.0	132,800	132.8
25	200.0	664.0	132,800	132.8
26	200.0	664.0	132,800	132.8
27	200.0	664.0	132,800	132.8
28	200.0	664.0	132,800	132.8
29	200.0	664.0	132,800	132.8
30	200.0	664.0	132,800	132.8
31	200.0	664.0	132,800	132.8
32	200.0	664.0	132,800	132.8
33	200.0	664.0	132,800	132.8
34	200.0	664.0	132,800	132.8
35	200.0	664.0	132,800	132.8
36	200.0	664.0	132,800	132.8
37	200.0	664.0	132,800	132.8
38	200.0	664.0	132,800	132.8
39	200.0	664.0	132,800	132.8
40	200.0	664.0	132,800	132.8
41	200.0	664.0	132,800	132.8
42	200.0	664.0	132,800	132.8
43	200.0	664.0	132,800	132.8
44	200.0	664.0	132,800	132.8
45	200.0	664.0	132,800	132.8
46	200.0	664.0	132,800	132.8
47	200.0	578.0	115,600	115.6
48	200.0	578.0	115,600	115.6
49	200.0	578.0	115,600	115.6
50	200.0	578.0	115,600	115.6
51	200.0	578.0	115,600	115.6
52	200.0	578.0	115,600	115.6
Total			x 1.02 =	6,271.2
				6,400