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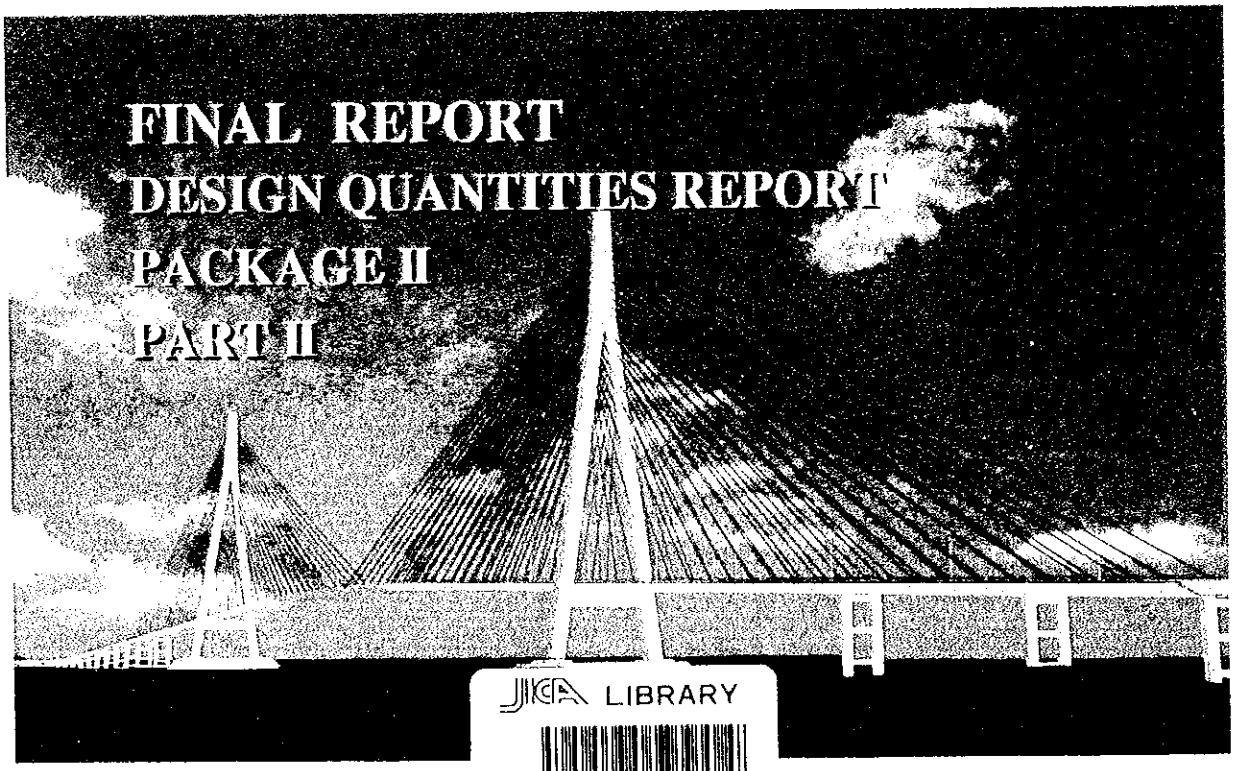
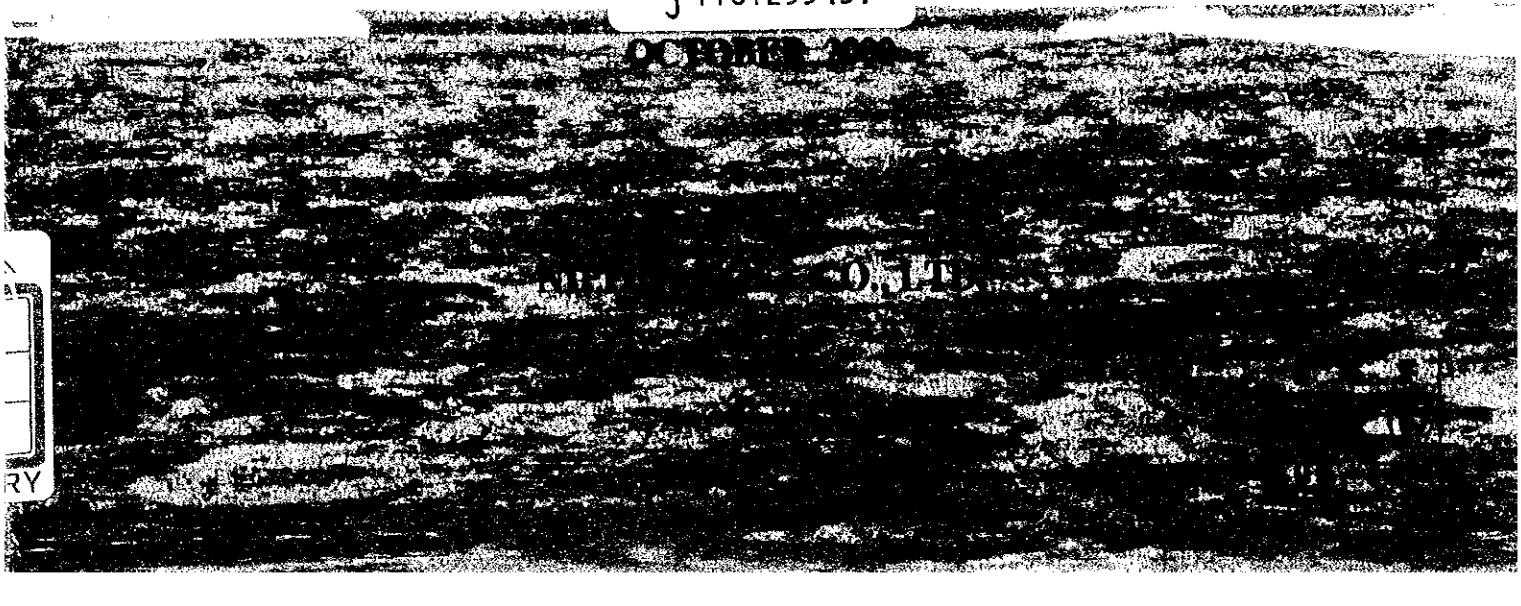
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
MINISTRY OF TRANSPORT
SOCIALIST REPUBLIC OF VIET NAM

THE DETAILED DESIGN ON THE CAN THO BRIDGE CONSTRUCTION IN SOCIALIST REPUBLIC OF VIET NAM





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FINAL REPORT
DESIGN QUANTITIES REPORT
PACKAGE II
PART II

OCTOBER 2000

NIPPON KOEI CO., LTD.

Table of Contents

Package II
Part - 2

Notes

1. General

Unless otherwise noted these notes are applied to all design quantities.

2. Concrete

Concrete strengths are specified as followings base on 28 days cylinder strength.

Concrete class	Strength	Typical use
Concrete class A	50MPa	Precast PC box girder
Concrete class B	40MPa	Pylon, Cast in place PC box girder, Precast PC I girder
Concrete class C	35MPa	Hollow slab
Concrete class D	30MPa	Pile cap (Stay cable bridge), Cast in place bored concrete pile, Deck slab, Diaphragm, Precast RC panel
Concrete class E	24MPa	Abutment, Pier, Pile cap, Footing
Concrete class G	15MPa	Lean concrete, Plain concrete

3. Reinforcement

Reinforcements are specified as SD345.

4. Prestressing

Prestressed tendons are specified as SWPR7B.

5. Anchor Bar

Anchor bars are specified as SS400.

2. Substructures

2.1. Approach Bridge (A1, P1-P11, P18-P35, P42, A2)

QUANTITY TABLE OF ABUTMENTS

ITEMS			UNIT	ABUTMENT A1	ABUTMENT A2	TOTAL
A- ABUTMENT						
PILE	NUMBER OF PILES		pile	12.0	12.0	24
	TOTAL LENGTH OF BORED PILE Þ1500mm		m	708.0	624.0	1332
	CONCRETE CLASS D		m3	1251.1	1102.7	2354
	REINFORCEMENT	D25	kg	51768.0	46590.0	98358
		D22	kg	4105.2	3631.2	7736
		D16	kg	386.4	386.4	773
		D10	kg	11076.0	9844.8	20921
		TOTAL	kg	67335.6	60452.4	127788
ABUTMENT	CONCRETE CLASS E		m3	545.1	507.0	1052
	REINFORCEMENT	D25	kg	3851.4	3882.5	7734
		D22	kg	1909.6	302.6	2212
		D20	kg	7613.9	0.0	7614
		D16	kg	14474.7	32.2	14507
		D10	kg	103.9	820.4	924
		TOTAL	kg	27953.5	5037.7	32991
	LEAN CONCRETE CLASS G		m3	14.7	14.7	29
	BLINDING STONE		m3	29.3	29.3	59
	EXCAVATION		m3	725.6	644.8	1370
	FILLING		m3	364.6	283.8	648
B- APPROACH SLAB						
	CONCRETE CLASS E		m3	41.6	41.6	83
	LEAN CONCRETE CLASS G		m3	12.8	12.8	26
	ASPHANTIC JOINT FILLER T=20mm		m3	0.6	0.6	1
	REINFORCEMENT	D20	kg	3331.6	3331.6	6663
		D16	kg	3315.5	3315.5	6631
		D10	kg	253.8	253.8	508
		TOTAL	kg	6900.9	6900.9	13802
C- SLOPE PROTECTION						
	STONE MASONRY T=300mm		m3	846.9	824.9	1672
	BLINDING AGGREATE T=100mm		m3	276.4	269.2	546
	GEOTEXTILE		m2	767.8	747.4	1515
	PVC PILE Þ50mm, L=1000mm		m	73.2	72.2	145
	WOOD PILE L=3m		m	8785.4	8665.8	17451
	EXCAVATION		m3	581.9	574.4	1156
	FILLING		m3	399.3	394.1	793

QUANTITY SURVEYING(ABUTMENT)

I. CONCRETE

1) PARAPET WALL

$v1=2*b1*h1*L$

2) APPROACH CUSHION SLAB PEDESTAL

$v2=2*(0.3*0.3+1/2*0.3*0.3)*L1$

3)FRONTWALL

$v3=2*\{1/2*b2*(h2+h3)-1/2*0.1*0.1\}*L$

4) FOOTING WALL

$v4=2*B*h4*L-1/4*\pi*1.5^2*0.1*n/2$

5) SIDE WALL

$v5=(H5+1)*3.5/2*T*2+H6*3.5*T*2$

6)WING

$v6=1/2*(h7+h8)*b4*T*2$

7) PARAPET

$v7=\{1/2*(0.35+0.5)*0.15+0.05*0.5+1/2*(0.65+0.75)*0.15+0.75*0.05\}*b5*2$

8) HAUNCH

$v8=1/2*0.5*0.5*h6*2$

II. FORM

1) PARAPET WALL

$a1=2*\{(2*h1*L+h1*b1*)-\{0.6*L1+2*(T+0.5)\}\}$

2) APPROACH CUSHION SLAB PEDESTAL

$a2=2*(0.3+0.424)*L1$

3)FRONTWALL

$a3=2*\{(1/2(h2+h3)-0.1+0.14)*L+h3*(L-(T+0.5))+h3*b2\}$

4) FOOTING WALL

$a4=(B+L)*h4*2$

5) SIDE WALL

$a5=1/2*(h5+h6)*b3*4+T*(h6-h8)*2$

6)WING

$a6=1/2*(h7+h8)*b4*2+[h7+\{\sqrt{(h8-h7)^2+b4^2}\}]*T*2$

7) PARAPET

$a7=(0.2+0.05+0.21)*b5*2*2$

8) HAUNCH

$a8=0.707*h6*2$

9) $A=a1+a2+a3+a4+a5+a6+a7+a8$

III. SCAFFOLDING WORK

$4m \leq H \leq 30m$

$A=\{2*(L+B)+8\}*(h1+h2)$

IV. SUPPORT

ALLOWABLE LOAD

$Q=2.81*1/2*(h7+h8)+0.4$

V={1/2*(h8-h7)+(h5-h8)}*T*b4*2

V. LEAN CONCRETE

1) CONCRETE

V={(B+0.2)*(2*L+0.2)-1/4*π*1.5^2*n}*0.1

2) FORM

A={(B+0.2)+(2*L+0.2)}*2*0.1

VI. BLINDING STONE

V={(B+0.2)*(L+0.2)-1/4*π*1.5^2*n}*0.2

VII. CAST-IN-PLACE-CONCRETE PILE

1) PILE DIMENTION

D=1.5m,59m(A1);52m(A2),12nos

2) CONCRETE

v1=1/4*π*1.5^2*L (A1: L=59m; A2: L=52m)

V1=v1*12

3) PILEHEAD TREAMENT

12(nos.)

4) EXCAVATION LENGTH

N<20(l1),20=<N=<40(l2),40=<N(l3)

L1,L2,L3

5) EXCAVATED MATERIALS

v2=1/4*3.142*1.5^2*(l1+l2+l3)

V2=v2*n

VIII. EARTH WORK

1) EXCAVATION FOR FOUNDATION

B1=9.2+2.2=11.4m,B2=B+2.2

B3=B1+2*h,B4=B2+2*h

v1=1/6*h*{B1*B2+B3*B4+(B1+B3)(B2+B4)}

v2=1/4*π*1.5^2*0.4*n

V1=v1-v2

2) EXCESS SOIL

v1=LEAN CONCRETE

v2=BLINDING STONE

v3=FOOTING VOLUMN-1/4*π*1.5^2*0.1*n

V2=v1+v2+v3

3) BACK FILL

V3=V1-V2

IX. APPROACH SLAB

1) CONCRETE

V1={6*0.3+(0.3+0.5)*0.2/2}*L*2

2) LEAN CONCRETE

V2=5.79*0.2*L*2

3) ASPHALTIC JOINT FILLER

V3={(0.057+0.02)*0.3/2+0.02*0.3)}*L*2

3) FORM

A1={6*0.3+(0.3+0.5)*0.2/2}*2+(5.79+0.3)*L*2

QUANTITY SURVEYING(ABUTMENT)

			A1	A2
CONCRETE		h1(m)	2.86	2.86
		h2(m)	4.32	3.32
		h3(m)	4.32	3.32
		h4(m)	2.00	2.00
		h5(m)	3.43	3.47
		h6(m)	7.30	6.28
		h7(m)	1.05	1.05
		h8(m)	2.59	2.59
		b1(m)	0.50	0.50
		b2(m)	1.50	1.50
		b3(m)	4.70	4.70
		b4(m)	1.30	1.30
		b5(m)	6.40	6.40
		B(m)	7.00	7.00
		L(m)	11.55	11.55
		L1(m)	10.85	10.85
		T(m)	0.50	0.50
		n(nos.)	12.00	12.00
		v1(m^3)	33.03	33.03
		v2(m^3)	2.93	2.93
		v3(m^3)	149.57	114.92
		v4(m^3)	319.16	319.16
		v5(m^3)	33.30	29.80
		v6(m^3)	2.37	2.37
		v7(m^3)	2.96	2.96
		v8(m^3)	1.83	1.83
		V(m^3)	545.15	507.00
FORM				
		a1(m^2)	117.97	117.97
		a2(m^2)	15.71	15.71
		a3(m^2)	204.83	157.63
		a4(m^2)	74.20	74.20
		a5(m^2)	96.15	87.96
		a6(m^2)	7.80	7.80
		a7(m^2)	11.78	11.78
		a8(m^2)	10.32	8.88
		A(m^2)	538.76	481.92
SCAFFOLDING WORK		A(m^2)	414.24	414.24
SUPPORT				0.00
		Q(t/m^2)	5.51	5.51
		V(m^3)	2.09	2.09
LEAN CONCRETE	CONCRETE	V(m^3)	14.66	14.66
	FORM	A(m^2)	6.10	6.10
BLINDING STONE		V(m^3)	29.31	29.31

VII.CAST-IN-PLACE-CONCRETE-PILE

		A1	A2
PILE DIMENTION	D(m)	1.50	1.50
	L(m)	59.00	52.00
	n(nos.)	12.00	12.00
CONCRETE	v1(m^3)	104.26	91.89
	V1(m^3)	1251.14	1102.70
EXCAVATION LENGTH	N<20(l1)(m)	28.10	45.72
	L1(m)	337.20	548.64
	20≤N≤40(l2)(m)	26.20	6.28
	L2(m)	314.40	75.36
	40≤N(l3)(m)	4.70	0.00
	L3(m)	56.40	0.00
EXCAVATION MATERIALS	v2(m^3)	104.26	91.89
	V(m^3)	1251.14	1102.70

VIII. EARTH WORK

		A1	A2
EXCAVATION FOR FOUNDATION	h1(m)	2.00	1.80
	h(m)	2.30	2.10
	n(nos.)	12.00	12.00
	B(m)	23.10	23.10
	B1(m)	9.20	9.20
	B2(m)	25.30	25.30
	B3(m)	13.80	13.40
	B4(m)	29.90	29.50
	v1(m^3)	734.08	653.29
	v2(m^3)	8.48	8.48
	V1(m^3)	725.59	644.81
EXCESS SOIL	FOOTING.V	319.16	319.16
	v1(m^3)	14.66	14.66
	v2(m^3)	29.31	29.31
	v3(m^3)	317.04	317.04
	V2(m^3)	361.00	361.00
BACK FILL	V(m^3)	364.59	283.80

IX. APPROACH SLAB

		A1	A2
	L(m)	11.05	11.05
CONCRETE	V1(m^3)	41.55	41.55
LEAN CONCRETE	V2(m^3)	12.80	12.80
ASPHALTIC JOINT FILLER	V3(m^3)	0.60	0.60
FORM	A(m^2)	21.44	21.44

XI. QUANTITIES OF EARTHWORKS SLOPE PROTECTION OF INFRONT OF ABUTMENTS

Abutment A1

h1	h2	h3	h4	h5	h6	d1	d2
6.96	3.5	2.9	0.39	0.89	-0.21	23.1	12

Block	a	b	Dh	R	r	L	Sxq	W	Masonry	Blinding
	(m)	(m)	(m)	(m)	(m)	(m)	(m2)	(m)	(m3)	(m3)
1	8.390	5.755	3.460	7.073	0.500	7.873	43.713		13.11	4.37
2	12.000	12.000	0.600	19.073	7.073	12.015	246.594		73.98	24.66
3	5.220	3.338	2.510	23.352	19.073	4.961	165.210		49.56	16.52
4	23.100	12.000	0.600				277.546		83.26	27.75
5	23.100	3.338	2.510				96.475		28.94	9.65
6	8.390	5.755	3.460	7.073	0.500	7.873	43.713		13.11	4.37
7	12.000	12.000	0.600	19.073	7.073	12.015	246.594		73.98	24.66
8	5.220	3.338	2.510	23.352	19.073	4.961	165.210		49.56	16.52
9			1.100				3.795	96.424	34.71	7.71
Extra								82.988	**420**	**136**
						Geotextile	(m2)		**510**	
						PVC Pipe	(m)		**48**	
						Wood Pile	(m)		**5785**	
						Excavation	(m3)		**366**	
						Filling	(m3)		**249**	

Abutment A2

h1	h2	h3	h4	h5	h6	d1	d2
6.96	3.5	2.9	0.45	0.95	-0.15	23.1	12

Block	a	b	Dh	R	r	L	Sxq	W	Masonry	Blinding
	(m)	(m)	(m)	(m)	(m)	(m)	(m2)	(m)	(m3)	(m3)
1	6.918	6.152	3.460	6.535	0.500	7.394	37.933		11.38	3.79
2	12.000	12.000	0.600	18.535	6.535	12.015	236.454		70.94	23.65
3	5.100	3.263	2.450	22.717	18.535	4.846	156.938		47.08	15.69
4	23.100	12.000	0.600				277.546		83.26	27.75
5	23.100	3.263	2.450				94.257		28.28	9.43
6	6.918	6.152	3.460	6.535	0.500	7.394	37.933		11.38	3.79
7	12.000	12.000	0.600	18.535	6.535	12.015	236.454		70.94	23.65
8	5.100	3.263	2.450	22.717	18.535	4.846	156.938		47.08	15.69
9			1.100				3.795	94.430	33.99	7.55
Extra								81.300	**404**	**131**
						Geotextile	(m2)		**489**	
						PVC Pipe	(m)		**47**	
						Wood Pile	(m)		**5666**	
						Excavation	(m3)		**358**	
						Filling	(m3)		**244**	

NOTES :

* INPUT VALUES : GRAY CELLS ; TOTAL VALUES : BOLD NUMBERS
* No. of Blocks : see drawing. Extra block used for calculation only.

h_i : Elevations (see drawing)
d_i : Distances (see drawing)
a_i : Long edge of ellipse (or rectangle) : $a_i = Dh_i * slo$
b_i : Short edge of ellipse (or rectangle) : $b_i = Dh_i * slope_i$
Dh_i : Height of cone (or truncated cone)
R_i : Average radius of lower ellipse : $R_i = (Sa_i + Sb_i)/2$
r_i : Average radius of upper ellipse : $r_i = (Sa_{i-1} + Sb_{i-1})/2$
L_i : Generatrix of cone : $L_i = sqrt(Dh_i^2 + (R_i - r_i)^2)$
Sxq_i : Area of cone's side (or plane before abutment)
$Sxq_i = 3.14/4 * (R_i + r_i) * L_i$ for block 1,2,3,6,7,8
$Sxq_i = a_i * sqrt(b_i^2 + Dh_i^2)$ for block 4,5
$Sxq_9 = (1.8 + 1.8 + Dh_9 + 2*Dh_9) * Dh_9/2$ for block 9

W : Length of masonry's footing : W_9
$W_9 = 2*3.14*R_3/4 + a_5 + 2*3.14*R_8/4$, and
$W_{Ex} = 2*3.14*R_2/4 + a_5 + 2*3.14*R_7/4$

$Masonry_i$ = $0.3 * Sxq_i$
$Blinding_i$ = $0.1 * Sxq_i$
Geotextile = $Sxq_3 + Sxq_5 + Sxq_8 + W_{Ex} * 1$
PVC Pipe = $W_9/2$
Wood Pile = $W_9 * 0.8 * 25 * 3$
Excavation = $W_9 * Sxq_9$
Filling = Excavation-$W_9 * Dh_9 * 1.1$

X. QUANTITIES OF EARTHWORKS SLOPE PROTECTION OF 25M BEHIND BACK WALLS OF ABUTMENTS

ABUTMENT A1 :

Block	B	L	S	Thick	Masonry	Blinding (T=0.1m)
	m	m	m2	m	m3	m3
10	11.07	25	276.71	0.30	83.01	27.67
11	12.01	25	300.37	0.30	90.11	30.04
12	4.16	25	103.98	0.30	31.19	10.40
13	0.80	25	20.00	0.10		4.00
14	0.60	25	15.00	0.60	18.00	
15	11.07	25	276.71	0.30	83.01	27.67
16	12.01	25	300.37	0.30	90.11	30.04
17	4.16	25	103.98	0.30	31.19	10.40
					426.64	140.21

Wood pile (m)						
= 2 x L x B13 x 3 x 25 =	3000					
Geotextile (m2)						
= 2 x (L + S12) =	258					
PVC pipe (m)						
= 2 x L/2 x 1m =	25					

No	h	Dh	S	L	Total (m3)	
	m	m	m2	m	Excavation	Filling
5	1.54					
6	0.34	1.2	4.32	25	216	150

Excavation = 2 x S x L

Filling = Excavation - 2 x 25 x Dh x 1.1

ABUTMENT A2 :

Block	B	L	S	Thick	Masonry	Blinding (T=0.1m)
	m	m	m2	m	m3	m3
10	10.67	25	266.65	0.30	80.00	26.67
11	12.01	25	300.37	0.30	90.11	30.04
12	4.16	25	103.98	0.30	31.19	10.40
13	0.80	25	20.00	0.10		4.00
14	0.60	25	15.00	0.60	18.00	
15	10.67	25	266.65	0.30	80.00	26.67
16	12.01	25	300.37	0.30	90.11	30.04
17	4.16	25	103.98	0.30	31.19	10.40
					420.60	138.20

Wood pile (m)						
= 2 x L x B13 x 3 x 25 =	3000					
Geotextile (m2)						
= 2 x (L + S12) =	258					
PVC pipe (m)						
= 2 x L/2 x 1m =	25					

No	h	Dh	S	L	Total (m3)	
	m	m	m2	m	Excavation	Filling
5	1.54					
6	0.34	1.2	4.32	25	216	150

Excavation = 2 x S x L

Filling = Excavation - 2 x 25 x Dh x 1.1

LIST OF REINFORCEMENT FOR A1

REINF No.	DIA. mm	LENGTH mm	NUMBER	UNIT WEIGHT kg/m	WEIGHT kg
A1	22	3478	184	2.984	1909.64
A2	16	24434	25	1.578	964.13
A3	16	1607	94	1.578	238.42
A4	16	24440	2	1.578	77.15
A5	16	760	230	1.578	275.89
A6	16	3247	184	1.578	942.97
A7	16	792	91	1.578	113.75
F1	20	6926	94	2.466	1605.57
F2	16	4024	184	1.578	1168.63
F3	16	3630	94	1.578	538.56
F4	20	4250	184	2.466	1928.53
F5	20	7500	16	2.466	295.94
F6	20	24900	16	2.466	982.51
F7	16	4806	329	1.578	2495.62
F8	16	27374	28	1.578	1209.75
F9	16	24434	28	1.578	1079.82
K1	25	7737	10	3.853	298.13
K2	25	4237	24	3.853	391.84
K3	25	9492	42	3.853	1536.20
K4	25	5237	46	3.853	928.28
K5	20	8500	10	2.466	209.62
K6	20	6911	8	2.466	136.35
K7	16	1285	74	1.578	150.08
K8-1	20	2250	32	2.466	177.56
K8-2	20	4016	38	2.466	376.35
K9	20	9503	44	2.466	1031.18
K10	20	5150	34	2.466	431.82
K11	10	540	312	0.617	103.87
K12	25	6415	14	3.853	346.07
K13	20	7178	14	2.466	247.83
K14	25	2105	26	3.853	210.89
K15	20	2105	26	2.466	134.97
K16	25	6115	4	3.853	94.25
K17	20	5638	4	2.466	55.62
K18	25	2965	4	3.853	45.70
W1	16	6332	184	1.578	1838.90
W2	16	6332	94	1.578	939.44
W3	16	24434	40	1.578	1542.60
W4	16	4006	99	1.578	625.96
W5	16	1860	93	1.578	273.02

TOTAL		27953 kg
	D10	104 kg
	D16	14475 kg
	D20	7614 kg
	D22	1910 kg
	D25	3851 kg

LIST OF REINFORCEMENT FOR A2

REINF No.	DIA. mm	LENGTH mm	NUMBER	UNIT WEIGHT kg/m	WEIGHT kg
A1	22	3478	184	2.984	1909.64
A2	16	24434	25	1.578	964.13
A3	16	1607	94	1.578	238.42
A4	16	24440	2	1.578	77.15
A5	16	760	230	1.578	275.89
A6	16	3247	184	1.578	942.97
A7	16	792	91	1.578	113.75
F1	20	6926	94	2.466	1605.57
F2	16	4024	184	1.578	1168.63
F3	16	3630	94	1.578	538.56
F4	20	4250	184	2.466	1928.53
F5	20	7500	16	2.466	295.94
F6	20	24900	16	2.466	982.51
F7	16	4806	329	1.578	2495.62
F8	16	27374	28	1.578	1209.75
F9	16	24434	28	1.578	1079.82
K1	25	7737	10	3.853	298.13
K2	25	4237	24	3.853	391.84
K3	25	8492	42	3.853	1374.35
K4	25	5237	36	3.853	726.48
K5	20	8500	10	2.466	209.62
K6	20	5911	8	2.466	116.62
K7	16	1285	74	1.578	150.08
K8-1	20	2250	22	2.466	122.07
K8-2	20	4016	28	2.466	277.31
K9	20	8503	44	2.466	922.67
K10	20	5150	24	2.466	304.82
K11	10	540	312	0.617	103.87
K12	25	6415	14	3.853	346.07
K13	20	7178	14	2.466	247.83
K14	25	2105	26	3.853	210.89
K15	20	2105	26	2.466	134.97
K16	25	6115	4	3.853	94.25
K17	20	5638	4	2.466	55.62
K18	25	2965	4	3.853	45.70
W1	16	5332	184	1.578	1548.49
W2	16	5332	94	1.578	791.07
W3	16	24434	30	1.578	1156.95
W4	16	4006	70	1.578	442.60
W5	16	1860	93	1.578	273.02

TOTAL		26172 kg
	D10	104 kg
	D16	13467 kg
	D20	7204 kg
	D22	1910 kg
	D25	3488 kg

MATERIAL OF PILE (FOR A1)

TYPE	D	LENGTH OF BAR	U.WEIGHT	NUMBER	WEIGHT	CONCRETE VOLUME
	mm	mm	kg/m		kg	m^3
N1	D25	12000	3.853	84	3883.8	
N1'	D25	3000	3.853	14	161.8	
N1"	D25	4975	3.853	14	268.4	
N2	D22	4409	2.984	26	342.1	
N3	D10	155195	0.617	1	95.8	
N4	D10	186234	0.617	1	114.9	106
N5	D10	193993	0.617	2	239.4	
N5'	D10	197873	0.617	2	244.2	
N5"	D10	73717	0.617	1	45.5	
N6	D10	4184	0.617	71	183.3	
N7	D16	1276	1.578	16	32.2	

D10	923.0 kg
D16	32.2 kg
D22	342.1 kg
D25	4314.0 kg
TOTAL	5611.3 kg

MATERIAL OF PILE (FOR A2)

TYPE	D	LENGTH OF BAR	U.WEIGHT	NUMBER	WEIGHT	CONCRETE VOLUME
	mm	mm	kg/m		kg	m^3
N1	D25	12000	3.853	70	3236.5	
N1'	D25	3000	3.853	14	161.8	
N1"	D25	8975	3.853	14	484.1	
N2	D22	4409	2.984	23	302.6	
N3	D10	155195	0.617	1	95.8	
N4	D10	186234	0.617	1	114.9	92.1
N5	D10	193993	0.617	2	239.4	
N5'	D10	197873	0.617	1	122.1	
N5"	D10	151315	0.617	1	93.4	
N6	D10	4184	0.617	60	154.9	
N7	D16	1276	1.578	16	32.2	

D10	820.4 kg
D16	32.2 kg
D22	302.6 kg
D25	3882.5 kg
TOTAL	5037.7 kg

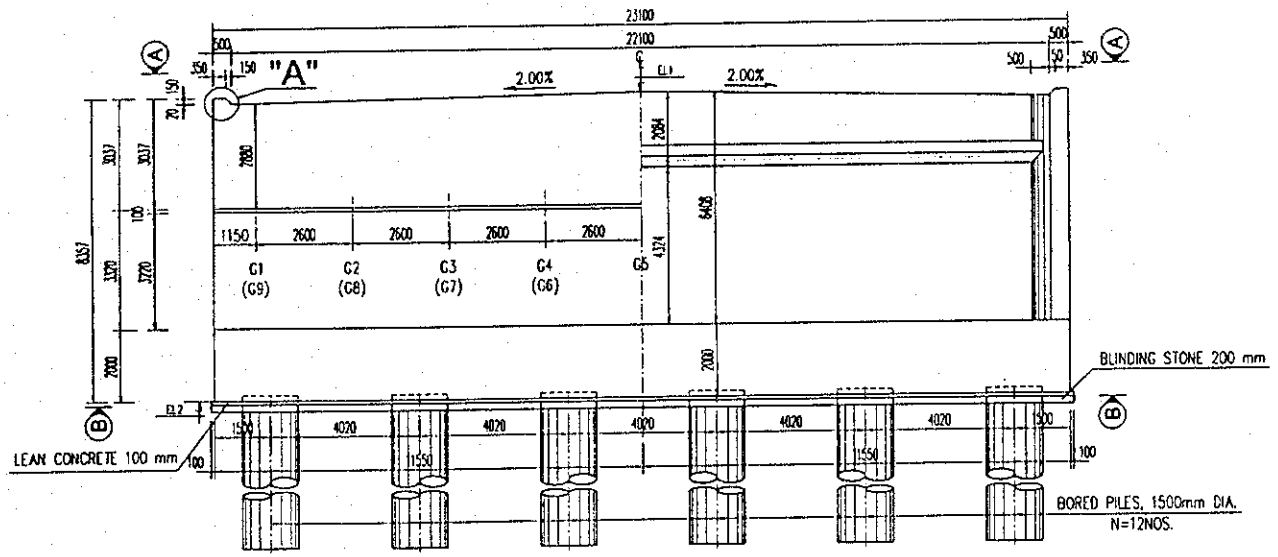
LIST OF REINFORCEMENT OF APPROACH SLAB

TYPE	D	LENGTH OF BAR	U.WEIGHT	NUMBER	WEIGHT
	mm	mm	kg/m		kg
AS1	20	5850	2.466	224	3231.4
AS2	16	11170	1.578	110	1938.9
AS3	16	6320	1.578	116	1156.9
AS4	16	1200	1.578	116	219.7
AS5	20	700	2.466	58	100.1
AS6	10	1580	0.617	58	56.5
AS7	10	519	0.617	616	197.3

D10	253.8 kg
D16	3315.4 kg
D20	3331.6 kg
TOTAL	6901 kg

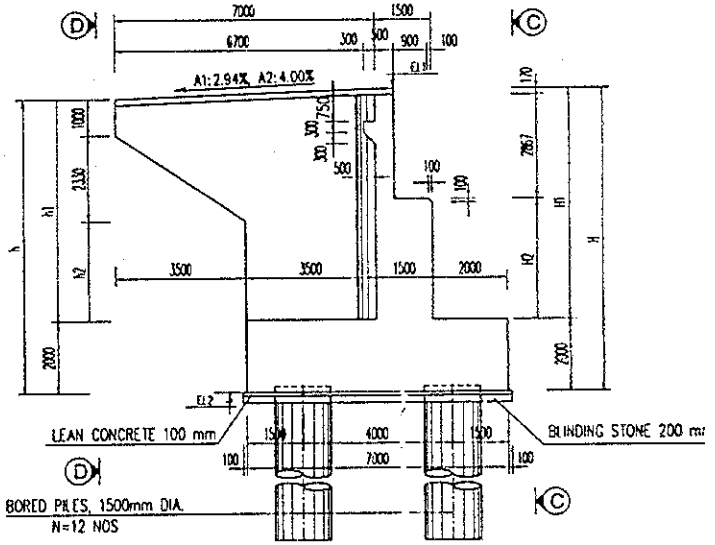
GENERAL VIEW OF ABUTMENT

1/2 C -C



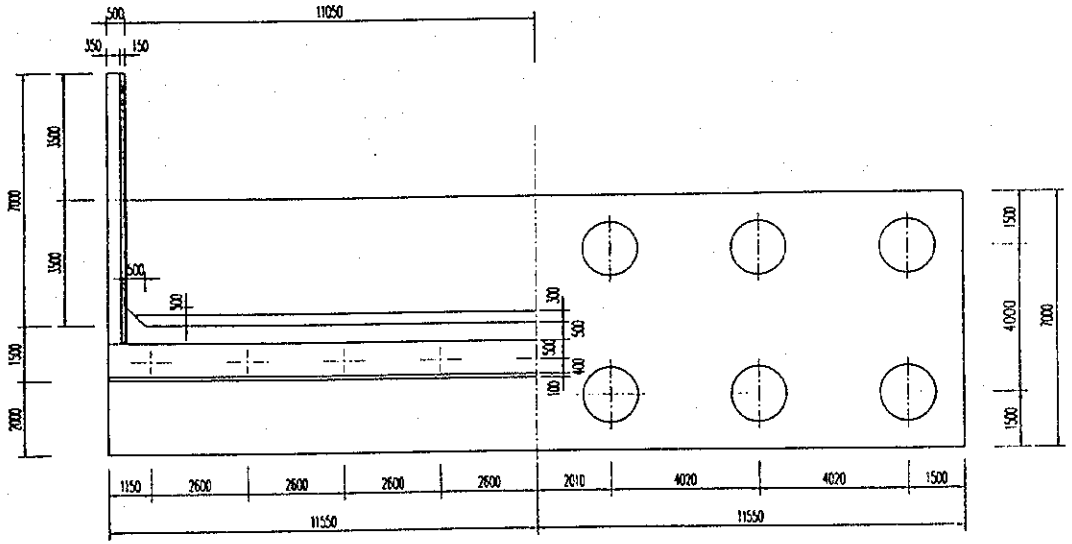
1/2 D - D

SIDE ELEVATION



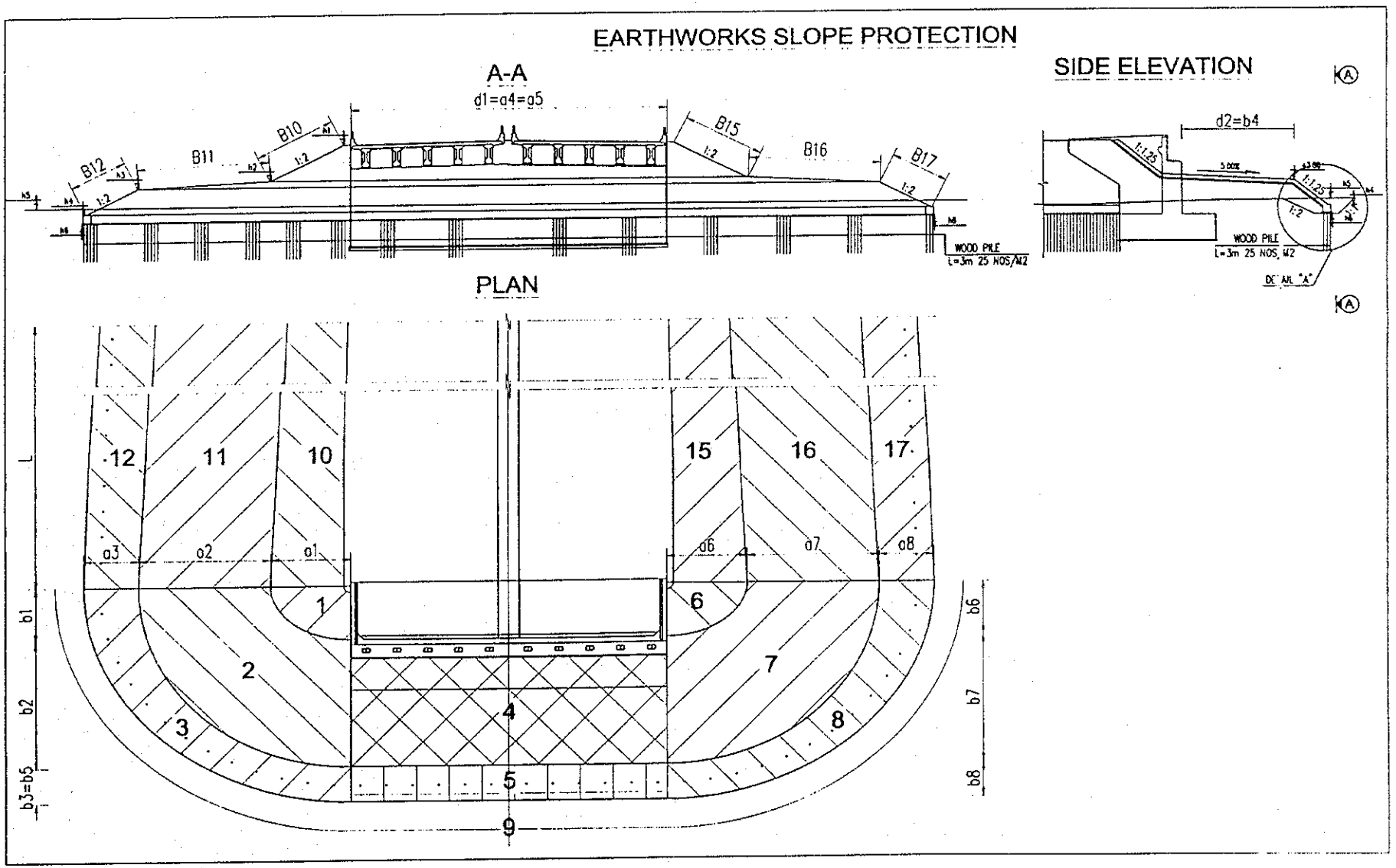
1/2 A - A

1/2 B - B



DIMENSIONS OF ABUTMENTS

DIMENSION (mm) / ABUTMENT	h	h1	h2	H	H1	H2
A1	9151	7151	3821	9357	7357	4320
A2	8077	6077	2747	8357	6357	3320


EARTHWORKS SLOPE PROTECTION
A-A
d1=a4=a5
B10
B11
B12
B15
B16
B17
1:2
WOOD PILE
L=3m 25 NOS/M2
SIDE ELEVATION
d2=b4
1:1.25
1:2
WOOD PILE
L=3m 25 NOS/M2
DETAIL "A"
PLAN
1
2
3
4
5
6
7
8
9
10
11
12
15
16
17
a1
a2
a3
a6
a7
a8
b1
b2
b3=b5
b6
b7
b8

2. QUANTITY SURVEYING FOR PIERS

I. CONCRETE

1.1) BEAM A1
v1 = (B1*H1-A1*H1/2)*B2

1.2) BEAM A2
v2 = C1*C2*C3
V = v1 + v2

2) COLUMN
V2 = 2*H2((2*A2+A3)*(2*A2+A3)-A2*A2/2*4))

3) FOOTING
V3 = H4*B4*B3+(B5*H3+4.2*H3)*B3-n*3.14*1.5*1.5/4*0.1

II. FORM

1) BEAM
w1 = (B1*H1-A1*H1/2*2/2)*2+B2*B1+B2*H1/2*2+15*4-2*(4*4-1*1/2*4)+4.272*4*2
w2 = ((C1+C2)*2*C3)
W1 = w1 + w2

2) COLUMN
W2 = (A3*4+1.414*4)*H2

3) FOOTING
W1 = (B3+B4)*H4*2+B5*H3*2+4.2*H3*2

III. SCAFFOLINDING WORK

FLAMEWORK
1) H<4m
W1 = (B3+2+B4+2)(H3+H4)

1) 4m ≤ H ≤ 30m
h_o
W2 = (H2+H1)*(B1+2+B4+2)

IV. SUPPORT
ALLOWABLE LOAD
P = V/S= (H1*C3*B2+3/2*A1*H1)*2.5/{[C3*B2+(A1*A1+(H1/2)*(H1/2)]$^{1/2}$*B1
W1 = (H1/2+H2*2)/2*A1
W2 = C3*H2
V = (2*W1+W2)B2

V. LEAN CONCRETE

1) CONCRETE
V = 0.1*(B3+0.2)*(B4+0.2)-3.14*pi()*1.5*1.5/4*0.1*n

2) FORM
W = (B3+0.2+B4+0.2)*0.1*2

VI. BLINDING STONE

CONCRETE

V = 0.2*(B3+0.2)*(B4+0.2)-3.14*pi()*1.5*1.5/4*0.2*n

VII. CAST-IN-PLACE-CONRETE PILE

1) PILE DIMENSION

D,L,n

2) CONCRETE

v1 = $\pi D^2/4 * L$

V1 = $2*\pi D^2/4 * L*n$

3) PILEHEAD TREATMENT

n (nos.)

4) EXCAVATION LENGTH

N<20 (l_1)	$L_1 = l_1 * n$
20=<N<40 (l_2)	$L_2 = l_2 * n$
N>=40 (l_3)	$L_3 = l_3 * n$

5) EXCAVATED MATERIALS

v2 = $\pi D^2/4 *(l_1+l_2+l_3)$

V2 = $2*\pi D^2/4 *(L_1+L_2+L_3)$

6) BACK FILL

V3 = $\pi D^2/4 *l_1*n$

7) EXCESS SOIL

V4 = V2 - V3

VIII. EARTH WORK

1) EXCAVATION FOR FOUNDATION

h , B3, B4 , D

w1 = (B3+2)*(B4+2)

w2 = (B3+2+2*h)*(B4+2+2*h)

V1 = $1/3*\{w1+w2+(w1*w2)^{1/2}\}*h - 2*\pi D^2/4 * 0.3 *n$

2) EXCESS SOIL

v1 = LEAN CONRETE

v2 = BLINDING STONE

v3 = FOOTING

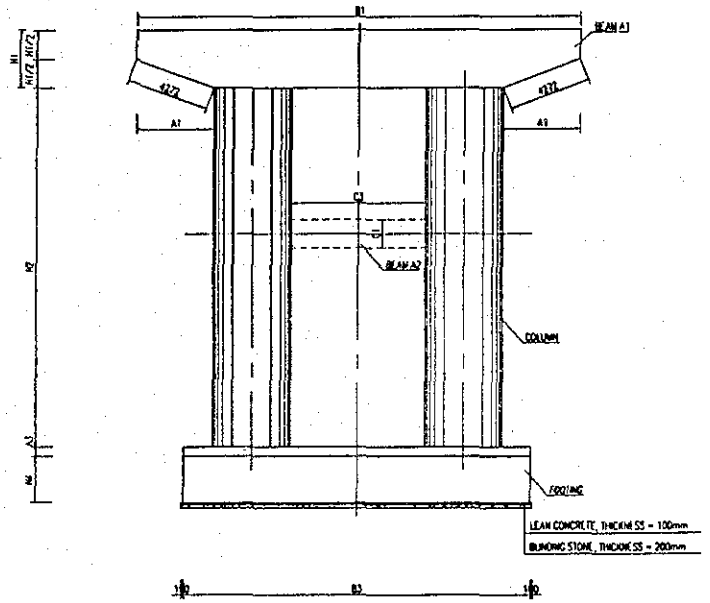
v4 = $\pi D^2/4 * l_4 +(A3*A3+2*A2*A2)(h-H3-H4-l_4)$

V2 = v1+ v2 + v3 + v4

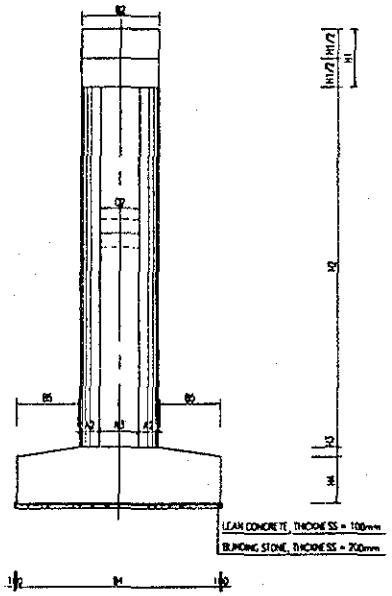
5) BACK FILL

V = V1 - V2

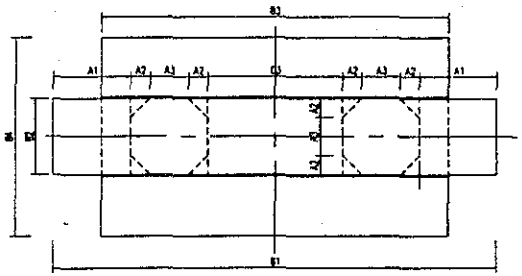
ELEVATION



SIDE ELEVATION



PLAN



SECTION OF BEAM A2

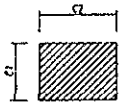


TABLE OF DIMENSIONS

PIER TYPE / ELEVATION / DIMENTION (m)	P1	P2	P3	P4
A1	3.75	3.75	3.75	3.75
A2	1.00	1.00	1.00	1.00
A3	1.50	1.50	1.50	1.50
B1	23.00	23.00	23.00	23.00
B2	3.50	3.50	3.50	3.50
B3	18.00	18.00	18.00	18.00
B4	10.50	8.00	8.00	10.50
B5	3.40	0.00	0.00	3.40
C1	0.00	0.00	0.00	0.00
C2	0.00	0.00	0.00	0.00
C3	8.50	8.50	8.50	8.50
H1	3.00	3.00	3.00	3.00
H2	3.10	4.20	5.80	6.90
H3	0.50	0.00	0.00	0.50
H4	2.50	2.50	2.50	2.50
h	3.90	3.47	3.48	3.74
DIAMETER OF PILE D(m)	1.50	1.50	1.50	1.50
l_1	26.50	27.08	26.72	26.60
l_2	26.20	26.20	26.20	26.20
l_3	4.30	3.72	4.08	4.20
l_4	0.30	0.30	0.30	0.30
NUMBER OF PILE (n. nos.)	12.00	10.00	10.00	15.00
LENGTH OF PILE L(m)	57.00	57.00	57.00	57.00

I. CONCRETE

			P1	P2	P3	P4
BEAM	BEAM A1	v1	221.81	221.81	221.81	221.81
	BEAM A2	v2	0.00	0.00	0.00	0.00
	TOTAL	V1=v1+v2	221.81	221.81	221.81	221.81
COLUMN	V2 (m^3)		63.55	86.10	118.90	141.45
FOOTING	V3(m^3)		538.78	358.23	358.23	538.25
TOTAL (m^3)			824.14	666.15	698.95	901.51

II. FORM

			P1	P2	P3	P4
BEAM	BEAM A1	w1	283.93	283.93	283.93	283.93
	BEAM A2	w2	0.00	0.00	0.00	0.00
	TOTAL	W1=w1+w2	283.93	283.93	283.93	283.93
COLUMN	W2 (m^2)		36.13	48.96	67.60	80.43
FOOTING	W3 (m^2)		150.20	130.00	130.00	150.20
TOTAL (m^2)			470.26	462.88	481.53	514.55

TABLE OF DIMENSIONS

PIER TYPE / ELEVATION / DIMENTION (m)	P5	P6	P7	P8
A1	3.75	3.75	3.75	3.75
A2	1.00	1.00	1.00	1.00
A3	1.50	1.50	1.50	1.50
B1	23.00	23.00	23.00	23.00
B2	3.50	3.50	3.50	3.50
B3	18.00	18.00	18.00	18.00
B4	8.00	8.00	10.50	10.50
B5	0.00	0.00	3.40	3.40
C1	0.00	0.00	0.00	0.00
C2	0.00	0.00	0.00	0.00
C3	8.50	8.50	8.50	8.50
H1	3.00	3.00	3.00	3.00
H2	8.70	10.10	11.70	13.30
H3	0.00	0.00	0.50	0.50
H4	2.50	2.50	2.50	2.50
h	3.34	3.24	3.74	3.76
DIAMETER OF PILE D(m)	1.50	1.50	1.50	1.50
l_1	26.90	27.10	26.60	36.54
l_2	26.20	26.20	26.20	20.46
l_3	3.90	3.70	4.20	0.00
l_4	0.30	0.30	0.30	0.30
NUMBER OF PILE (n. nos.)	10.00	10.00	12.00	12.00
LENGTH OF PILE L(m)	57.00	57.00	57.00	57.00

I. CONCRETE

			P5	P6	P7	P8
BEAM	BEAM A1	v1	221.81	221.81	221.81	221.81
	BEAM A2	v2	0.00	0.00	0.00	0.00
	TOTAL	V1=v1+v2	221.81	221.81	221.81	221.81
COLUMN	V2 (m^3)		178.35	207.05	239.85	272.65
FOOTING	V3(m^3)		358.23	358.23	538.78	538.78
TOTAL (m^3)			758.40	787.10	1000.44	1033.24

II. FORM

			P5	P6	P7	P8
BEAM	BEAM A1	w1	283.93	283.93	283.93	283.93
	BEAM A2	w2	0.00	0.00	0.00	0.00
	TOTAL	W1=w1+w2	283.93	283.93	283.93	283.93
COLUMN	W2 (m^2)		101.41	117.73	136.38	155.02
FOOTING	W3 (m^2)		130.00	130.00	150.20	150.20
TOTAL (m^2)			515.33	531.65	570.50	589.15

TABLE OF DIMENSIONS

PIER TYPE / ELEVATION / DIMENTION (m)	P9	P10	P11	P18
A1	3.75	3.75	3.75	3.75
A2	1.00	1.00	1.00	1.00
A3	1.50	1.50	1.50	1.50
B1	23.00	23.00	23.00	23.00
B2	3.50	3.50	3.50	3.50
B3	18.00	18.00	18.00	18.00
B4	8.00	10.50	10.50	10.50
B5	0.00	3.40	3.40	3.40
C1	0.00	1.50	1.50	1.50
C2	0.00	1.50	1.50	1.50
C3	8.50	8.50	8.50	8.50
H1	3.00	3.00	3.00	3.00
H2	15.30	16.40	17.80	14.60
H3	0.00	0.50	0.50	0.50
H4	2.50	2.50	2.50	2.50
h	3.83	3.85	3.83	0.00
DIAMETER OF PILE D(m)	1.50	1.50	1.50	1.50
l_1	36.64	36.64	36.84	55.88
l_2	20.36	20.36	20.16	1.62
l_3	0.00	0.00	0.00	9.50
l_4	0.30	0.30	0.30	0.30
NUMBER OF PILE (n. nos.)	10.00	15.00	15.00	15.00
LENGTH OF PILE L(m)	57.00	57.00	57.00	67.00

I. CONCRETE

			P9	P10	P11	P18
BEAM	BEAM A1	v1	221.81	221.81	221.81	221.81
	BEAM A2	v2	0.00	19.13	19.13	19.13
	TOTAL	V1=v1+v2	221.81	240.94	240.94	240.94
COLUMN	V2 (m^3)		313.65	336.20	364.90	299.30
FOOTING	V3(m^3)		358.23	538.25	538.25	538.25
TOTAL (m^3)			893.70	1115.39	1144.09	1078.49

II. FORM

			P9	P10	P11	P18
BEAM	BEAM A1	w1	283.93	283.93	283.93	283.93
	BEAM A2	w2	0.00	51.00	51.00	51.00
	TOTAL	W1=w1+w2	283.93	334.93	334.93	334.93
COLUMN	W2 (m^2)		178.34	191.16	207.48	170.18
FOOTING	W3 (m^2)		130.00	150.20	150.20	150.20
TOTAL (m^2)			592.26	676.28	692.60	655.30

TABLE OF DIMENSIONS

PIER TYPE / ELEVATION / DIMENTION (m)	P19	P20	P21	P22
A1	3.75	3.75	3.75	3.75
A2	1.00	1.00	1.00	1.00
A3	1.50	1.50	1.50	1.50
B1	23.00	23.00	23.00	23.00
B2	3.50	3.50	3.50	3.50
B3	18.00	18.00	18.00	18.00
B4	10.50	10.50	8.00	10.50
B5	3.40	3.40	0.00	3.40
C1	1.50	1.50	0.00	0.00
C2	1.50	1.50	0.00	0.00
C3	8.50	8.50	8.50	8.50
H1	3.00	3.00	3.00	3.00
H2	18.70	17.00	16.10	14.10
H3	0.50	0.50	0.00	0.50
H4	2.50	2.50	2.50	2.50
h	4.00	3.92	3.88	3.88
DIAMETER OF PILE D(m)	1.50	1.50	1.50	1.50
l_1	50.18	50.08	50.10	49.98
l_2	1.62	1.62	1.62	1.62
l_3	11.20	12.30	12.28	13.40
l_4	0.30	0.30	0.30	0.30
NUMBER OF PILE (n. nos.)	15.00	15.00	10.00	12.00
LENGTH OF PILE L(m)	63.00	64.00	64.00	65.00

I. CONCRETE

			P19	P20	P21	P22
BEAM	BEAM A1	v1	221.81	221.81	221.81	221.81
	BEAM A2	v2	19.13	19.13	0.00	0.00
	TOTAL	V1=v1+v2	240.94	240.94	221.81	221.81
COLUMN	V2 (m^3)		383.35	348.50	330.05	289.05
FOOTING	V3(m^3)		538.25	538.25	358.23	538.78
TOTAL (m^3)			1162.54	1127.69	910.10	1049.64

II. FORM

			P19	P20	P21	P22
BEAM	BEAM A1	w1	283.93	283.93	283.93	283.93
	BEAM A2	w2	51.00	51.00	0.00	0.00
	TOTAL	W1=w1+w2	334.93	334.93	283.93	283.93
COLUMN	W2 (m^2)		217.97	198.15	187.66	164.35
FOOTING	W3 (m^2)		150.20	150.20	130.00	150.20
TOTAL (m^2)			703.09	683.28	601.59	598.48

TABLE OF DIMENSIONS

PIER TYPE / ELEVATION / DIMENTION (m)	P23	P24	P25	P26
A1	3.75	3.75	3.75	3.75
A2	1.00	1.00	1.00	1.00
A3	1.50	1.50	1.50	1.50
B1	23.00	23.00	23.00	23.00
B2	3.50	3.50	3.50	3.50
B3	18.00	18.00	18.00	18.00
B4	10.50	8.00	8.00	10.50
B5	3.40	0.00	0.00	3.40
C1	0.00	0.00	0.00	0.00
C2	0.00	0.00	0.00	0.00
C3	8.50	8.50	8.50	8.50
H1	3.00	3.00	3.00	3.00
H2	10.40	8.90	7.30	7.20
H3	0.50	0.00	0.00	0.50
H4	2.50	2.50	2.50	2.50
h	3.77	3.21	3.16	3.81
DIAMETER OF PILE D(m)	1.50	1.50	1.50	1.50
l_1	49.84	50.30	50.20	48.30
l_2	9.20	9.20	9.20	9.20
l_3	8.96	9.50	10.60	10.50
l_4	0.30	0.30	0.30	0.30
NUMBER OF PILE (n. nos.)	12.00	10.00	10.00	15.00
LENGTH OF PILE L(m)	68.00	69.00	70.00	68.00

I. CONCRETE

			P23	P24	P25	P26
BEAM	BEAM A1	v1	221.81	221.81	221.81	221.81
	BEAM A2	v2	0.00	0.00	0.00	0.00
	TOTAL	V1=v1+v2	221.81	221.81	221.81	221.81
COLUMN	V2 (m^3)		213.20	182.45	149.65	147.60
FOOTING	V3(m^3)		538.78	358.23	358.23	538.25
TOTAL (m^3)			973.79	762.50	729.70	907.66

II. FORM

			P23	P24	P25	P26
BEAM	BEAM A1	w1	283.93	283.93	283.93	283.93
	BEAM A2	w2	0.00	0.00	0.00	0.00
	TOTAL	W1=w1+w2	283.93	283.93	283.93	283.93
COLUMN	W2 (m^2)		121.22	103.74	85.09	83.92
FOOTING	W3 (m^2)		150.20	130.00	130.00	150.20
TOTAL (m^2)			555.35	517.66	499.01	518.05

TABLE OF DIMENSIONS

PIER TYPE / ELEVATION / DIMENTION (m)	P27	P28	P29	P30
A1	3.75	3.75	3.75	3.75
A2	1.00	1.00	1.00	1.00
A3	1.50	1.50	1.50	1.50
B1	23.00	23.00	23.00	23.00
B2	3.50	3.50	3.50	3.50
B3	18.00	18.00	18.00	18.00
B4	8.00	8.00	10.50	8.00
B5	0.00	0.00	3.40	0.00
C1	0.00	0.00	0.00	0.00
C2	0.00	0.00	0.00	0.00
C3	8.50	8.50	8.50	8.50
H1	3.00	3.00	3.00	3.00
H2	4.80	3.30	2.10	1.70
H3	0.00	0.00	0.50	0.00
H4	2.50	2.50	2.50	2.50
h	3.32	3.25	3.77	3.26
DIAMETER OF PILE D(m)	1.50	1.50	1.50	1.50
l_1	50.00	50.20	49.72	50.00
l_2	9.20	9.20	9.20	9.20
l_3	11.80	11.60	13.08	13.80
l_4	0.30	0.30	0.30	0.30
NUMBER OF PILE (n. nos.)	10.00	10.00	12.00	10.00
LENGTH OF PILE L(m)	71.00	71.00	72.00	73.00

I. CONCRETE

			P27	P28	P29	P30
BEAM	BEAM A1	v1	221.81	221.81	221.81	221.81
	BEAM A2	v2	0.00	0.00	0.00	0.00
	TOTAL	V1=v1+v2	221.81	221.81	221.81	221.81
COLUMN	V2 (m^3)		98.40	67.65	43.05	34.85
FOOTING	V3(m^3)		358.23	358.23	538.78	358.23
TOTAL (m^3)			678.45	647.70	803.64	614.90

II. FORM

			P27	P28	P29	P30
BEAM	BEAM A1	w1	283.93	283.93	283.93	283.93
	BEAM A2	w2	0.00	0.00	0.00	0.00
	TOTAL	W1=w1+w2	283.93	283.93	283.93	283.93
COLUMN	W2 (m^2)		55.95	38.46	24.48	19.82
FOOTING	W3 (m^2)		130.00	130.00	150.20	130.00
TOTAL (m^2)			469.87	452.39	458.60	433.74

TABLE OF DIMENSIONS

PIER TYPE / ELEVATION / DIMENTION (m)	P31	P32	P33	P34
A1	3.75	3.75	3.75	3.75
A2	1.00	1.00	1.00	1.00
A3	1.50	1.50	1.50	1.50
B1	23.00	23.00	23.00	23.00
B2	3.50	3.50	3.50	3.50
B3	18.00	18.00	18.00	18.00
B4	10.50	8.00	8.00	10.50
B5	3.40	0.00	0.00	3.40
C1	0.00	0.00	0.00	0.00
C2	0.00	0.00	0.00	0.00
C3	8.50	8.50	8.50	8.50
H1	3.00	3.00	3.00	3.00
H2	1.80	2.50	2.00	2.20
H3	0.50	0.00	0.00	0.50
H4	2.50	2.50	2.50	2.50
h	3.84	3.35	2.18	2.66
DIAMETER OF PILE D(m)	1.50	1.50	1.50	1.50
l_1	35.38	35.18	35.66	35.40
l_2	36.40	36.40	36.40	36.40
l_3	1.22	1.42	2.94	3.20
l_4	0.30	0.30	0.30	0.30
NUMBER OF PILE (n. nos.)	12.00	10.00	10.00	12.00
LENGTH OF PILE L(m)	73.00	73.00	75.00	75.00

I. CONCRETE

			P31	P32	P33	P34
BEAM	BEAM A1	v1	221.81	221.81	221.81	221.81
	BEAM A2	v2	0.00	0.00	0.00	0.00
	TOTAL	V1=v1+v2	221.81	221.81	221.81	221.81
COLUMN	V2 (m^3)		36.90	51.25	41.00	45.10
FOOTING	V3(m^3)		538.78	358.23	358.23	538.78
TOTAL (m^3)			797.49	631.30	621.05	805.69

II. FORM

			P31	P32	P33	P34
BEAM	BEAM A1	w1	283.93	283.93	283.93	283.93
	BEAM A2	w2	0.00	0.00	0.00	0.00
	TOTAL	W1=w1+w2	283.93	283.93	283.93	283.93
COLUMN	W2 (m^2)		20.98	29.14	23.31	25.64
FOOTING	W3 (m^2)		150.20	130.00	130.00	150.20
TOTAL (m^2)			455.11	443.07	437.24	459.77

TABLE OF DIMENSIONS

PIER TYPE		
ELEVATION / DIMENTION (m)	P35	P42
A1	3.75	3.75
A2	1.00	1.00
A3	1.50	1.50
B1	23.00	23.00
B2	3.50	3.50
B3	18.00	18.00
B4	8.00	10.50
B5	0.00	3.40
C1	0.00	0.00
C2	0.00	0.00
C3	8.50	8.50
H1	3.00	3.00
H2	4.90	2.40
H3	0.00	0.50
H4	2.50	2.50
h	3.56	3.81
DIAMETER OF PILE D(m)	1.50	1.50
l_1	34.28	47.50
l_2	36.40	9.66
l_3	4.32	3.84
l_4	0.30	0.30
NUMBER OF PILE (n. nos.)	10.00	12.00
LENGTH OF PILE L(m)	75.00	61.00

I. CONCRETE

			P35	P42
BEAM	BEAM A1	v1	221.81	221.81
	BEAM A2	v2	0.00	0.00
	TOTAL	V1=v1+v2	221.81	221.81
COLUMN	V2 (m^3)		100.45	49.20
FOOTING	V3(m^3)		358.23	538.78
TOTAL (m^3)			680.50	809.79

II. FORM

			P35	P42
BEAM	BEAM A1	w1	283.93	283.93
	BEAM A2	w2	0.00	0.00
	TOTAL	W1=w1+w2	283.93	283.93
COLUMN	W2 (m^2)		57.11	27.97
FOOTING	W3 (m^2)		130.00	150.20
TOTAL (m^2)			471.04	462.10

III. SCAFFOLINDING WORK

		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
W (m^2)	H < 4m	54.00	38.75	38.75	54.00	38.75	38.75	54.00	54.00	38.75	54.00
	4m £ H < 30m	228.75	252.00	308.00	371.25	409.50	458.50	551.25	611.25	640.50	727.50

IV. SUPPORT

	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
P(t/m^2)	6.05	6.05	6.05	6.05	6.05	6.05	6.05	6.05	6.05	6.05
W1 (m^2)	14.44	18.56	24.56	28.69	35.44	40.69	46.69	52.69	60.19	64.31
W2 (m^2)	26.35	35.70	49.30	58.65	73.95	85.85	99.45	113.05	130.05	139.40
V (m^3)	193.29	254.89	344.49	406.09	506.89	585.29	674.89	764.49	876.49	938.09

V. LEAN CONCRETE VI. BLINDING STONE

		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
LEAN	CONCRETE (m^3)	1.73	1.18	1.18	1.20	1.18	1.18	1.73	1.73	1.18	1.20
	FORM (m^2)	5.78	5.28	5.28	5.78	5.28	5.28	5.78	5.78	5.28	5.78
BLINDING STONE (m^3)		34.71	26.31	26.31	33.65	26.31	26.31	34.71	34.71	26.31	33.65

III. SCAFFOLINDING WORK

		P11	P18	P19	P20	P21	P22	P23	P24	P25	P26
W (m^2)	H < 4m	54.00	54.00	54.00	54.00	38.75	54.00	54.00	38.75	38.75	54.00
	4m £ H < 30m	780.00	660.00	813.75	750.00	668.50	641.25	502.50	416.50	360.50	382.50

IV. SUPPORT

	P11	P18	P19	P20	P21	P22	P23	P24	P25	P26
P(t/m^2)	6.05	6.05	6.05	6.05	6.05	6.05	6.05	6.05	6.05	6.05
W1 (m^2)	69.56	57.56	72.94	66.56	63.19	55.69	41.81	36.19	30.19	29.81
W2 (m^2)	151.30	124.10	158.95	144.50	136.85	119.85	88.40	75.65	62.05	61.20
V (m^3)	1016.49	837.29	1066.89	971.69	921.29	809.29	602.09	518.09	428.49	422.89

V. LEAN CONCRETE VI. BLINDING S

		P11	P18	P19	P20	P21	P22	P23	P24	P25	P26
LEAN	CONCRETE (m^3)	1.20	1.20	1.20	1.20	1.18	1.73	1.73	1.18	1.18	1.20
	FORM (m^2)	5.78	5.78	5.78	5.78	5.28	5.78	5.78	5.28	5.28	5.78
BLINDING STONE (m^3)		33.65	33.65	33.65	33.65	26.31	34.71	34.71	26.31	26.31	33.65

III. SCAFFOLINDING WORK

		P27	P28	P29	P30	P31	P32	P33	P34	P35	P42
W (m^2)	H < 4m	38.75	38.75	54.00	38.75	54.00	38.75	38.75	54.00	38.75	54.00
	4m £ H < 30m	273.00	220.50	191.25	164.50	180.00	192.50	175.00	195.00	276.50	202.50

IV. SUPPORT

	P27	P28	P29	P30	P31	P32	P33	P34	P35	P42
P(t/m^2)	6.05	6.05	6.05	6.05	6.05	6.05	6.05	6.05	6.05	6.05
W1 (m^2)	20.81	15.19	10.69	9.19	9.56	12.19	10.31	11.06	21.19	11.81
W2 (m^2)	40.80	28.05	17.85	14.45	15.30	21.25	17.00	18.70	41.65	20.40
V (m^3)	288.49	204.49	137.29	114.89	120.49	159.69	131.69	142.89	294.09	154.09

V. LEAN CONCRETE VI. BLINDING S

		P27	P28	P29	P30	P31	P32	P33	P34	P35	P42
LEAN	CONCRETE (m^3)	1.18	1.18	1.73	1.18	1.73	1.18	1.18	1.73	1.18	1.73
	FORM (m^2)	5.28	5.28	5.78	5.28	5.78	5.28	5.28	5.78	5.28	5.78
BLINDING STONE (m^3)		26.31	26.31	34.71	26.31	34.71	26.31	26.31	34.71	26.31	34.71

VII. CAST-IN-PLACE-CONRETE PILE

		P1	P2	P3	P4	P5	P6	P7	P8	P9
CONCRETE	v (m^3)	100.73	100.73	100.73	100.73	100.73	100.73	100.73	100.73	100.73
	V1 (m^3)	1208.73	1007.27	1007.27	1510.91	1007.27	1007.27	1208.73	1208.73	1007.27
EXCAVATION LENGTH	N < 20 (l_1) (m)	26.50	27.08	26.72	26.60	26.90	27.10	26.60	36.54	36.64
	L_1 (m)	318.00	324.96	320.64	319.20	322.80	325.20	319.20	438.48	439.68
	20 ≤ N ≤ 40 (l_2) (m)	26.20	26.20	26.20	26.20	26.20	26.20	26.20	20.46	20.36
	L_2 (m)	314.40	314.40	314.40	314.40	314.40	314.40	314.40	245.52	244.32
	N ≥ 40 (l_3) (m)	4.30	3.72	4.08	4.20	3.90	3.70	4.20	0.00	0.00
	L_3 (m)	51.60	44.64	48.96	50.40	46.80	44.40	50.40	0.00	0.00
EXCAVATED MATERIALS	v2 (m^3)	100.73	100.73	100.73	100.73	100.73	100.73	100.73	100.73	100.73
	V2 (m^3)	2417.46	2014.55	2014.55	3021.82	2014.55	2014.55	2417.46	2417.46	2014.55
BACK FILL	V3 (m^3)	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
EXCESS SOIL	V4 (m^3)	2416.40	2013.49	2013.49	3020.76	2013.49	2013.49	2416.40	2416.40	2013.49

VIII. EARTH WORK

		P1	P2	P3	P4	P5	P6	P7	P8	P9
EXCAVATION FOR FOUNDATION	w1 (m^2)	319.00	264.00	264.00	319.00	264.00	264.00	319.00	319.00	264.00
	w2 (m^2)	664.64	548.41	549.18	648.18	535.93	526.50	647.56	650.24	583.31
	V1 (m^3)	1865.09	1370.39	1374.77	1757.67	1299.55	1246.56	1756.97	1773.82	1572.95
EXCESS SOIL	v1 (m^3)	1.73	1.18	1.18	1.20	1.18	1.18	1.73	1.73	1.18
	v2 (m^3)	34.71	26.31	26.31	33.65	26.31	26.31	34.71	34.71	26.31
	v3 (m^3)	538.78	358.23	358.23	538.25	358.23	358.23	538.78	538.78	358.23
	v4 (m^3)	2.33	3.39	3.42	2.41	2.83	2.41	2.38	2.49	4.92
	V2 (m^3)	577.55	389.12	389.16	575.51	388.57	388.14	577.60	577.71	390.55
BACK FILL	V (m^3)	1287.54	981.27	985.61	1182.17	910.98	858.42	1179.37	1196.11	1182.30

VII. CAST-IN-PLACE-CONRETE PILE

		P10	P11	P18	P19	P20	P21	P22	P23	P24
CONCRETE	v (m^3)	100.73	100.73	118.40	111.33	113.10	113.10	114.86	120.17	121.93
	V1 (m^3)	1510.91	1510.91	1775.98	1669.95	1696.46	1130.97	1378.37	1441.99	1219.33
EXCAVATION LENGTH	N < 20 (l_1) (m)	36.64	36.84	55.88	50.18	50.08	50.10	49.98	49.84	50.30
	L_1 (m)	439.68	442.08	670.56	602.16	600.96	601.20	599.76	598.08	603.60
	20 ≤ N ≤ 40 (l_2) (m)	20.36	20.16	1.62	1.62	1.62	1.62	1.62	9.20	9.20
	L_2 (m)	244.32	241.92	19.44	19.44	19.44	19.44	19.44	110.40	110.40
	N ≥ 40 (l_3) (m)	0.00	0.00	9.50	11.20	12.30	12.28	13.40	8.96	9.50
	L_3 (m)	0.00	0.00	114.00	134.40	147.60	147.36	160.80	107.52	114.00
EXCAVATED MATERIALS	v2 (m^3)	100.73	100.73	118.40	111.33	113.10	113.10	114.86	120.17	121.93
	V2 (m^3)	3021.82	3021.82	3551.96	3339.91	3392.92	2261.95	2756.75	2883.98	2438.66
BACK FILL	V3 (m^3)	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
EXCESS SOIL	V4 (m^3)	3020.76	3020.76	3550.90	3338.85	3391.86	2260.89	2755.69	2882.92	2437.60

VIII. EARTH WORK

		P10	P11	P18	P19	P20	P21	P22	P23	P24
EXCAVATION FOR FOUNDATION	w1 (m^2)	319.00	319.00	319.00	319.00	319.00	264.00	319.00	319.00	264.00
	w2 (m^2)	659.55	657.47	319.00	675.21	666.83	588.26	662.67	651.27	523.68
	V1 (m^3)	1829.51	1816.35	0.00	1929.49	1875.87	1602.16	1852.50	1780.32	1230.84
EXCESS SOIL	v1 (m^3)	1.20	1.20	1.20	1.20	1.20	1.18	1.73	1.73	1.18
	v2 (m^3)	33.65	33.65	33.65	33.65	33.65	26.31	34.71	34.71	26.31
	v3 (m^3)	538.25	538.25	538.25	538.25	538.25	358.23	538.78	538.78	358.23
	v4 (m^3)	2.88	2.79	0.00	3.51	3.17	5.13	3.00	2.54	2.28
	V2 (m^3)	575.97	575.89	0.00	576.61	576.27	390.86	578.22	577.75	388.01
BACK FILL	V (m^3)	1253.53	1240.47	0.00	1352.88	1299.60	1211.30	1274.28	1202.57	842.83

VII. CAST-IN-PLACE-CONRETE PILE

		P25	P26	P27	P28	P29	P30	P31	P32	P33
CONCRETE	v (m^3)	123.70	120.17	125.47	125.47	127.23	129.00	129.00	129.00	132.54
	V1 (m^3)	1237.00	1802.49	1254.67	1254.67	1526.81	1290.02	1548.02	1290.02	1325.36
EXCAVATION LENGTH	N < 20 (l_1) (m)	50.20	48.30	50.00	50.20	49.72	50.00	35.38	35.18	35.66
	L_1 (m)	602.40	579.60	600.00	602.40	596.64	600.00	424.56	422.16	427.92
	20 ≤ N ≤ 40 (l_2) (m)	9.20	9.20	9.20	9.20	9.20	9.20	36.40	36.40	36.40
	L_2 (m)	110.40	110.40	110.40	110.40	110.40	110.40	436.80	436.80	436.80
	N ≥ 40 (l_3) (m)	10.60	10.50	11.80	11.60	13.08	13.80	1.22	1.42	2.94
	L_3 (m)	127.20	126.00	141.60	139.20	156.96	165.60	14.64	17.04	35.28
EXCAVATED MATERIALS	v2 (m^3)	123.70	120.17	125.47	125.47	127.23	129.00	129.00	129.00	132.54
	V2 (m^3)	2474.00	3604.98	2509.35	2509.35	3053.63	2580.03	3096.04	2580.03	2650.72
BACK FILL	V3 (m^3)	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
EXCESS SOIL	V4 (m^3)	2472.94	3603.92	2508.29	2508.29	3052.57	2578.97	3094.98	2578.97	2649.66

VIII. EARTH WORK

		P25	P26	P27	P28	P29	P30	P31	P32	P33
EXCAVATION FOR FOUNDATION	w1 (m^2)	264.00	319.00	264.00	264.00	319.00	264.00	319.00	264.00	264.00
	w2 (m^2)	519.10	655.50	534.23	527.25	650.75	527.81	658.41	536.88	431.59
	V1 (m^3)	1205.35	1803.90	1289.94	1250.76	1777.07	1253.92	1825.45	1304.90	741.52
EXCESS SOIL	v1 (m^3)	1.18	1.20	1.18	1.18	1.73	1.18	1.73	1.18	1.18
	v2 (m^3)	26.31	33.65	26.31	26.31	34.71	26.31	34.71	26.31	26.31
	v3 (m^3)	358.23	538.25	358.23	358.23	538.78	358.23	538.78	358.23	358.23
	v4 (m^3)	2.07	2.71	2.76	2.44	2.51	2.47	2.83	2.88	-2.09
	V2 (m^3)	387.80	575.81	388.49	388.17	577.73	388.20	578.05	388.61	383.64
BACK FILL	V (m^3)	817.55	1228.09	901.45	862.59	1199.34	865.72	1247.40	916.29	357.88

VII. CAST-IN-PLACE-CONRETE PILE

		P34	P35	P42
CONCRETE	v (m^3)	132.54	132.54	107.80
	V1 (m^3)	1590.43	1325.36	1293.55
EXCAVATION LENGTH	$N < 20$ (l_1) (m)	35.40	34.28	47.50
	L_1 (m)	424.80	411.36	570.00
	$20 \leq N \leq 40$ (l_2) (m)	36.40	36.40	9.66
	L_2 (m)	436.80	436.80	115.92
	$N \geq 40$ (l_3) (m)	3.20	4.32	3.84
	L_3 (m)	38.40	51.84	46.08
EXCAVATED MATERIALS	v2 (m^3)	132.54	132.54	107.80
	V2 (m^3)	3180.86	2650.72	2587.10
BACK FILL	V3 (m^3)	1.06	1.06	1.06
EXCESS SOIL	V4 (m^3)	3179.80	2649.66	2586.04

VIII. EARTH WORK

		P34	P35	P42
EXCAVATION FOR FOUNDATION	w1 (m^2)	319.00	264.00	319.00
	w2 (m^2)	541.58	556.58	655.40
	V1 (m^3)	1119.29	1417.23	1806.42
EXCESS SOIL	v1 (m^3)	1.73	1.18	1.73
	v2 (m^3)	34.71	26.31	34.71
	v3 (m^3)	538.78	358.23	538.78
	v4 (m^3)	-2.19	3.75	2.71
	V2 (m^3)	573.03	389.48	577.92
BACK FILL	V (m^3)	546.26	1027.75	1228.50

STEEL OF PIER 1

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	23	629.07	3971.55
	S2	32	10120	46	465.52	2938.99
	S31	22	9832	104	1022.53	3051.27
	S32	18	8288	36	298.37	596.01
	S33	22	4124	78	321.67	959.88
	S34	18	3980	36	143.28	286.21
	S4	32	8749	42	367.46	2319.89
	S5	20	24801	16	396.82	978.61
	S6	20	20838	20	416.76	1027.79
	S7	20	4000	56	224.00	552.42
	S81	22	6928	416	2882.05	8600.15
	S82	18	6644	144	956.74	1911.16
	S9	22	4124	317	1307.31	3901.06
	S101	32	19847	21	416.79	2631.32
	S102	32	19097	21	401.04	2531.88
	S103	32	17126	21	359.65	2270.57
COLUMN	C1	32	9328	336	3134.21	19787.34
	C2	25	7887	156	1230.37	4741.07
	C3	25	7500	156	1170.00	4508.43
	C4	16	3908	80	312.64	493.45
FOOTING	F1	28	20142	83	1671.79	8080.84
	F2	20	11711	143	1674.67	4130.00
	F31	25	15976	143	2284.57	8803.26
	F32	25	11214	72	807.41	3111.23
	F41	20	8088	4	32.35	79.78
	F42	20	11000	24	264.00	651.06
	F5	32	20686	83	1716.94	10839.62
	F61	32	26679	29	773.69	4884.58
	F62	32	26189	54	1414.21	8928.37
	F7	32	19150	20	383.00	2418.01
	F81	20	6585	336	2212.56	5456.51
	F82	20	7046	210	1479.66	3649.06

TOTAL			
	D = 16	493.5	(kg)
	D = 18	2793.4	(kg)
	D = 20	16525.2	(kg)
	D = 22	16512.4	(kg)
	D = 25	21164.0	(kg)
	D = 28	8080.8	(kg)
	D = 32	63522.1	(kg)
	TOTAL	129091.4	(kg)

STEEL OF PIER 2

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	30	303.60	1916.73
	S3-1	18	3982	36	143.35	286.36
	S3-2	22	4122	78	321.52	959.42
	S4	32	8749	58	507.44	3203.66
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	18	8288	36	298.37	596.01
	S8	22	9832	103	1012.70	3021.93
	S9	16	3860	58	223.88	353.36
	S10-1	18	6644	144	956.74	1911.16
	S10-2	22	6928	416	2882.05	8600.15
	S11	22	4152	317	1316.18	3927.55
	S12-1	32	17126	27	462.40	2919.30
	S12-2	32	19097	27	515.62	3255.28
COLUMN	C1	25	9886	176	1739.94	6704.60
	C2	25	7887	176	1388.11	5348.89
	C3	16	3908	80	312.64	493.45
FOOTING	F1	28	20142	63	1268.95	6133.65
	F2	28	20142	32	644.54	3115.50
	F3	16	8327	143	1190.76	1879.42
	F4	16	8327	72	599.54	946.28
	F5	20	8548	18	153.86	379.45
	F6	22	8537	72	614.66	1834.18
	F7	22	13250	143	1894.75	5654.01
	F8	20	19150	18	344.70	850.08
	F9-1	32	20686	32	661.95	4179.13
	F9-2	32	26679	63	1680.78	10611.32
	F10-1	20	5727	324	1855.55	4576.06
	F10-2	20	5717	736	4207.71	10376.85
TOTAL	D = 16		4930.1		(kg)	
	D = 18		2793.5		(kg)	
	D = 20		16182.4		(kg)	
	D = 22		23997.2		(kg)	
	D = 25		12053.5		(kg)	
	D = 28		9249.1		(kg)	
	D = 32		31093.0		(kg)	
	TOTAL		100299.0		(kg)	

STEEL OF PIER 3

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	30	303.60	1916.73
	S3-1	18	3982	36	143.35	286.36
	S3-2	22	4122	78	321.52	959.42
	S4	32	8749	58	507.44	3203.66
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	18	8288	36	298.37	596.01
	S8	22	9832	103	1012.70	3021.93
	S9	16	3860	58	223.88	353.36
	S10-1	18	6644	144	956.74	1911.16
	S10-2	22	6928	416	2882.05	8600.15
	S11	22	4152	317	1316.18	3927.55
	S12-1	32	17126	27	462.40	2919.30
	S12-2	32	19097	27	515.62	3255.28
COLUMN	C1	25	11923	176	2098.45	8086.08
	C2	25	7887	220	1735.14	6686.12
	C3	16	3908	108	422.06	666.16
FOOTING	F1	28	20142	63	1268.95	6133.65
	F2	28	20142	32	644.54	3115.50
	F3	16	8327	143	1190.76	1879.42
	F4	16	8327	72	599.54	946.28
	F5	20	8548	18	153.86	379.45
	F6	22	8537	72	614.66	1834.18
	F7	22	13250	143	1894.75	5654.01
	F8	20	19150	18	344.70	850.08
	F9-1	32	20686	32	661.95	4179.13
	F9-2	32	26679	63	1680.78	10611.32
	F10-1	20	5727	324	1855.55	4576.06
	F10-2	20	5717	736	4207.71	10376.85

TOTAL			
	D = 16	5102.8	(kg)
	D = 18	2793.5	(kg)
	D = 20	16182.4	(kg)
	D = 22	23997.2	(kg)
	D = 25	14772.2	(kg)
	D = 28	9249.1	(kg)
	D = 32	31093.0	(kg)
	TOTAL	103190.4	(kg)

STEEL OF PIER 4

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	23	629.07	3971.55
	S2	32	10120	46	465.52	2938.99
	S31	22	9832	104	1022.53	3051.27
	S32	18	8288	36	298.37	596.01
	S33	22	4124	78	321.67	959.88
	S34	18	3980	36	143.28	286.21
	S4	32	8749	42	367.46	2319.89
	S5	20	24801	16	396.82	978.61
	S6	20	20838	20	416.76	1027.79
	S7	20	4000	56	224.00	552.42
	S81	22	6928	416	2882.05	8600.15
	S82	18	6644	144	956.74	1911.16
	S9	22	4124	208	857.79	2559.69
	S101	32	19097	21	401.04	2531.88
	S102	32	17126	21	359.65	2270.57
COLUMN	C1	32	14898	336	5005.73	31602.89
	C2	18	7648	260	1988.48	3972.15
	C3	18	7233	130	940.29	1878.31
	C4	16	3908	136	531.49	838.87
FOOTING	F1	28	20142	125	2517.75	12169.93
	F2	16	10971	215	2358.77	3722.92
	F3	32	16625	143	2377.38	15009.19
	F41	20	8088	4	32.35	79.78
	F42	20	11000	24	264.00	651.06
	F51	22	24923	29	722.77	2156.77
	F52	22	24433	54	1319.38	3937.09
	F6	20	19150	20	383.00	944.54
	F71	20	6585	336	2212.56	5456.51
	F72	20	7046	210	1479.66	3649.06

TOTAL			
	D = 16	4561.8	(kg)
	D = 18	8643.8	(kg)
	D = 20	13339.8	(kg)
	D = 22	21264.8	(kg)
	D = 25	0.0	(kg)
	D = 28	12169.9	(kg)
	D = 32	60645.0	(kg)
	TOTAL	120625.1	(kg)

STEEL OF PIER 5

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	30	303.60	1916.73
	S3-1	18	3982	36	143.35	286.36
	S3-2	22	4122	78	321.52	959.42
	S4	32	8749	46	402.45	2540.83
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	18	8138	36	292.97	585.23
	S8	22	9774	103	1006.72	3004.10
	S9	16	3860	58	223.88	353.36
	S10-1	18	6644	144	956.74	1911.16
	S10-2	22	6928	416	2882.05	8600.15
	S11	22	4052	317	1284.48	3832.95
	S12-1	32	17126	21	359.65	2270.57
	S12-2	32	19097	10	190.97	1205.66
COLUMN	C1	25	15786	176	2778.34	10705.93
	C2	25	7887	332	2618.48	10089.96
	C3	16	3908	164	640.91	1011.57
FOOTING	F1	32	20685	63	1303.16	8227.27
	F2	32	20685	32	661.92	4178.93
	F3	16	8327	143	1190.76	1879.42
	F4	16	8327	72	599.54	946.28
	F5	20	8548	20	170.96	421.61
	F6	25	13479	143	1927.50	7427.34
	F7	20	19150	18	344.70	850.08
	F8	32	26679	63	1680.78	10611.32
	F9-1	20	5727	324	1855.55	4576.06
	F9-2	20	5720	736	4209.92	10382.30

TOTAL			
	D = 16	5448.3	(kg)
	D = 18	2782.7	(kg)
	D = 20	16230.1	(kg)
	D = 22	16396.6	(kg)
	D = 25	28223.2	(kg)
	D = 28	0.0	(kg)
	D = 32	35958.9	(kg)
	TOTAL	105039.8	(kg)

STEEL OF PIER 6

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	30	303.60	1916.73
	S3-1	18	3982	36	143.35	286.36
	S3-2	22	4122	78	321.52	959.42
	S4	32	8749	46	402.45	2540.83
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	18	8138	36	292.97	585.23
	S8	22	9774	103	1006.72	3004.10
	S9	16	3860	58	223.88	353.36
	S10-1	18	6644	144	956.74	1911.16
	S10-2	22	6928	416	2882.05	8600.15
	S11	22	4052	317	1284.48	3832.95
	S12-1	32	17126	21	359.65	2270.57
	S12-2	32	19097	10	190.97	1205.66
COLUMN	C1	25	17186	176	3024.74	11655.40
	C2	25	7887	368	2902.42	11184.05
	C3	16	3908	182	711.26	1122.60
FOOTING	F1	32	20685	63	1303.16	8227.27
	F2	32	20685	32	661.92	4178.93
	F3	16	8327	143	1190.76	1879.42
	F4	16	8327	72	599.54	946.28
	F5	20	8548	20	170.96	421.61
	F6	25	13479	143	1927.50	7427.34
	F7	20	19150	18	344.70	850.08
	F8	32	26679	63	1680.78	10611.32
	F9-1	20	5727	324	1855.55	4576.06
	F9-2	20	5720	736	4209.92	10382.30

TOTAL			
	D = 16	5559.3	(kg)
	D = 18	2782.7	(kg)
	D = 20	16230.1	(kg)
	D = 22	16396.6	(kg)
	D = 25	30266.8	(kg)
	D = 28	0.0	(kg)
	D = 32	35958.9	(kg)
	TOTAL	107194.4	(kg)

STEEL OF PIER 7

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	23	629.07	3971.55
	S2	32	10120	46	465.52	2938.99
	S31	22	9832	104	1022.53	3051.27
	S32	18	8288	36	298.37	596.01
	S33	22	4124	78	321.67	959.88
	S34	18	3980	36	143.28	286.21
	S4	32	8749	42	367.46	2319.89
	S5	16	24335	16	389.36	614.54
	S6	20	20932	20	418.64	1032.43
	S7	20	4000	56	224.00	552.42
	S81	22	6928	416	2882.05	8600.15
	S82	18	6644	144	956.74	1911.16
	S9	22	4124	208	857.79	2559.69
	S101	32	19097	21	401.04	2531.88
	S102	32	17126	21	359.65	2270.57
COLUMN	C1	32	19693	272	5356.50	33817.41
	C2	18	7648	268	2049.66	4094.37
	C3	18	7233	134	969.22	1936.10
	C4	16	3910	200	782.00	1234.26
FOOTING	F1	28	20142	83	1671.79	8080.84
	F2	20	11711	143	1674.67	4130.00
	F3	25	15976	143	2284.57	8803.26
	F41	20	8088	4	32.35	79.78
	F42	20	11000	24	264.00	651.06
	F51	32	26679	29	773.69	4884.58
	F52	32	26189	54	1414.21	8928.37
	F6	32	19150	20	383.00	2418.01
	F71	20	6585	336	2212.56	5456.51
	F72	20	7046	210	1479.66	3649.06

TOTAL			
	D = 16	1848.8	(kg)
	D = 18	8823.9	(kg)
	D = 20	15551.3	(kg)
	D = 22	15171.0	(kg)
	D = 25	8803.3	(kg)
	D = 28	8080.8	(kg)
	D = 32	64081.2	(kg)
	TOTAL	122360.3	(kg)

STEEL OF PIER 8

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	23	629.07	3971.55
	S2	32	10120	46	465.52	2938.99
	S31	22	9832	104	1022.53	3051.27
	S32	18	8288	36	298.37	596.01
	S33	22	4124	78	321.67	959.88
	S34	18	3980	36	143.28	286.21
	S4	32	8749	42	367.46	2319.89
	S5	16	24335	16	389.36	614.54
	S6	20	20932	20	418.64	1032.43
	S7	20	4000	56	224.00	552.42
	S81	22	6928	416	2882.05	8600.15
	S82	18	6644	144	956.74	1911.16
	S9	22	4124	208	857.79	2559.69
	S101	32	19097	21	401.04	2531.88
	S102	32	17126	21	359.65	2270.57
COLUMN	C1	32	21293	272	5791.70	36564.97
	C2	18	7648	432	3303.94	6599.88
	C3	18	7233	216	1562.33	3120.88
	C4	16	3910	224	875.84	1382.37
FOOTING	F1	28	20142	83	1671.79	8080.84
	F2	20	11711	143	1674.67	4130.00
	F3	25	15976	143	2284.57	8803.26
	F41	20	8088	4	32.35	79.78
	F42	20	11000	24	264.00	651.06
	F51	32	26679	29	773.69	4884.58
	F52	32	26189	54	1414.21	8928.37
	F6	32	19150	20	383.00	2418.01
	F71	20	6585	336	2212.56	5456.51
	F72	20	7046	210	1479.66	3649.06

TOTAL			
	D = 16	1996.9	(kg)
	D = 18	12514.1	(kg)
	D = 20	15551.3	(kg)
	D = 22	15171.0	(kg)
	D = 25	8803.3	(kg)
	D = 28	8080.8	(kg)
	D = 32	66828.8	(kg)
	TOTAL	128946.2	(kg)

STEEL OF PIER 9

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	30	303.60	1916.73
	S3-1	18	3982	36	143.35	286.36
	S3-2	22	4122	78	321.52	959.42
	S4	32	8749	46	402.45	2540.83
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	18	8138	36	292.97	585.23
	S8	22	9774	103	1006.72	3004.10
	S9	16	3860	58	223.88	353.36
	S10-1	18	6644	144	956.74	1911.16
	S10-2	22	6928	416	2882.05	8600.15
	S11	22	4052	317	1284.48	3832.95
	S12-1	32	17126	21	359.65	2270.57
	S12-2	32	19097	10	190.97	1205.66
COLUMN	C1	25	22386	176	3939.94	15181.99
	C2	25	7887	508	4006.60	15438.86
	C3	16	3908	252	984.82	1554.37
FOOTING	F1	32	20685	63	1303.16	8227.27
	F2	32	20685	32	661.92	4178.93
	F3	16	8327	143	1190.76	1879.42
	F4	16	8327	72	599.54	946.28
	F5	20	8548	20	170.96	421.61
	F6	25	13479	143	1927.50	7427.34
	F7	20	19150	18	344.70	850.08
	F8	32	26679	63	1680.78	10611.32
	F9-1	20	5727	324	1855.55	4576.06
	F9-2	20	5720	736	4209.92	10382.30

TOTAL			
	D = 16	5991.0	(kg)
	D = 18	2782.7	(kg)
	D = 20	16230.1	(kg)
	D = 22	16396.6	(kg)
	D = 25	38048.2	(kg)
	D = 28	0.0	(kg)
	D = 32	35958.9	(kg)
	TOTAL	115407.6	(kg)

STEEL OF PIER 10

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	58	586.96	3705.68
	S31	22	9832	104	1022.53	3051.27
	S32	18	8288	36	298.37	596.01
	S33	22	4124	78	321.67	959.88
	S34	18	3980	36	143.28	286.21
	S4	32	8749	58	507.44	3203.66
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	20	4000	56	224.00	552.42
	S81	22	6946	416	2889.54	8622.50
	S82	18	6662	144	959.33	1916.34
	S9	22	4124	208	857.79	2559.69
	S101	32	19097	14	267.36	1687.92
	S102	32	17126	29	496.65	3135.55
COLUMN	C1	32	26058	480	12507.84	78966.30
	C2	18	7648	512	3915.78	7822.08
	C3	18	7233	260	1880.58	3756.61
	C4	18	6891	260	1791.66	3578.99
	C5	16	3908	264	1031.71	1628.39
FOOTING	F1	32	20142	125	2517.75	15895.42
	F2	16	10971	215	2358.77	3722.92
	F3	32	16625	143	2377.38	15009.19
	F41	20	8088	4	32.35	79.78
	F42	20	11000	20	220.00	542.55
	F51	32	26679	29	773.69	4884.58
	F52	32	26189	54	1414.21	8928.37
	F6	20	19150	20	383.00	944.54
	F71	20	6642	336	2231.71	5503.74
	F72	20	7102	210	1491.42	3678.07
	H1	22	10480	30	314.40	938.18
	H2	16	4536	51	231.34	365.13
	H3	16	1860	51	94.86	149.72
	H4	16	3836	51	195.64	308.78

TOTAL			
	D = 16	7432.6	(kg)
	D = 18	17956.2	(kg)
	D = 20	11301.1	(kg)
	D = 22	16131.5	(kg)
	D = 25	0.0	(kg)
	D = 28	0.0	(kg)
	D = 32	140424.3	(kg)
	TOTAL	193245.7	(kg)

STEEL OF PIER 11

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	58	586.96	3705.68
	S31	22	9832	104	1022.53	3051.27
	S32	18	8288	36	298.37	596.01
	S33	22	4124	78	321.67	959.88
	S34	18	3980	36	143.28	286.21
	S4	32	8749	58	507.44	3203.66
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	20	4000	56	224.00	552.42
	S81	22	6946	416	2889.54	8622.50
	S82	18	6662	144	959.33	1916.34
	S9	22	4124	208	857.79	2559.69
	S101	32	19097	14	267.36	1687.92
	S102	32	17126	29	496.65	3135.55
	C1	32	27458	480	13179.84	83208.87
COLUMN	C2	18	7648	552	4221.70	8433.18
	C3	18	7233	280	2025.24	4045.58
	C4	18	6891	280	1929.48	3854.29
	C5	16	3908	272	1062.98	1677.73
FOOTING	F1	32	20142	125	2517.75	15895.42
	F2	16	10971	215	2358.77	3722.92
	F3	32	16625	143	2377.38	15009.19
	F41	20	8088	4	32.35	79.78
	F42	20	11000	20	220.00	542.55
	F51	32	26679	29	773.69	4884.58
	F52	32	26189	54	1414.21	8928.37
	F6	20	19150	20	383.00	944.54
	F71	20	6642	336	2231.71	5503.74
	F72	20	7102	210	1491.42	3678.07
	H1	22	10480	30	314.40	938.18
	H2	16	4536	51	231.34	365.13
	H3	16	1860	51	94.86	149.72
	H4	16	3836	51	195.64	308.78
TOTAL	D = 16		7481.9	(kg)		
	D = 18		19131.6	(kg)		
	D = 20		11301.1	(kg)		
	D = 22		16131.5	(kg)		
	D = 25		0.0	(kg)		
	D = 28		0.0	(kg)		
	D = 32		144666.9	(kg)		
	TOTAL		198713.0	(kg)		

STEEL OF PIER 18

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	30	303.60	1916.73
	S3-1	22	9832	104	1022.53	3051.27
	S3-2	18	8288	36	298.37	596.01
	S3-3	22	4124	78	321.67	959.88
	S3-4	18	3980	36	143.28	286.21
	S4	32	8749	46	402.45	2540.83
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	16	3860	56	216.16	341.17
	S8-1	22	6928	416	2882.05	8600.15
	S8-2	18	6644	144	956.74	1911.16
	S9	22	4124	317	1307.31	3901.06
	S10-1	32	19097	10	190.97	1205.66
	S10-2	32	17126	21	359.65	2270.57
COLUMN	C1	25	22279	176	3921.10	15109.42
	C2	25	7887	464	3659.57	14101.63
	C3	16	3908	230	898.84	1418.67
FOOTING	F1	32	20142	166	3343.57	21109.12
	F2	16	10971	215	2358.77	3722.92
	F3	32	16625	141	2344.13	14799.27
	F4-1	20	8088	4	32.35	79.78
	F4-2	20	11000	24	264.00	651.06
	F5-1	25	25381	29	736.05	2836.26
	F5-2	25	24891	54	1344.11	5179.35
	F6	20	19150	20	383.00	944.54
	F7-1	20	6642	336	2231.71	5503.74
	F7-2	20	7102	210	1491.42	3678.07
	H1	22	10480	30	314.40	938.18
	H2	16	4536	51	231.34	365.13
	H3	16	1860	51	94.86	149.72
	H4	16	3836	51	195.64	308.78

TOTAL			
	D = 16	7564.0	(kg)
	D = 18	2793.4	(kg)
	D = 20	10857.2	(kg)
	D = 22	17450.5	(kg)
	D = 25	37226.7	(kg)
	D = 28	0.0	(kg)
	D = 32	48849.8	(kg)
	TOTAL	124741.6	(kg)

STEEL OF PIER 19

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	58	586.96	3705.68
	S31	22	9832	104	1022.53	3051.27
	S32	18	8288	36	298.37	596.01
	S33	22	4124	78	321.67	959.88
	S34	18	3980	36	143.28	286.21
	S4	32	8749	58	507.44	3203.66
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	20	4000	56	224.00	552.42
	S81	22	6946	416	2889.54	8622.50
	S82	18	6662	144	959.33	1916.34
	S9	22	4124	208	857.79	2559.69
	S101	32	19097	14	267.36	1687.92
	S102	32	17126	29	496.65	3135.55
COLUMN	C1	32	28358	480	13611.84	85936.24
	C2	18	7648	576	4405.25	8799.84
	C3	18	7233	292	2112.04	4218.96
	C4	18	6891	292	2012.17	4019.48
	C5	16	3908	296	1156.77	1825.77
FOOTING	F1	32	20142	125	2517.75	15895.42
	F2	16	10971	215	2358.77	3722.92
	F3	32	16625	143	2377.38	15009.19
	F41	20	8088	4	32.35	79.78
	F42	20	11000	20	220.00	542.55
	F51	32	26679	29	773.69	4884.58
	F52	32	26189	54	1414.21	8928.37
	F6	20	19150	20	383.00	944.54
	F71	20	6642	336	2231.71	5503.74
	F72	20	7102	210	1491.42	3678.07
	H1	22	10480	30	314.40	938.18
	H2	16	4536	51	231.34	365.13
	H3	16	1860	51	94.86	149.72
	H4	16	3836	51	195.64	308.78

TOTAL			
	D = 16	7629.9	(kg)
	D = 18	19836.8	(kg)
	D = 20	11301.1	(kg)
	D = 22	16131.5	(kg)
	D = 25	0.0	(kg)
	D = 28	0.0	(kg)
	D = 32	147394.2	(kg)
	TOTAL	202293.6	(kg)

STEEL OF PIER 20

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	58	586.96	3705.68
	S31	22	9832	104	1022.53	3051.27
	S32	18	8288	36	298.37	596.01
	S33	22	4124	78	321.67	959.88
	S34	18	3980	36	143.28	286.21
	S4	32	8749	58	507.44	3203.66
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	20	4000	56	224.00	552.42
	S81	22	6946	416	2889.54	8622.50
	S82	18	6662	144	959.33	1916.34
	S9	22	4124	208	857.79	2559.69
	S101	32	19097	14	267.36	1687.92
	S102	32	17126	29	496.65	3135.55
	C1	32	26658	480	12795.84	80784.55
COLUMN	C2	18	7648	528	4038.14	8066.52
	C3	18	7233	268	1938.44	3872.20
	C4	18	6891	268	1846.79	3689.11
	C5	16	3908	272	1062.98	1677.73
FOOTING	F1	32	20142	125	2517.75	15895.42
	F2	16	10971	215	2358.77	3722.92
	F3	32	16625	143	2377.38	15009.19
	F41	20	8088	4	32.35	79.78
	F42	20	11000	20	220.00	542.55
	F51	32	26679	29	773.69	4884.58
	F52	32	26189	54	1414.21	8928.37
	F6	20	19150	20	383.00	944.54
	F71	20	6642	336	2231.71	5503.74
	F72	20	7102	210	1491.42	3678.07
	H1	22	10480	30	314.40	938.18
	H2	16	4536	51	231.34	365.13
	H3	16	1860	51	94.86	149.72
	H4	16	3836	51	195.64	308.78

TOTAL			
	D = 16	7481.9	(kg)
	D = 18	18426.4	(kg)
	D = 20	11301.1	(kg)
	D = 22	16131.5	(kg)
	D = 25	0.0	(kg)
	D = 28	0.0	(kg)
	D = 32	142242.5	(kg)
	TOTAL	195583.4	(kg)

STEEL OF PIER 21

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	30	303.60	1916.73
	S3-1	18	3982	36	143.35	286.36
	S3-2	22	4122	78	321.52	959.42
	S4	32	8749	46	402.45	2540.83
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	18	8138	36	292.97	585.23
	S8	22	9774	103	1006.72	3004.10
	S9	16	3860	58	223.88	353.36
	S10-1	18	6644	144	956.74	1911.16
	S10-2	22	6928	416	2882.05	8600.15
	S11	22	4052	317	1284.48	3832.95
	S12-1	32	17126	21	359.65	2270.57
	S12-2	32	19097	10	190.97	1205.66
COLUMN	C1	25	23186	176	4080.74	15724.54
	C2	25	7887	528	4164.34	16046.68
	C3	16	3908	262	1023.90	1616.05
FOOTING	F1	32	20685	63	1303.16	8227.27
	F2	32	20685	32	661.92	4178.93
	F3	16	8327	143	1190.76	1879.42
	F4	16	8327	72	599.54	946.28
	F5	20	8548	20	170.96	421.61
	F6	25	13479	143	1927.50	7427.34
	F7	20	19150	18	344.70	850.08
	F8	32	26679	63	1680.78	10611.32
	F9-1	20	5727	324	1855.55	4576.06
	F9-2	20	5720	736	4209.92	10382.30

TOTAL			
	D = 16	6052.7	(kg)
	D = 18	2782.7	(kg)
	D = 20	16230.1	(kg)
	D = 22	16396.6	(kg)
	D = 25	39198.6	(kg)
	D = 28	0.0	(kg)
	D = 32	35958.9	(kg)
	TOTAL	116619.6	(kg)

STEEL OF PIER 22

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	23	629.07	3971.55
	S2	32	10120	46	465.52	2938.99
	S31	22	9832	104	1022.53	3051.27
	S32	18	8288	36	298.37	596.01
	S33	22	4124	78	321.67	959.88
	S34	18	3980	36	143.28	286.21
	S4	32	8749	42	367.46	2319.89
	S5	16	24335	16	389.36	614.54
	S6	20	20932	20	418.64	1032.43
	S7	20	4000	56	224.00	552.42
	S81	22	6928	416	2882.05	8600.15
	S82	18	6644	144	956.74	1911.16
	S9	22	4124	208	857.79	2559.69
	S101	32	19097	21	401.04	2531.88
	S102	32	17126	21	359.65	2270.57
COLUMN	C1	32	22093	272	6009.30	37938.76
	C2	18	7648	452	3456.90	6905.43
	C3	18	7233	228	1649.12	3294.26
	C4	16	3910	232	907.12	1431.74
FOOTING	F1	28	20142	83	1671.79	8080.84
	F2	20	11711	143	1674.67	4130.00
	F3	25	15976	143	2284.57	8803.26
	F41	20	8088	4	32.35	79.78
	F42	20	11000	24	264.00	651.06
	F51	32	26679	29	773.69	4884.58
	F52	32	26189	54	1414.21	8928.37
	F6	32	19150	20	383.00	2418.01
	F71	20	6585	336	2212.56	5456.51
	F72	20	7046	210	1479.66	3649.06

TOTAL			
	D = 16	2046.3	(kg)
	D = 18	12993.1	(kg)
	D = 20	15551.3	(kg)
	D = 22	15171.0	(kg)
	D = 25	8803.3	(kg)
	D = 28	8080.8	(kg)
	D = 32	68202.6	(kg)
	TOTAL	130848.3	(kg)

STEEL OF PIER 23

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	23	629.07	3971.55
	S2	32	10120	46	465.52	2938.99
	S31	22	9832	104	1022.53	3051.27
	S32	18	8288	36	298.37	596.01
	S33	22	4124	78	321.67	959.88
	S34	18	3980	36	143.28	286.21
	S4	32	8749	42	367.46	2319.89
	S5	16	24335	16	389.36	614.54
	S6	20	20932	20	418.64	1032.43
	S7	20	4000	56	224.00	552.42
	S81	22	6928	416	2882.05	8600.15
	S82	18	6644	144	956.74	1911.16
	S9	22	4124	208	857.79	2559.69
	S101	32	19097	21	401.04	2531.88
	S102	32	17126	21	359.65	2270.57
COLUMN	C1	32	18393	272	5002.90	31585.01
	C2	18	7648	352	2692.10	5377.68
	C3	18	7233	176	1273.01	2542.94
	C4	16	3910	184	719.44	1135.52
FOOTING	F1	28	20142	83	1671.79	8080.84
	F2	20	11711	143	1674.67	4130.00
	F3	25	15976	143	2284.57	8803.26
	F41	20	8088	4	32.35	79.78
	F42	20	11000	24	264.00	651.06
	F51	32	26679	29	773.69	4884.58
	F52	32	26189	54	1414.21	8928.37
	F6	32	19150	20	383.00	2418.01
	F71	20	6585	336	2212.56	5456.51
	F72	20	7046	210	1479.66	3649.06
TOTAL	D = 16		1750.1	(kg)		
	D = 18		10714.0	(kg)		
	D = 20		15551.3	(kg)		
	D = 22		15171.0	(kg)		
	D = 25		8803.3	(kg)		
	D = 28		8080.8	(kg)		
	D = 32		61848.9	(kg)		
	TOTAL		121919.3	(kg)		

STEEL OF PIER 24

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	30	303.60	1916.73
	S3-1	18	3982	36	143.35	286.36
	S3-2	22	4122	78	321.52	959.42
	S4	32	8749	46	402.45	2540.83
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	18	8138	36	292.97	585.23
	S8	22	9774	103	1006.72	3004.10
	S9	16	3860	58	223.88	353.36
	S10-1	18	6644	144	956.74	1911.16
	S10-2	22	6928	416	2882.05	8600.15
	S11	22	4052	317	1284.48	3832.95
	S12-1	32	17126	21	359.65	2270.57
	S12-2	32	19097	10	190.97	1205.66
COLUMN	C1	25	15986	176	2813.54	10841.57
	C2	25	7887	336	2650.03	10211.53
	C3	16	3908	166	648.73	1023.91
FOOTING	F1	32	20685	63	1303.16	8227.27
	F2	32	20685	32	661.92	4178.93
	F3	16	8327	143	1190.76	1879.42
	F4	16	8327	72	599.54	946.28
	F5	20	8548	20	170.96	421.61
	F6	25	13479	143	1927.50	7427.34
	F7	20	19150	18	344.70	850.08
	F8	32	26679	63	1680.78	10611.32
	F9-1	20	5727	324	1855.55	4576.06
	F9-2	20	5720	736	4209.92	10382.30

TOTAL			
	D = 16	5460.6	(kg)
	D = 18	2782.7	(kg)
	D = 20	16230.1	(kg)
	D = 22	16396.6	(kg)
	D = 25	28480.4	(kg)
	D = 28	0.0	(kg)
	D = 32	35958.9	(kg)
	TOTAL	105309.4	(kg)

STEEL OF PIER 25

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	30	303.60	1916.73
	S3-1	18	3982	36	143.35	286.36
	S3-2	22	4122	78	321.52	959.42
	S4	32	8749	46	402.45	2540.83
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	18	8138	36	292.97	585.23
	S8	22	9774	103	1006.72	3004.10
	S9	16	3860	58	223.88	353.36
	S10-1	18	6644	144	956.74	1911.16
	S10-2	22	6928	416	2882.05	8600.15
	S11	22	4052	317	1284.48	3832.95
	S12-1	32	17126	21	359.65	2270.57
	S12-2	32	19097	10	190.97	1205.66
COLUMN	C1	25	14386	176	2531.94	9756.46
	C2	25	7887	292	2303.00	8874.30
	C3	16	3908	144	562.75	888.21
FOOTING	F1	32	20685	63	1303.16	8227.27
	F2	32	20685	32	661.92	4178.93
	F3	16	8327	143	1190.76	1879.42
	F4	16	8327	72	599.54	946.28
	F5	20	8548	20	170.96	421.61
	F6	25	13479	143	1927.50	7427.34
	F7	20	19150	18	344.70	850.08
	F8	32	26679	63	1680.78	10611.32
	F9-1	20	5727	324	1855.55	4576.06
	F9-2	20	5720	736	4209.92	10382.30

TOTAL			
	D = 16	5324.9	(kg)
	D = 18	2782.7	(kg)
	D = 20	16230.1	(kg)
	D = 22	16396.6	(kg)
	D = 25	26058.1	(kg)
	D = 28	0.0	(kg)
	D = 32	35958.9	(kg)
	TOTAL	102751.3	(kg)

STEEL OF PIER 26

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	23	629.07	3971.55
	S2	32	10120	46	465.52	2938.99
	S31	22	9832	104	1022.53	3051.27
	S32	18	8288	36	298.37	596.01
	S33	22	4124	78	321.67	959.88
	S34	18	3980	36	143.28	286.21
	S4	32	8749	42	367.46	2319.89
	S5	20	24801	16	396.82	978.61
	S6	20	20838	20	416.76	1027.79
	S7	20	4000	56	224.00	552.42
	S81	22	6928	416	2882.05	8600.15
	S82	18	6644	144	956.74	1911.16
	S9	22	4124	208	857.79	2559.69
	S101	32	19097	21	401.04	2531.88
	S102	32	17126	21	359.65	2270.57
COLUMN	C1	32	15198	336	5106.53	32239.27
	C2	18	7648	268	2049.66	4094.37
	C3	18	7233	134	969.22	1936.10
	C4	16	3908	136	531.49	838.87
FOOTING	F1	28	20142	125	2517.75	12169.93
	F2	16	10971	215	2358.77	3722.92
	F3	32	16625	143	2377.38	15009.19
	F41	20	8088	4	32.35	79.78
	F42	20	11000	24	264.00	651.06
	F51	22	24923	29	722.77	2156.77
	F52	22	24433	54	1319.38	3937.09
	F6	20	19150	20	383.00	944.54
	F71	20	6585	336	2212.56	5456.51
	F72	20	7046	210	1479.66	3649.06

TOTAL			
	D = 16	4561.8	(kg)
	D = 18	8823.9	(kg)
	D = 20	13339.8	(kg)
	D = 22	21264.8	(kg)
	D = 25	0.0	(kg)
	D = 28	12169.9	(kg)
	D = 32	61281.3	(kg)
	TOTAL	121441.5	(kg)

STEEL OF PIER 27

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	30	303.60	1916.73
	S3-1	18	3982	36	143.35	286.36
	S3-2	22	4122	78	321.52	959.42
	S4	32	8749	58	507.44	3203.66
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	18	8288	36	298.37	596.01
	S8	22	9832	103	1012.70	3021.93
	S9	16	3860	58	223.88	353.36
	S10-1	18	6644	144	956.74	1911.16
	S10-2	22	6928	416	2882.05	8600.15
	S11	22	4152	317	1316.18	3927.55
	S12-1	32	17126	27	462.40	2919.30
	S12-2	32	19097	27	515.62	3255.28
COLUMN	C1	25	10486	176	1845.54	7111.51
	C2	25	7887	192	1514.30	5835.16
	C3	16	3908	94	367.35	579.80
FOOTING	F1	28	20142	63	1268.95	6133.65
	F2	28	20142	32	644.54	3115.50
	F3	16	8327	143	1190.76	1879.42
	F4	16	8327	72	599.54	946.28
	F5	20	8548	18	153.86	379.45
	F6	22	8537	72	614.66	1834.18
	F7	22	13250	143	1894.75	5654.01
	F8	20	19150	18	344.70	850.08
	F9-1	32	20686	32	661.95	4179.13
	F9-2	32	26679	63	1680.78	10611.32
	F10-1	20	5727	324	1855.55	4576.06
	F10-2	20	5717	736	4207.71	10376.85

TOTAL			
	D = 16	5016.5	(kg)
	D = 18	2793.5	(kg)
	D = 20	16182.4	(kg)
	D = 22	23997.2	(kg)
	D = 25	12946.7	(kg)
	D = 28	9249.1	(kg)
	D = 32	31093.0	(kg)
	TOTAL	101278.6	(kg)

STEEL OF PIER 28

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	30	303.60	1916.73
	S3-1	18	3982	36	143.35	286.36
	S3-2	22	4122	78	321.52	959.42
	S4	32	8749	58	507.44	3203.66
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	18	8288	36	298.37	596.01
	S8	22	9832	103	1012.70	3021.93
	S9	16	3860	58	223.88	353.36
	S10-1	18	6644	144	956.74	1911.16
	S10-2	22	6928	416	2882.05	8600.15
	S11	22	4152	317	1316.18	3927.55
	S12-1	32	17126	27	462.40	2919.30
	S12-2	32	19097	27	515.62	3255.28
COLUMN	C1	25	8986	176	1581.54	6094.23
	C2	25	7887	152	1198.82	4619.50
	C3	16	3908	74	289.19	456.44
FOOTING	F1	28	20142	63	1268.95	6133.65
	F2	28	20142	32	644.54	3115.50
	F3	16	8327	143	1190.76	1879.42
	F4	16	8327	72	599.54	946.28
	F5	20	8548	18	153.86	379.45
	F6	22	8537	72	614.66	1834.18
	F7	22	13250	143	1894.75	5654.01
	F8	20	19150	18	344.70	850.08
	F9-1	32	20686	32	661.95	4179.13
	F9-2	32	26679	63	1680.78	10611.32
	F10-1	20	5727	324	1855.55	4576.06
	F10-2	20	5717	736	4207.71	10376.85

TOTAL			
	D = 16	4893.1	(kg)
	D = 18	2793.5	(kg)
	D = 20	16182.4	(kg)
	D = 22	23997.2	(kg)
	D = 25	10713.7	(kg)
	D = 28	9249.1	(kg)
	D = 32	31093.0	(kg)
	TOTAL	98922.3	(kg)

STEEL OF PIER 29

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	23	629.07	3971.55
	S2	32	10120	46	465.52	2938.99
	S31	22	9832	104	1022.53	3051.27
	S32	18	8288	36	298.37	596.01
	S33	22	4124	78	321.67	959.88
	S34	18	3980	36	143.28	286.21
	S4	32	8749	42	367.46	2319.89
	S5	20	24801	16	396.82	978.61
	S6	20	20838	20	416.76	1027.79
	S7	20	4000	56	224.00	552.42
	S81	22	6928	416	2882.05	8600.15
	S82	18	6644	144	956.74	1911.16
	S9	22	4124	317	1307.31	3901.06
	S101	32	19847	21	416.79	2631.32
	S102	32	19097	21	401.04	2531.88
	S103	32	17126	21	359.65	2270.57
COLUMN	C1	32	8328	336	2798.21	17666.05
	C2	25	7887	128	1009.54	3890.11
	C3	25	7500	128	960.00	3699.23
	C4	16	3908	72	281.38	444.11
FOOTING	F1	28	20142	83	1671.79	8080.84
	F2	20	11711	143	1674.67	4130.00
	F31	25	15976	143	2284.57	8803.26
	F32	25	11214	72	807.41	3111.23
	F41	20	8088	4	32.35	79.78
	F42	20	11000	24	264.00	651.06
	F5	32	20686	83	1716.94	10839.62
	F61	32	26679	29	773.69	4884.58
	F62	32	26189	54	1414.21	8928.37
	F7	32	19150	20	383.00	2418.01
	F81	20	6585	336	2212.56	5456.51
	F82	20	7046	210	1479.66	3649.06

TOTAL			
	D = 16	444.1	(kg)
	D = 18	2793.4	(kg)
	D = 20	16525.2	(kg)
	D = 22	16512.4	(kg)
	D = 25	19503.8	(kg)
	D = 28	8080.8	(kg)
	D = 32	61400.8	(kg)
	TOTAL	125260.6	(kg)

STEEL OF PIER 30

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	30	303.60	1916.73
	S3-1	18	3982	36	143.35	286.36
	S3-2	22	4122	78	321.52	959.42
	S4	32	8749	58	507.44	3203.66
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	18	8288	36	298.37	596.01
	S8	22	9832	103	1012.70	3021.93
	S9	16	3860	58	223.88	353.36
	S10-1	18	6644	144	956.74	1911.16
	S10-2	22	6928	416	2882.05	8600.15
	S11	22	4152	317	1316.18	3927.55
	S12-1	32	17126	27	462.40	2919.30
	S12-2	32	19097	27	515.62	3255.28
COLUMN	C1	25	7386	176	1299.94	5009.12
	C2	25	7887	108	851.80	3282.28
	C3	16	3908	52	203.22	320.74
FOOTING	F1	28	20142	63	1268.95	6133.65
	F2	28	20142	32	644.54	3115.50
	F3	16	8327	143	1190.76	1879.42
	F4	16	8327	72	599.54	946.28
	F5	20	8548	18	153.86	379.45
	F6	22	8537	72	614.66	1834.18
	F7	22	13250	143	1894.75	5654.01
	F8	20	19150	18	344.70	850.08
	F9-1	32	20686	32	661.95	4179.13
	F9-2	32	26679	63	1680.78	10611.32
	F10-1	20	5727	324	1855.55	4576.06
	F10-2	20	5717	736	4207.71	10376.85

TOTAL			
	D = 16	4757.4	(kg)
	D = 18	2793.5	(kg)
	D = 20	16182.4	(kg)
	D = 22	23997.2	(kg)
	D = 25	8291.4	(kg)
	D = 28	9249.1	(kg)
	D = 32	31093.0	(kg)
	TOTAL	96364.2	(kg)

STEEL OF PIER 31

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	23	629.07	3971.55
	S2	32	10120	46	465.52	2938.99
	S31	22	9832	104	1022.53	3051.27
	S32	18	8288	36	298.37	596.01
	S33	22	4124	78	321.67	959.88
	S34	18	3980	36	143.28	286.21
	S4	32	8749	42	367.46	2319.89
	S5	20	24801	16	396.82	978.61
	S6	20	20838	20	416.76	1027.79
	S7	20	4000	56	224.00	552.42
	S81	22	6928	416	2882.05	8600.15
	S82	18	6644	144	956.74	1911.16
	S9	22	4124	317	1307.31	3901.06
	S101	32	19847	21	416.79	2631.32
	S102	32	19097	21	401.04	2531.88
	S103	32	17126	21	359.65	2270.57
COLUMN	C1	32	8028	336	2697.41	17029.67
	C2	25	7887	120	946.44	3646.97
	C3	25	7500	120	900.00	3468.02
	C4	16	3908	64	250.11	394.76
FOOTING	F1	28	20142	83	1671.79	8080.84
	F2	20	11711	143	1674.67	4130.00
	F31	25	15976	143	2284.57	8803.26
	F32	25	11214	72	807.41	3111.23
	F41	20	8088	4	32.35	79.78
	F42	20	11000	24	264.00	651.06
	F5	32	20686	83	1716.94	10839.62
	F61	32	26679	29	773.69	4884.58
	F62	32	26189	54	1414.21	8928.37
	F7	32	19150	20	383.00	2418.01
	F81	20	6585	336	2212.56	5456.51
	F82	20	7046	210	1479.66	3649.06
TOTAL	D = 16		394.8		(kg)	
	D = 18		2793.4		(kg)	
	D = 20		16525.2		(kg)	
	D = 22		16512.4		(kg)	
	D = 25		19029.5		(kg)	
	D = 28		8080.8		(kg)	
	D = 32		60764.5		(kg)	
	TOTAL		124100.5		(kg)	

STEEL OF PIER 32

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	30	303.60	1916.73
	S3-1	18	3982	36	143.35	286.36
	S3-2	22	4122	78	321.52	959.42
	S4	32	8749	58	507.44	3203.66
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	18	8288	36	298.37	596.01
	S8	22	9832	103	1012.70	3021.93
	S9	16	3860	58	223.88	353.36
	S10-1	18	6644	144	956.74	1911.16
	S10-2	22	6928	416	2882.05	8600.15
	S11	22	4152	317	1316.18	3927.55
	S12-1	32	17126	27	462.40	2919.30
	S12-2	32	19097	27	515.62	3255.28
COLUMN	C1	25	8186	176	1440.74	5551.67
	C2	25	7887	128	1009.54	3890.11
	C3	16	3908	62	242.30	382.42
FOOTING	F1	28	20142	63	1268.95	6133.65
	F2	28	20142	32	644.54	3115.50
	F3	16	8327	143	1190.76	1879.42
	F4	16	8327	72	599.54	946.28
	F5	20	8548	18	153.86	379.45
	F6	22	8537	72	614.66	1834.18
	F7	22	13250	143	1894.75	5654.01
	F8	20	19150	18	344.70	850.08
	F9-1	32	20686	32	661.95	4179.13
	F9-2	32	26679	63	1680.78	10611.32
	F10-1	20	5727	324	1855.55	4576.06
	F10-2	20	5717	736	4207.71	10376.85

TOTAL			
	D = 16	4819.1	(kg)
	D = 18	2793.5	(kg)
	D = 20	16182.4	(kg)
	D = 22	23997.2	(kg)
	D = 25	9441.8	(kg)
	D = 28	9249.1	(kg)
	D = 32	31093.0	(kg)
	TOTAL	97576.3	(kg)

97576.29

STEEL OF PIER 33

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	30	303.60	1916.73
	S3-1	18	3982	36	143.35	286.36
	S3-2	22	4122	78	321.52	959.42
	S4	32	8749	58	507.44	3203.66
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	18	8288	36	298.37	596.01
	S8	22	9832	103	1012.70	3021.93
	S9	16	3860	58	223.88	353.36
	S10-1	18	6644	144	956.74	1911.16
	S10-2	22	6928	416	2882.05	8600.15
	S11	22	4152	317	1316.18	3927.55
	S12-1	32	17126	27	462.40	2919.30
	S12-2	32	19097	27	515.62	3255.28
COLUMN	C1	25	7686	176	1352.74	5212.58
	C2	25	7887	112	883.34	3403.84
	C3	16	3908	54	211.03	333.08
FOOTING	F1	28	20142	63	1268.95	6133.65
	F2	28	20142	32	644.54	3115.50
	F3	16	8327	143	1190.76	1879.42
	F4	16	8327	72	599.54	946.28
	F5	20	8548	18	153.86	379.45
	F6	22	8537	72	614.66	1834.18
	F7	22	13250	143	1894.75	5654.01
	F8	20	19150	18	344.70	850.08
	F9-1	32	20686	32	661.95	4179.13
	F9-2	32	26679	63	1680.78	10611.32
	F10-1	20	5727	324	1855.55	4576.06
	F10-2	20	5717	736	4207.71	10376.85

TOTAL			
	D = 16	4769.8	(kg)
	D = 18	2793.5	(kg)
	D = 20	16182.4	(kg)
	D = 22	23997.2	(kg)
	D = 25	8616.4	(kg)
	D = 28	9249.1	(kg)
	D = 32	31093.0	(kg)
	TOTAL	96701.6	(kg)

STEEL OF PIER 34

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	23	629.07	3971.55
	S2	32	10120	46	465.52	2938.00
	S31	22	9832	104	1022.53	3051.27
	S32	18	8288	36	298.37	596.01
	S33	22	4124	78	321.67	959.88
	S34	18	3980	36	143.28	286.21
	S4	32	8749	42	367.46	2319.89
	S5	20	24801	16	396.82	978.61
	S6	20	20838	20	416.76	1027.79
	S7	20	4000	56	224.00	552.42
	S81	22	6928	416	2882.05	8600.15
	S82	18	6644	144	956.74	1911.16
	S9	22	4124	317	1307.31	3901.06
	S101	32	19847	21	416.79	2631.32
	S102	32	19097	21	401.04	2531.88
	S103	32	17126	21	359.65	2270.57
COLUMN	C1	32	8428	336	2831.81	17878.18
	C2	25	7887	132	1041.08	4011.67
	C3	25	7500	132	990.00	3814.83
	C4	16	3908	72	281.38	444.11
FOOTING	F1	28	20142	83	1671.79	8080.84
	F2	20	11711	143	1674.67	4130.00
	F31	25	15976	143	2284.57	8803.26
	F32	25	11214	72	807.41	3111.23
	F41	20	8088	4	32.35	79.78
	F42	20	11000	24	264.00	651.06
	F5	32	20686	83	1716.94	10839.62
	F61	32	26679	29	773.69	4884.58
	F62	32	26189	54	1414.21	8928.37
	F7	32	19150	20	383.00	2418.01
	F81	20	6585	336	2212.56	5456.51
	F82	20	7046	210	1479.66	3649.06
TOTAL	D = 16		444.1		(kg)	
	D = 18		2793.4		(kg)	
	D = 20		16525.2		(kg)	
	D = 22		16512.4		(kg)	
	D = 25		19741.0		(kg)	
	D = 28		8080.8		(kg)	
	D = 32		61613.0		(kg)	
	TOTAL		125709.9		(kg)	

STEEL OF PIER 35

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	29	793.18	5007.61
	S2	32	10120	30	303.60	1916.73
	S3-1	18	3982	36	143.35	286.36
	S3-2	22	4122	78	321.52	959.42
	S4	32	8749	46	402.45	2540.83
	S5	16	24335	16	389.36	614.54
	S6	16	20372	20	407.44	643.08
	S7	18	8138	36	292.97	585.23
	S8	22	9774	103	1006.72	3004.10
	S9	16	3860	58	223.88	353.36
	S10-1	18	6644	144	956.74	1911.16
	S10-2	22	6928	416	2882.05	8600.15
	S11	22	4052	317	1284.48	3832.95
	S12-1	32	17126	21	359.65	2270.57
	S12-2	32	19097	10	190.97	1205.66
COLUMN	C1	25	11986	176	2109.54	8128.80
	C2	25	7887	228	1798.24	6929.25
	C3	16	3908	112	437.70	690.83
FOOTING	F1	32	20685	63	1303.16	8227.27
	F2	32	20685	32	661.92	4178.93
	F3	16	8327	143	1190.76	1879.42
	F4	16	8327	72	599.54	946.28
	F5	20	8548	20	170.96	421.61
	F6	25	13479	143	1927.50	7427.34
	F7	20	19150	18	344.70	850.08
	F8	32	26679	63	1680.78	10611.32
	F9-1	20	5727	324	1855.55	4576.06
	F9-2	20	5720	736	4209.92	10382.30

TOTAL			
	D = 16	5127.5	(kg)
	D = 18	2782.7	(kg)
	D = 20	16230.1	(kg)
	D = 22	16396.6	(kg)
	D = 25	22485.4	(kg)
	D = 28	0.0	(kg)
	D = 32	35958.9	(kg)
	TOTAL	98981.2	(kg)

STEEL OF PIER 42

DETAIL	No	D (mm)	LENGTH (m)	QUANTITY (nos.)	TOTAL LENGTH (m)	TOTAL STEEL (kg)
BEAM	S1	32	27351	23	629.07	3971.55
	S2	32	10120	46	465.52	2938.99
	S31	22	9832	104	1022.53	3051.27
	S32	18	8288	36	298.37	596.01
	S33	22	4124	78	321.67	959.88
	S34	18	3980	36	143.28	286.21
	S4	32	8749	42	367.46	2319.89
	S5	20	24801	16	396.82	978.61
	S6	20	20838	20	416.76	1027.79
	S7	20	4000	56	224.00	552.42
	S81	22	6928	416	2882.05	8600.15
	S82	18	6644	144	956.74	1911.16
	S9	22	4124	317	1307.31	3901.06
	S101	32	19847	21	416.79	2631.32
	S102	32	19097	21	401.04	2531.88
	S103	32	17126	21	359.65	2270.57
COLUMN	C1	32	8628	336	2899.01	18302.44
	C2	25	7887	136	1072.63	4133.24
	C3	25	7500	136	1020.00	3930.43
	C4	16	3908	72	281.38	444.11
FOOTING	F1	28	20142	83	1671.79	8080.84
	F2	20	11711	143	1674.67	4130.00
	F31	25	15976	143	2284.57	8803.26
	F32	25	11214	72	807.41	3111.23
	F41	20	8088	4	32.35	79.78
	F42	20	11000	24	264.00	651.06
	F5	32	20686	83	1716.94	10839.62
	F61	32	26679	29	773.69	4884.58
	F62	32	26189	54	1414.21	8928.37
	F7	32	19150	20	383.00	2418.01
	F81	20	6585	336	2212.56	5456.51
	F82	20	7046	210	1479.66	3649.06

TOTAL			
	D = 16	444.1	(kg)
	D = 18	2793.4	(kg)
	D = 20	16525.2	(kg)
	D = 22	16512.4	(kg)
	D = 25	19978.2	(kg)
	D = 28	8080.8	(kg)
	D = 32	62037.2	(kg)
	TOTAL	126371.3	(kg)

Quantity table of pier

Items			Unit	Pier 1	Pier 2	Pier 3	Pier 4	Pier 5	Pier 6	Pier 7	Pier 8
Pile	Number of piles		Pile	12	10	10	15	10	10	12	12
	Total length bored piles D=1500mm Dia.		m	684.0	570.0	570.0	855.0	570.0	570.0	684.0	684.0
	Concrete piles class D		m^3	1208.7	1007.3	1007.3	1510.9	1007.3	1007.3	1208.7	1208.7
	Renforcement	D10	kg	10895.6	9295.2	9295.2	13659.2	9440.6	9440.6	11154.2	11154.2
		D16	kg	386.6	322.2	322.2	483.2	322.2	322.2	386.6	386.6
		D22	kg	3944.7	3287.5	3287.5	4930.4	3284.5	3284.5	3945.0	3945.0
		D25	kg	30306.8	26604.2	26604.2	36265.2	26852.3	26852.3	31925.0	31925.0
		D28	kg	25987.6	20302.8	20302.8	35529.9	26518.8	26518.8	24363.4	24363.4
		Total	kg	71521.3	59811.9	59811.9	90868.0	66418.4	66418.4	71774.2	71774.2
Pier	Concrete class E		m^3	824.1	666.1	698.9	901.5	758.4	787.1	1000.4	1033.2
	Reinforcement	D16	kg	493.5	4930.1	5102.8	4561.8	5448.3	5559.3	1848.8	1996.9
		D18	kg	2793.4	2793.5	2793.5	8643.8	2782.7	2782.7	8823.9	12514.1
		D20	kg	16525.2	16182.4	16182.4	13339.8	16230.1	16230.1	15551.3	15551.3
		D22	kg	16512.4	23997.2	23997.2	21264.8	16396.6	16396.6	15171.0	15171.0
		D25	kg	21164.0	12053.5	14772.2	0.0	28223.2	30266.8	8803.3	8803.3
		D28	kg	8080.8	9249.1	9249.1	12169.9	0.0	0.0	8080.8	8080.8
		D32	kg	63522.1	31093.0	31093.0	60645.0	35958.9	35958.9	64081.2	66828.8
		Total	kg	129091.4	100299.0	103190.4	120625.1	105039.8	107194.4	122360.3	128946.2
	Form	Flat	m^2	470.3	462.9	481.5	514.6	515.3	531.7	570.5	589.2
	Scaffolingding work	H < 4m	m^2	54.0	38.8	38.8	54.0	38.8	38.8	54.0	54.0
		4m ≤ H < 30m	m^2	228.8	252.0	308.0	371.3	409.5	458.5	551.3	611.3
	Support		m^3	193.3	254.9	344.5	406.1	506.9	585.3	674.9	764.5
	Earth work	Excavation for foundation	m^3	1865.1	1370.4	1374.8	1757.7	1299.5	1246.6	1757.0	1773.8
		Excess soil	m^3	578.3	389.1	389.2	575.5	388.6	388.1	577.6	577.7

Quantity table of pier

Items			Unit	Pier 9	Pier 10	Pier 11	Pier 18	Pier 19	Pier 20	Pier 21	Pier 22
Pile	Number of piles		Pile	10	15	15	15	15	15	10	12
	Total length bored piles D=1500mm Dia.		m	570.0	855.0	855.0	1005.0	945.0	960.0	640.0	780.0
	Concrete piles class D		m^3	1007.3	1510.9	1510.9	1776.0	1670.0	1696.5	1131.0	1378.4
	Renforcement	D10	kg	9440.6	13619.5	13619.5	20099.6	15017.8	15197.4	10252.5	12301.0
		D16	kg	322.2	483.2	483.2	483.2	483.2	483.2	322.2	386.6
		D22	kg	3284.5	4930.9	4930.9	7238.9	5325.5	5522.9	3679.2	4418.6
		D25	kg	26852.3	37883.5	37883.5	49306.1	43547.4	44356.5	30628.3	37103.5
		D28	kg	26518.8	32484.5	32484.5	69609.6	32484.5	32484.5	26518.8	24363.4
		Total	kg	66418.4	89401.6	89401.6	146737.4	96858.5	98044.5	71400.9	78573.1
Pier	Concrete class E		m^3	893.7	1115.4	1144.1	1078.5	1162.5	1127.7	910.1	1049.6
	Reinforcement	D16	kg	5991.0	7432.6	7481.9	7564.0	7629.9	7481.9	6052.7	2046.3
		D18	kg	2782.7	17956.2	19131.6	2793.4	19836.8	18426.4	2782.7	12993.1
		D20	kg	16230.1	11301.1	11301.1	10857.2	11301.1	11301.1	16230.1	15551.3
		D22	kg	16396.6	16131.5	16131.5	17450.5	16131.5	16131.5	16396.6	15171.0
		D25	kg	38048.2	0.0	0.0	37226.7	0.0	0.0	39198.6	8803.3
		D28	kg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8080.8
		D32	kg	35958.9	140424.3	144666.9	48849.8	147394.2	142242.5	35958.9	68202.6
		Total	kg	115407.6	193245.7	198713.0	124741.6	202293.6	195583.4	116619.6	130848.3
	Form	Flat	m^2	592.3	676.3	692.6	655.3	703.1	683.3	601.6	598.5
	Scaffolingding work	H < 4m	m^2	38.8	54.0	54.0	54.0	54.0	54.0	38.8	54.0
		4m ≤ H < 30m	m^2	640.5	727.5	780.0	660.0	813.8	750.0	668.5	641.3
	Support		m^3	876.5	938.1	1016.5	837.3	1066.9	971.7	921.3	809.3
	Earth work	Excavation for foundation	m^3	1573.0	1829.5	1816.4	0.0	1929.5	1875.9	1602.2	1852.5
		Excess soil	m^3	390.6	576.0	575.9	0.0	576.6	576.3	390.9	578.2

Quantity table of pier

Items			Unit	Pier 23	Pier 24	Pier 25	Pier 26	Pier 27	Pier 28	Pier 29	Pier 30
Pile	Number of piles		Pile	12	10	10	15	10	10	12	10
	Total length bored piles D=1500mm Dia.		m	816.0	690.0	700.0	1020.0	710.0	710.0	864.0	730.0
	Concrete piles class D		m^3	1442.0	1219.3	1237.0	1802.5	1254.7	1254.7	1526.8	1290.0
	Renforcement	D10	kg	12962.3	10757.2	10876.9	14046.0	11184.9	11184.9	13535.1	11424.3
		D16	kg	386.6	322.2	322.2	483.0	322.2	322.2	386.6	322.2
		D22	kg	4576.5	3942.3	3942.3	4930.5	4076.9	4076.9	4891.9	4076.9
		D25	kg	39692.7	33864.8	34404.2	45975.0	34695.5	34695.5	41310.9	35774.3
		D28	kg	24363.4	26518.8	26518.8	35530.5	20302.8	20302.8	25987.6	20302.8
		Total	kg	81981.5	75405.3	76064.4	100965.0	70582.3	70582.3	86112.1	71900.5
Pier	Concrete class E		m^3	973.8	762.5	729.7	907.7	678.4	647.7	803.6	614.9
	Reinforcement	D16	kg	1750.1	5460.6	5324.9	4561.8	5016.5	4893.1	444.1	4757.4
		D18	kg	10714.0	2782.7	2782.7	8823.9	2793.5	2793.5	2793.4	2793.5
		D20	kg	15551.3	16230.1	16230.1	13339.8	16182.4	16182.4	16525.2	16182.4
		D22	kg	15171.0	16396.6	16396.6	21264.8	23997.2	23997.2	16512.4	23997.2
		D25	kg	8803.3	28480.4	26058.1	0.0	12946.7	10713.7	19503.8	8291.4
		D28	kg	8080.8	0.0	0.0	12169.9	9249.1	9249.1	8080.8	9249.1
		D32	kg	61848.9	35958.9	35958.9	61281.3	31093.0	31093.0	61400.8	31093.0
		Total	kg	121919.3	105309.4	102751.3	121441.5	101278.6	98922.3	125260.6	96364.2
	Form	Flat	m^2	555.3	517.7	499.0	518.0	469.9	452.4	458.6	433.7
	Scaffolingding work	H < 4m	m^2	54.0	38.8	38.8	54.0	38.8	38.8	54.0	38.8
		4m ≤ H < 30m	m^2	502.5	416.5	360.5	382.5	273.0	220.5	191.3	164.5
	Support		m^3	602.1	518.1	428.5	422.9	288.5	204.5	137.3	114.9
	Earth work	Excavation for foundation	m^3	1780.3	1230.8	1205.4	1803.9	1289.9	1250.8	1777.1	1253.9
		Excess soil	m^3	577.8	388.0	387.8	575.8	388.5	388.2	577.7	388.2

Quantity table of pier

Items			Unit	Pier 31	Pier 32	Pier 33	Pier 34	Pier 35	Pier 42	Total
Pile	Number of piles		Pile	12	10	10	12	10	12	353
	Total length bored piles D=1500mm Dia.		m	876.0	730.0	750.0	900.0	750.0	732.0	22775.0
	Concrete piles class D		m^3	1548.0	1290.0	1325.4	1590.4	1325.4	1293.6	40247.0
	Renforcement	D10	kg	13678.7	11424.3	11663.7	13531.3	11475.4	12728.7	364356.6
		D16	kg	386.6	322.2	322.2	386.6	322.2	386.6	11372.2
		D22	kg	4891.9	4076.9	4208.5	5049.8	4205.5	4260.4	130448.0
		D25	kg	41958.2	35774.3	36853.2	43252.9	38180.1	33543.3	1074871.0
		D28	kg	25987.6	20302.8	20302.8	25987.6	26518.8	25987.6	825750.5
		Total	kg	86903.1	71900.5	73350.3	88208.2	80702.0	76906.6	2406798.3
Pier	Concrete class E		m^3	797.5	631.3	621.0	805.7	680.5	809.8	25615.7
	Reinforcement	D16	kg	394.8	4819.1	4769.8	444.1	5127.5	444.1	129829.6
		D18	kg	2793.4	2793.5	2793.5	2793.4	2782.7	2793.4	193658.1
		D20	kg	16525.2	16182.4	16182.4	16525.2	16230.1	16525.2	454459.8
		D22	kg	16512.4	23997.2	23997.2	16512.4	16396.6	16512.4	550509.1
		D25	kg	19029.5	9441.8	8616.4	19741.0	22485.4	19978.2	461452.6
		D28	kg	8080.8	9249.1	9249.1	8080.8	0.0	8080.8	161811.4
		D32	kg	60764.5	31093.0	31093.0	61613.0	35958.9	62037.2	1785166.8
		Total	kg	124100.5	97576.3	96701.6	125709.9	98981.2	126371.3	3736887.5
	Form	Flat	m^2	455.1	443.1	437.2	459.8	471.0	462.1	15971.8
	Scaffolingding work	H < 4m	m^2	54.0	38.8	38.8	54.0	38.8	54.0	1406.5
		4m ≤ H < 30m	m^2	180.0	192.5	175.0	195.0	276.5	202.5	12604.8
	Support		m^3	120.5	159.7	131.7	142.9	294.1	154.1	14887.4
	Earth work	Excavation for foundation	m^3	1825.4	1304.9	741.5	1119.3	1417.2	1806.4	44730.6
		Excess soil	m^3	578.0	388.6	383.6	573.0	389.5	577.9	14091.3