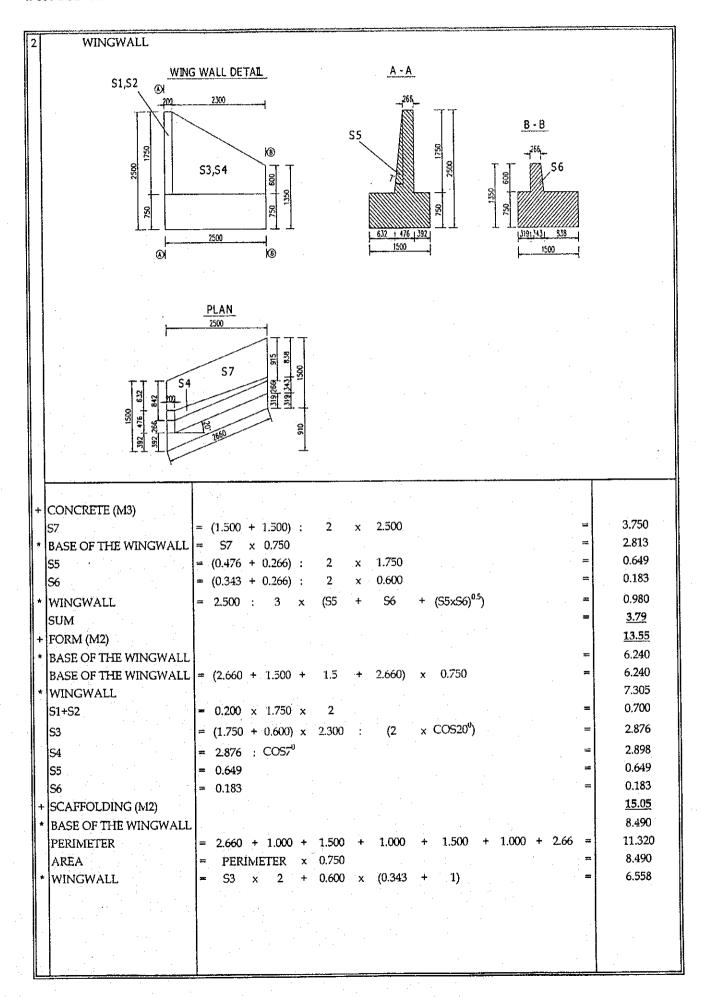
2.5. Box culvert at station 1+300

1	BOX CULVERT STATI	ION	 		01+300									·			QUANTITIES
	L			+	13.340	÷ 0.	02 =	= 26	5.700								
1	CULVERT	T				.,		********									
+	CONCRETE (M3)																
l1 I	S1	=	2.950	х	2.050	- 2.5	500 ;	x 1	.500	+	2	x	0.100	x	0.100	===	2.318
	S	=	S1	+	S2											=	4.635
	VOLUME	=	S	X	(13.340 -	+ 13.3	340) -	+ 5	,900	x	0.200	х	0.300	x	2	=	124.36
					`		,										
						_	DOU	BLE	BOX (CUL	<u>VERT</u>					- 1	
									5900		.1		_				
							29	50		29:	50					.	•
						30	0 2	500	300	250	0 300		S2				
	:				250							_ /	/				
							9	+]	
	,				2050	-	100 5	2			- 11						
					⊥g	<u> </u>			니_								,
					- *1	1	Si	/ 									
								•									_
li .	FORM																<u>419.90</u>
*	INSIDE FORM (M2)								_								291.649
	BOX BULWARK				2							X	26.680	X	4	=	168.921
	BOTTOM OF THE BOX	=	(2.500		0.100	x 2	2)	x 2	6.680	X	2					=	122.728
*	OUTSIDE FORM (M2)	.															128.253
-	BOX BULWARK	1	2.050			x 26.		+	4	x		х	0.200	•		=	109.628
	THE END OF CULVERT	=	S	X	2	+ 5.9	900	x ().200	x	. 4	•	•			=	13.990
	CENTER	=	S	٠												-	4.635
∥.	CCAPTOLDING (A40)		9.050		0.000	24			1 000		0.200		0.000				100.68
11	SCAFFOLDING (M2) SUPPORT	-	2.000	х	2.000	x 26.	.080	+ 4	1.000	х	0.300	X	0.200			=	<u>109.63</u>
	AREA (M2)		E 000		1.500		c									=	4.215
	VOLUME (M3)	1	AREA			-	3										112.54
ı	VOLOME (MIS)		AICEA		L												112.53
										·							
										·							
														-			
												•					

BOXCULVERT STATION 1+300 QUANTITIES TABLE OF REINFORCEMENT

SEGMENT 1 & 2

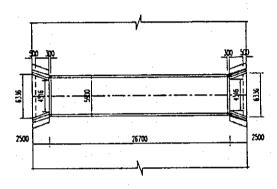
	T				momit toxicont	000000 1 1 11 10 10 10 10 10 10 10 10 10
UNIT LENGTH	SPACE	DIAMETER				TOTAL WEIGHT
(mm)	(mm)	(mm)	OF BAR	(kg/m)	(m)	(kg)
3660	125	14	214	1.208	783.24	946.5
2350	250	12	108	0.888	253.80	225.3
6270	250	14	108	1.208	677,16	818.3
1500	250	14	212	1.208	318.00	384.3
1550	125	18	214	1.998	331.70	662.6
1970	250	12	216	0.888	425.52	377.8
2350	125	12	214	0.888	502.90	446.5
1049	250	12	216	0.888	226.58	201.2
1120	250	12	216	0.888	241.92	214.8
13845	250	12	52	0.888	719.94	639.2
13945	250	12	88	0.888	1227.16	1089.5
5780	250	12	2	0.888	11.56	10.3
1440	250	12	26	0.888	37.44	33.2
1180	250	12	320	0.888	377.79	335.4
EMENT: D)<=14		5722.1	TOTAL FOR SEC	GMENT 1:	
EMENT: 16=	D<=25		662.6	REINFORCEMEN	NT (KG):	6384.7
EMENT: 25	<d=32< td=""><td></td><td>0.0</td><td>CONCRETE (M3</td><td>):</td><td>62.18</td></d=32<>		0.0	CONCRETE (M3):	62.18
		TOTAI	FOR SEC			
EMENT: D	><=14		11444.29	REINFORCEMEN	NT (KG):	12769.5
	D<=25					
			0	1):	124.36
	3660 2350 6270 1500 1550 1970 2350 1049 1120 13845 13945 5780 1440 1180 EMENT: I6= EMENT: 25 EMENT: 16= EMENT: 16=	(mm) (mm) 3660 125 2350 250 6270 250 1500 250 1550 125 1970 250 2350 125 1049 250 1120 250 13845 250 13945 250 1440 250 1180 250 EMENT: D<=14	(mm) (mm) (mm) 3660 125 14 2350 250 12 6270 250 14 1500 250 14 1550 125 18 1970 250 12 2350 125 12 1049 250 12 13845 250 12 13945 250 12 5780 250 12 1440 250 12 EMENT: D<=14	(mm) (mm) (mm) OF BAR 3660 125 14 214 2350 250 12 108 6270 250 14 108 1500 250 14 212 1550 125 18 214 1970 250 12 216 2350 125 12 214 1049 250 12 216 1120 250 12 216 13845 250 12 25 13945 250 12 88 5780 250 12 2 1440 250 12 26 1180 250 12 320 EMENT: D<=14	(mm) (mm) (mm) OF BAR (kg/m) 3660 125 14 214 1.208 2350 250 12 108 0.888 6270 250 14 108 1.208 1500 250 14 212 1.208 1550 125 18 214 1.998 1970 250 12 216 0.888 2350 125 12 214 0.888 1049 250 12 216 0.888 1120 250 12 216 0.888 13845 250 12 216 0.888 13945 250 12 25 0.888 1440 250 12 2 0.888 1180 250 12 26 0.888 EMENT: D<=14	(mm) (mm) (mm) OF BAR (kg/m) (m) 3660 125 14 214 1.208 783.24 2350 250 12 108 0.888 253.80 6270 250 14 108 1.208 677.16 1500 250 14 212 1.208 318.00 1550 125 18 214 1.998 331.70 1970 250 12 216 0.888 425.52 2350 125 12 214 0.888 502.90 1049 250 12 216 0.888 226.58 1120 250 12 216 0.888 241.92 13845 250 12 216 0.888 719.94 13945 250 12 28 0.888 1227.16 5780 250 12 2 0.888 11.56 1440 250 12 320

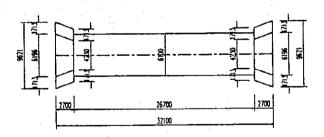


BOX CULVERT STATION 1+300 REINFORCEMENT OF WINGWALL

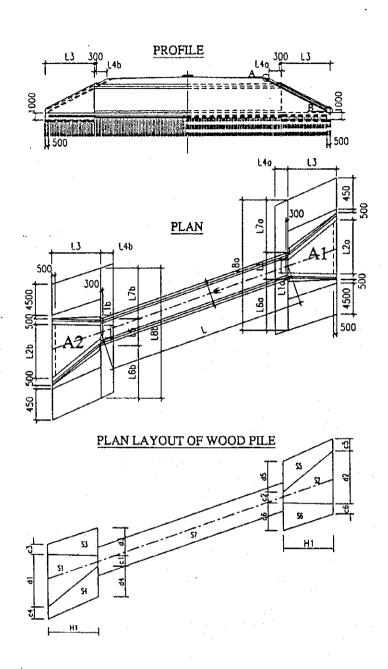
RAR MARK	UNIT LENGTH	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	NUMBER UNIT WEIGHT TOTAL LENGTH TOTAL WEIGHT
	(MM)	(MM)	OF BAR	(KG/M)	(M)	(KG)
la	2011	12	15	0.888	30.2	26.8
1b	2060	14	15	1.208	30.9	37.3
2a	2651	12	9	0.888	15.9	14.1
2b	1552	12	12	0.888	18.6	16.5
2c	582	12	15	0.888	8.7	7.8
3	3002	12	2	0.888	6.0	5.3
4	3378	12	16	0.888	54.0	48.0
5a	3824	12	1.1	0.888	42.1	37.3
5b	1867	12	4	0.888	7.5	6.6
20	3248	20	11	2.466	35.7	88.1
P <u>S</u>	1291	20	4	2.466	5.2	12.7
9	2444	14	8	1.208	19.6	23.6
7	1814	12	4	0.888	7.3	6.4
8	1814	12	4	0.888	7.3	6.4
6	2554	12	4	0.888	10.2	9.1
10	1304	14	5	1.208	6.5	7.9
11	724	12	6	0.888	6.5	5.8
12	1791	12	1	0.888	1.8	1.6
		REINFORCEMENT		D=<14	260.7 KG	KG
		REINFORCEMENT		14< D<=25	100.8 KG	KG
		TOTAL REINFORCEMENT	EMENT:		361.5 KG	KG

BOX CULVERT FOR DRAINAGE (STATION 1+300)

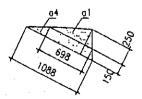




NOTATIONS FOR QUANTITY CALCULATION OF BOX CULVERT FOR DRAINAGE



DETAIL A



DETAIL B

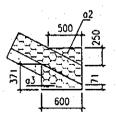


TABLE OF EXPLAINING QUANTITIES OF CULVERT

CULVERT KM1+300

																					B
	(m2)		(m2)		(m2)		(m2)		(m2)		(m2)						(m2)		(m2)) × 0.45× 0.5	$) \times 0.45 \times 0.5$
	14.075		14.075		4.625		4.625		4.625		4.625						13.565		13.565	1.26	6.336
li	11	li .	11	n	H	16	11		IF	II	n					Ħ	11	Ħ	li.	+	+
7	8	7	7	7	7	. 7	7	2	2	2	. 2		(m2)			7	5	2	7	.2a	6.336
••	••			•	••		••			••	٠.		. 02	•			••	••		,	9
H	2.700	Ħ	2.700	H	2.700	H	2,700	H	2.700	H	2.700		162.870			ជ	2.500	ខា	2.500	+	+
×	×	×	x	×	×	×	×	×	×	×	×					×	×	×	×	x 0.3	x 0.3
_	_		_	~	~	_	_	^	<u>.</u>	~	_	ll .	U.				~	_	~	~	_
d-1	6.196	d 2	961.9	63	1.713	d4	1.713	d5	1.713	9p	1.713	(W + 0.2)	6.100			L2a	926.9	L2b	6.336	A2	13.565
+	. +	+	+	+	+	+	+	+	+	+	+	×	×			+	+	+	+	+	.+
C	4.230	2	4.230	.	1.713	\$	1.713	i.	1.713	90	1.713	<u>-</u>	26.700		. APRON CONCRETE:	L1a	4.516	L1b	4.516	¥	13.565
J	ر ا	_	, <u> </u>	<i>.</i> _	<u> </u>	. —			_	<u> </u>	_				ONC			, -		•	
S	H	S2=	1H	S	11	S.	. #	S5 -	11	9S	!!	S7=	. 0	•	ONO	AI≃		A2=	1)		И
															APR						
															 1	-					

(m3)

10.99

32.57 (m3)

0.2

6.100

= 26.700

0.5

 \times (W + 0.2) \times

2. CONCRETE FOUNDATION OF CULVERT:

19.008 (m2)

L2b) 6.336

7.SCAFFOLDING = (L2a + (6.336 +

	•				(100m)										
					ğ										
	(m3)				71) × 0.15 =	$) \times 0.15 =$			
	4.67				226.71										
И	II			a	ı. H			(100m)			22	162.870			
0.1	0.1			9	•						•	162			
S6) × 0.1	× ($\times 25 \times 5:100$	\times 25 \times 5:100			21.11			+	+			
S 6	4.625			×	× 2						9S	4.625			
+	+				$\widehat{}$		i	li .			+	+			
S2	4.625			S7	162.870		x 25 x 3: 100	x 25 x 3: 100	•			4.625			
+	+			+	+		× 25 ×	× 25 ×			0,	4.			
\$	4.625			Se	4.625		~	^		· · .	+	+			19.008 (m2)
	4		-		41				កា		\$	4.625			19.008
+	+	٠		+	+		0	0.000	i SLOF			4			54
S3	4.625			SS	4.625			Ö	E TOE OF SLOPE		S3	.625	٠	2	2 11
+	+			+	+		+	+	D PIL		+	+ 4.6		×	×
25	14.0751			ጿ	4.625		S2	14.0751	EA WOO		25	14.075		X 0.75	X 0.75
+	+			+	+		+	+	IS AR		+	. +		٠,	· —
SI	14.075			S	4.625		SI	14.075).8 × 4.5 × 4	(네	Sı	14.075		L2b)	_
1)	ıı	4. WOOD PILE:	* L=5M	W5≈ (<u> </u>	* L=3M	W3= (_ =	NOTE: S=0.8 x 4.5 x 4 IS AREA WOOD PILE	5. SAND BEDDING:	_)	6.FORM	= (L2a +	(6.336 +

3. LEAN CONCRETE:

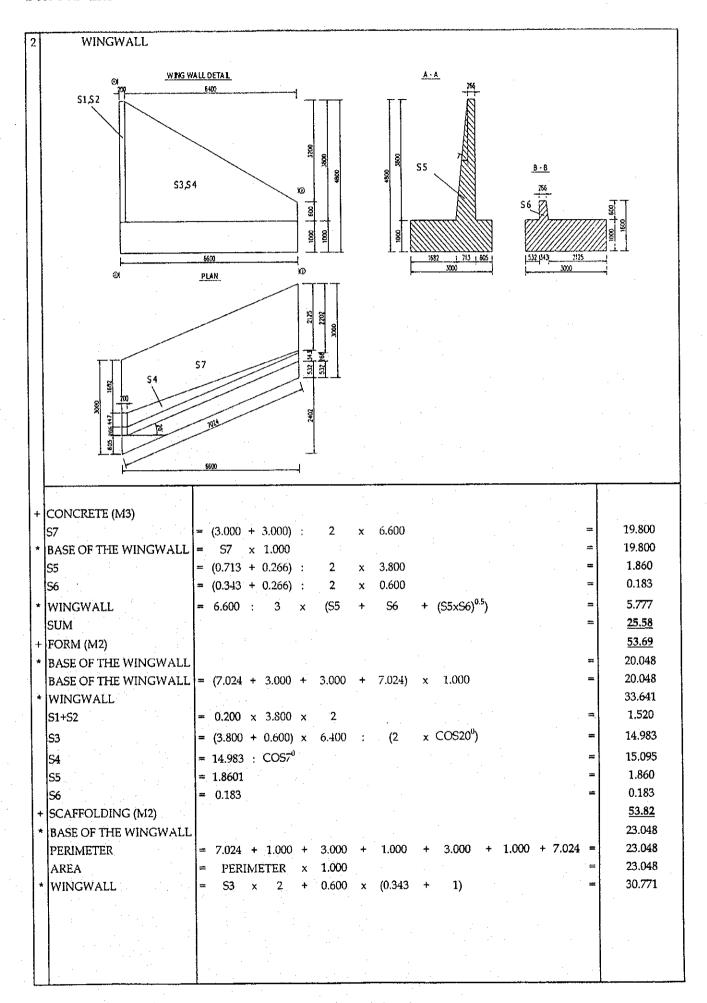
2.6. Box culvert at station 1+560

Ī	BOX CULVERT STATI				1+560	+	0.02		26.84								QUANTITIES
	CULVERT	_	13.410	T	13.410		0,02		20.04		·			- 			
	CONCRETE (M3) S VOLUME	=					3.500 13.410)		3.000 3.700				0.300 0.300			## ##	5.035 135.48
			-						BOX CU								
					•		<u> </u>		3700		<u> </u>						
	•						350	 	3000	350	S						
							3-	100	1								
						4150	3500			1							
						. `					•	٠					
		} 			4			_			٠		٠				
1	FORM INSIDE FORM (M2)																506.35 265.439
	BOX BULWARK		-						(1:SIN45 ⁰			x	26.820	x	2	=	201.071
*	BOTTOM OF THE BOX OUTSIDE FORM (M2)	=	(3.000	•	0.300	x	2)	X	26.820	x	1 .					=	64.368 240.911
	BOX BULWARK						26.820		4		0.300 4	x	0.200			==	222.846 13.030
	THE END OF CULVERT CENTER	1	S S	X	2	+	3.700	X	0.200	x	4.					=	5.035
	SCAFFOLDING (M2)	=	4.150	X	2.000	×	26.820	+	4.000	x	0.300	x	0.200		-	=	222.85
+	SUPPORT																
	AREA (M2) VOLUME (M3)		4.150 AREA			-	S									=	10.320 <u>276.99</u>
												-					
					•												
														•			
					•												<u> </u>
													·.				
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BOXCULVERT STATION 01+560 QUANTITIES TABLE OF REINFORCEMENT

SEGMENT 1 & 2

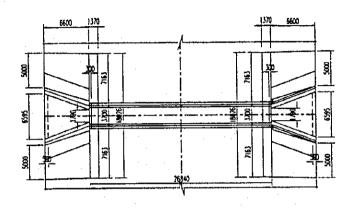
SYMBOL	UNIT LENGTH	SPACE	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT
OF BAR	(mm)	(mm)	(mm)	OF BAR	(kg/m)	(m)	(kg)
1	6110	250	14	108	1.208	659.88	797.4
2	4030	250	12	106	0.888	427.18	379.3
3	4289	250	16	53	1.578	227.32	358.8
4	4070	250	14	108	1.208	439.56	531.2
5	2220	250	12	108	0.888	239.76	212.9
6	4401	250	18	53	1.998	233.25	465.9
7	4520	250	14	108	1.208	488.16	589.9
8	1474	250	12	108	0.888	159.15	141.3
9	1544	250	12	108	0.888	166.78	148.1
10	1540	250	12	16	0.888	24.64	21.9
11	3580	180	12	2	0.888	7.16	6.4
12	14015	250	12	32	0.888	448.48	398.2
13	14115	250	12	88	0.888	1242.12	1102.8
14	1280	250	12	161	0.888	206.08	183.0
15	1380	250	12	161	0.888	222.18	197.3
REINFORG	CEMENT:	D<=14		4709.3	TOTAL FOR S	EGMENT 1:	
REINFORG	CEMENT: 16	=D<=25		824.7	REINFORCEM	IENT (KG):	5534.1
REINFORG	CEMENT: 2	5 <d=32< td=""><td></td><td></td><td>CONCRETE (1</td><td>М³):</td><td>67.74</td></d=32<>			CONCRETE (1	М ³):	67.74
		TOT.	& 2				
REINFORG	CEMENT:	D<=14		9418.691	IENT (KG) :	11068.1	
REINFORG	CEMENT: 16	=D<=25		1649.448			
REINFORG	CEMENT: 2	5 <d=32< td=""><td></td><td>·</td><td>CONCRETE (1</td><td>M^3):</td><td>135.48</td></d=32<>		·	CONCRETE (1	M^3):	135.48

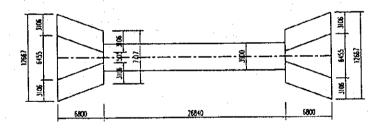


BOX CULVERT STATION 1+560 REINFORCEMENT OF WINGWALL

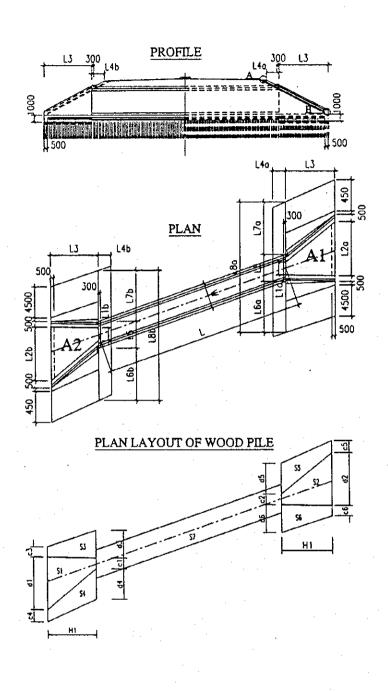
H								,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,														
TOTAL WEIGHT	(KG)	104.9	191.8	37.8	114.0	18.7	14.1	198.3	115.4	29.1	300.9	67.6	142.3	11.7	17.6	36.8	20.5	13.8	5.4	KG	KG	KG
TOTAL LENGTH	(M)	118.2	121.5	42.6	128.4	21.0	15.9	223.4	130.0	32.7	100.8	22.7	117.8	13.2	19.8	41.4	17.0	15.6	6.1	880.5 KG	560.3 KG	1440.8 KG
UNIT WEIGHT	(KG/M)	0.888	1.578	0.888	0.888	0.888	0.888	0.888	0.888	0.888	2.984	2.984	1.208	0.888	0.888	0.888	1.208	0.888	0.888	D=<14	14< D<=25	
NUMBER	OF BAR	36	36	9	32	36	2	28	29	10	29	10	48	4	9	9	13	19	2		•	PEMENT
DIAMETER	(MM)	12	16	12	12	12	12	12	12	12	22	22	14	12	12	12	14	12	12	REINFORCEMENT	REINFORCEMENT	TOTAL REINFORCEMENT.
UNIT LENGTH	(MM)	3283	3375	7100	4013	584	7952	7978	4483	3273	3477	2267	2454	3301	3301	6904	1304	820	3044			
Javykava	DAIN MAIN	la	116	2a	2b	2c	60	4	5a	5b	5c	5d	9	7	8	6	10	11	12			

BOX CULVERT FOR DRAINAGE (STATION 1+560)

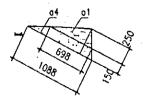




NOTATIONS FOR QUANTITY CALCULATION OF BOX CULVERT FOR DRAINAGE



DETAIL A



DETAIL B

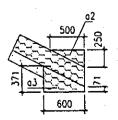


TABLE OF EXPLAINING QUANTITIES OF CULVERT

CULVERT KM1+560

$SS = \{ & 1.505 & + & 6.455 &) & \times & 6.800 & : & 2 & = & 27.064 & (m2) \\ SS = \{ & 1.505 & + & 6.455 &) & \times & 6.800 & : & 2 & = & 27.064 & (m2) \\ SS = \{ & 1.505 & + & 6.455 &) & \times & 4.800 & : & 2 & = & 27.064 & (m2) \\ SS = \{ & 2.3106 & + & 6.435 &) & \times & 4.800 & : & 2 & = & 21.121 & (m2) \\ S4 = \{ & 2.4 & + & 44 &) & \times & 4.800 & : & 2 & = & 21.121 & (m2) \\ S4 = \{ & 2.4 & + & 44 &) & \times & 4.800 & : & 2 & = & 21.121 & (m2) \\ S5 = \{ & 2.4 & 4.4 &) & \times & 4.800 & : & 2 & = & 21.121 & (m2) \\ S5 = \{ & 3.106 & + & 3.106 &) & \times & 6.800 & : & 2 & = & 21.121 & (m2) \\ S5 = \{ & 3.106 & + & 3.106 &) & \times & 6.800 & : & 2 & = & 21.121 & (m2) \\ S5 = \{ & 3.106 & + & 3.106 &) & \times & 6.800 & : & 2 & = & 21.121 & (m2) \\ S5 = \{ & 1.3106 & + & 3.106 &) & \times & 6.800 & : & 2 & = & 21.121 & (m2) \\ S7 = \{ & 1.4 & + & 1.2 &) & \times & 1.3 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.595 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.595 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.595 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.595 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.595 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.595 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.595 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.595 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.595 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.295 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.595 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.595 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.595 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.595 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.595 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6.595 &) & \times & 6.600 & : & 2 & = & 27.671 & (m2) \\ S7 = \{ & 1.790 & + & 6$) =LS	c1	+	d1	_	×	HI	••	7	12			
+ d2	,,	1.505	+	6.455	_	×	6.800		61	11	27.064	(m2)	
5) =2S	ପ	+	d2	_	×	H	•	7	II			
+ d3) × H1 : 2 = 21.121 (n + d4) × 6.800 : 2 = 21.121 (n + d4) × H1 : 2 = 21.121 (n + d4) × 6.800 : 2 = 21.121 (n + d5) × 6.800 : 2 = 21.121 (n + d6) × H1 : 2 = 21.121 (n × (W+0.2) = 104.676 (m2) 10 × 3.900 = 104.676 (m2) 1 + L2a) × 6.600 : 2 = 27.671 (n 1 + A2) × 0.3 + (L2a + L2b) 1 + A2) × 0.3 + (L2a + L2b) 1 + A2) × 0.3 + (L2a + L2b) 1 + A2) × 0.3 + (L2a + L2b) 1 + A2) × 0.3 + (L2a + L2b) 1 + A2) × 0.3 + (C5595 + C5595)	"	1.505	+	6.455	_	×	6.800		7	II	27.064	(m2)	
6 + 3.106) × 6.800 : 2 = 21.121 (n 6 + 3.106) × 6.800 : 2 = 21.121 (n 6 + 3.106) × 6.800 : 2 = 21.121 (n 6 + 3.106) × 6.800 : 2 = 21.121 (n 16 + 3.106) × 6.800 : 2 = 21.121 (n 16 + 3.106) × 6.800 : 2 = 21.121 (n 10 × 3.900 = 104.676 (m2) (m2) 10 × 3.900 = 1.24.676 (m2) 2 = 27.671 (m 3 + 4.6595) × 6.600 : 2 = 27.671 (m 4 + 4.6595) × <t< td=""><td>. =£S</td><td>೮</td><td>+</td><td>d3</td><td>_</td><td>×</td><td>H</td><td>٠.</td><td>5</td><td>il</td><td></td><td></td><td></td></t<>	. =£S	೮	+	d3	_	×	H	٠.	5	il			
+ d4) x H1 : 2 = 21.121 (n	D .	3.106	+	3:106	~	×	9.800	••	7	II	21.121	(m2)	
6 + 3.106)	S4=	ぎ	+	d4	_	×	H		71	II			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		3.106	+	3.106	~	×	6.800	••	7	II	21.121	(m2)	
16 + 3.106) × 6.800 : 2 = 21.121 (n) 16 + 3.106) × 6.800 : 2 = 21.121 (n) 10 × (10.60) = 104.676 (m2) = 21.121 (n) 10 × (3.900) = 104.676 (m2) = 27.671 (n) 10 + (5.955) × (6.600) : 2 = 27.671 (n) 10 + (6.595) × (6.600) : 2 = 27.671 (n) 10 + (6.595) × (6.600) : 2 = 27.671 (n) 11 +) = <u>5</u> S	&	+	d5	- -	×	H	•.	7	li.			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	ı I	3.106	+	3.106	~	×	6.800		7	ij	21.121	(m2)	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$) ==9S	90	+	qę	~	×	H		7	il			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		3.106	+	3.106	~	×	6.800		2	1	21.121	(m2)	
10 x 3.900 = 104.676 (m2) a + L2a) x L3 : 2 = a + 6.595) x 6.600 : 2 = 27.671 (m b + 6.595) x 6.600 : 2 = 27.671 (m c + 6.595) x 6.600 : 2 = 27.671 (m c + A2) x 0.3 + (math boundary contents) 1 <td< td=""><td>S7=</td><td>ن.</td><td>×</td><td>(W + 0.2)</td><td>I</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	S7=	ن.	×	(W + 0.2)	I								
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	JI	26.840	×	3.900	ŧ		104.6	92	(m2)			-	
(1.790 + 6.595)	RONCON	CRETE:							• .				
(1.790 + 6.595)							÷						
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	A1= (L1a	+	LZa	<u>.</u>	×	<u> 13</u>	٠.	7	I	٠		
(Lib + L2b) x L3 : 2 = 27.671 (n (1.790 + 6.595) x 6.600 : 2 = 27.671 (n (A1 + A2) x 0.3 + (L2a + L2b (27.671 + 27.671) x 0.3 + (6.595 + 6.595) II	1.790	+	6.595	~	×	009'9		2	II	27.671	(m2)	
(1.790 + 6.595) x 6.600 : 2 = 27.671 (n (A1 + A2) x 0.3 + (L2a + L2b (27.671 + 27.671) x 0.3 + (6.595 + 6.595	A2= (Lib	+	L2b	_	×	ន		8	16			
(A1 + A2) x 0.3 + (L2a + L2b (27.671 + 27.671) x 0.3 + (6.595 + 6.595	=	1.790	+	6.595	_	×	6.600		2	11	27.671	(m2)	
$(27.671 + 27.671) \times 0.3 + (6.595 + 6.595)$		Α1	+	A2	_	× 0.3	+	J	Za	+	L2b) × 0.7 × 0.5	
	=	27.671	+	27.671	_	x 0.3	+	9	395	+	6.595) \times 0.7 \times 0.5	

(m3)

21.22

20.94 (m3)

0.2

3.900

26.840

0.2

 $L \times (W + 0.2) \times$

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=
$$(51 + 52 + 53 + 54 + 55 + 56) \times 0.1 =$$

= $(27.064 + 27.064 + 21.121 + 21.121 + 21.121 + 21.121) \times 0.1 = 13.86$ (m3)

4. WOOD PILE:

••		(100m)			
		236.45			٠.
	n	II			(100m)
٠.	$\times 25 \times 5 : 100$	$\times 25 \times 5 : 100$			51.40
	~	<u> </u>	٠		
	S7	104.676		3:100 =	3:100 =
	+	+		$\times 25 \times 3:100$	$\times 25 \times 3:100$
	%	21.121		<u> </u>	<u></u>
	+	+		5×4)	8
	S5	21.121		$(0.8\times4.5\times4)$	14.400
	+	+		+	+
	22,	21.121		+ \$25 +	27.064
	+	+		+	+
	83	21.121 + 2		S1 +	27.064
* L=5M			* L=3M	W3= (i)

NOTE: S=0.8 x 4.5 x 4 IS AREA WOOD PILE TOE OF SLOPE

5. SAND BEDDING:

$$= (S1 + S2 + S3 + S4 + S5 + S6 + S6 + S7 + (0.8 \times 4.5 \times 4) \times 0.15 = (27.064 + 27.064 + 21.121 + 21.121 + 21.121 + 21.121 + 104.676 + (0.8 \times 4.5 \times 4) \times 0.15 = (27.064 + 27.064 + 21.121 + 2$$

38.65 (m3)

6. STONE MASONRY

			(b) IS AREA OF HEAD WALL)	
	(m2)	(m2)) (m2)	(m2)
(m2)	(m2, 0.133		= 1.110	40.1379
0.087	900	II .	3.700	н II
	9.0	0.15	3.7	x 0.5 x 0.5
0.5		0.5 x	×	1.3
	×	×	0.300	× ×
× >	< <u>_</u>	~	u	
0.25	0.371	1.088	L5	5.000
× ;	+ +	+	×	+ +
0.695	0.071	0.698	0.300	L6a 7.163
al= مئت=	a2= a3= (a4= (b1=	b2a= (= (

x 0.5

<u>.</u>

2.000

1.6b

b2b= (

	·															
										(m3)						
										3.902 (m3)	4		(m3)			
		,						(m3)	(m3)		(m3)	(m3)	65.122		·	
								1.566	1.566	×5×4	29.044	29.044	91			
										^	ı,	ti li				
								fl _.	IS	+ 0.133	COS(26.56) 0.894	COS(26.56) 0.894	V3b 29.044			
		(m2)	(m2)	(m2)	(m2)	(m2)							+ +			
		40.1379	40.1379	40.1379	24.696 (m2)	24.696 (m2)		18.026	18.026	0.063	× 0.25 × 0.25	× 0.25 × 0.25	V3a 29.044			
					#	il .	(m2)) ,						
		II	11 11	11 11	1.370	1.370	6.000	×	×	1		- -	+ +			
		x 0.5	× 0.5	x 0.5 x 0.5		,-	9	0.087	0.087	4	b3a 40.1379	b3b 40.1379	V2 3.902			
		6.600	L3 6.600	L3 6.600	×	×	. 1	11	II	ιυ ×	+ +	+ +	+ +			
·		*	××	× ×	18.026	18.026	2			×	b2a 40.1379	b2b 40.1379	V1b 1.566			
					= 18	= 18.	×				+ b	+ b + 40.	+ + + 1;; <			
		5.000	5.000	5.000	L4a	٠ ـ	Ŀń	L8a	18b	a3	b1 1.110	b1 1.110	V1a 1.566			
		+ 5.(+ +	+ + 5.(×	×	×	×	×	+	# []	1 15	> # 			
		7.163	L7a 7.163	L7b 7.163	L8a	1.8b	9.0	ra L	a.	a2	b4a 24.696	b4b 24.696				
		. <u> </u>	b3d= (= (h3b= (= (bła≖	=d]*d	lı5=	Vla=	V1b=	V2= (V3a≃ (= (V3b= (TOTAL=			
							•									
						÷	2 -	6 -	. 9							

			16.420	(m3)		16.420	(m3)					•				
		u	11:		31	Ħ										
(m3)	(m3)	COS(26.56)	0.894		COS(26.56)	0.894									-	
2.415 (m3)	2.415	••			••	••			(m3)							
7	7	0.15	0.15		0.15	0.15		٠	_							
П	IJ	×	×		×	×			37.67							
									5							
		_	_		_	_		H	<u>L</u>							
		,				,		^								
18.026	18.026	p2	90009		<u>55</u>	9.000		V5b	16.420							
×	×	. 1						+	+				(m2)			26.38 (m2)
0.134	0.134	b3a	40.1379		939	40.1379		V5a	16.420				26.38	•		26.38
I)	II	+	+		+	+		+	+			B	0		H	II
		b2a	40.1379		b2b	40.1379		V4b	2.415			7	. 7		2	6
		+	+		+	+		+	+			×	×		×	×
L8a	1.86	b1	1.110		<u>P.1</u>	1 110		V4a	2.415			X 1	X 1		X 1.	X .1
×	×	•	ı		1	•		_	_	٠		_			~	~
94	a4	b4a	24.696		140	24.696	2			-			6.595			6.595
V4a=	V4b=	V5a= (11	•	V5h= () } -		TOTAL =			8. FORM:	= (L2a +	(6.595 +	9. SCAFFOLDING	= (L2a +	(6.595 +

7. BASE BEDDING:

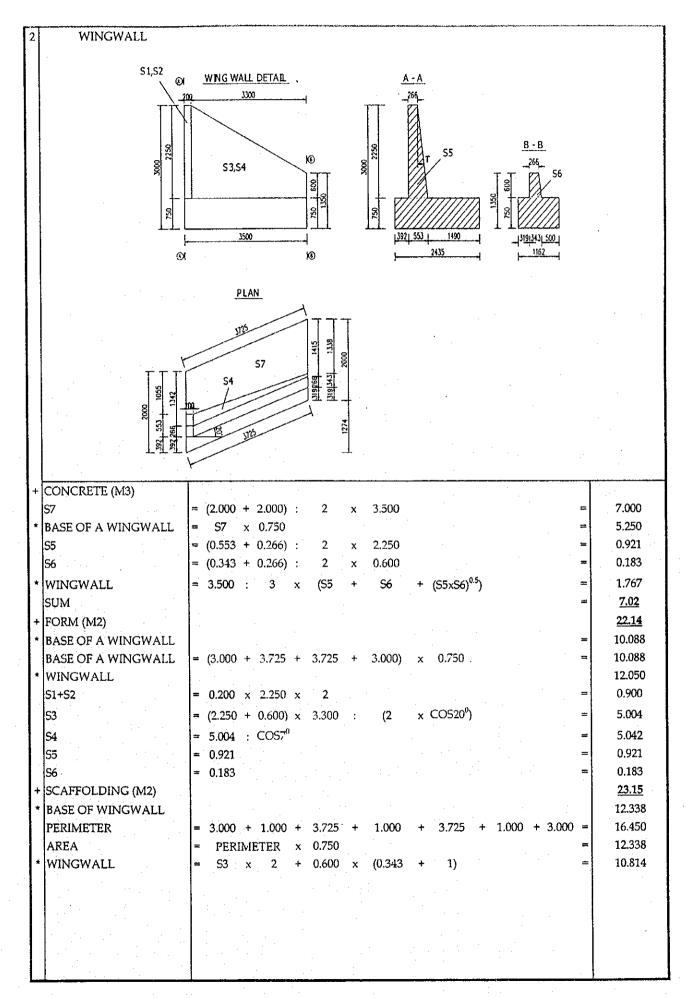
2.7. Box culvert at station 2+150

Γ	ī	BOX CULVERT STAT				02+150			*	and asked a second and the second an	*******	 			 -			QUANTITIES
L	\perp	L	=	13.340	+	13.340	+	0.02	=	26.700								
	1	CULVERT																
-	+	CONCRETE (M3)																
	- 1	S1=S2	_	2.050	~	2 550		2.500	v	2.000	+	2	v	0.100	v	ດາດ	n ==	2.543
ĺ	- 1		l				_	2,500	^	2.000	7	2	^	0.100	^	0.10		j l
	- 1	S	=	S1	+	S2											=	5.085
		VOLUME	=	S	X	(13.340)	+	13.340)	+	5.900	x	0.200	Х	0.300	x	2	=	<u>136.38</u>
ı																		1
	1							DO	UВ	LE BOX C	:UL	VERT						
İ										5900								
									200									
								 	295	" - -	295	v –	-					
							Q	300	250	0 300	2500	0 300	ر	52				
	ı					Ŧ	- 25	1 1	- 1	- 11								
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	İ					2550	2000	1 1100	=			- 11						
			١.			~	7											
	١					1	_ 8											
							~ 1	1	 S1									
	-								21]
.	+	FORM																503.96
Ι,	- 1	INSIDE FORM (M2)																347.677
	- 1	,																
		BOX BULWARK		(2.000						(1:SIN45°	-	1))	X	26.680	x	4	===	222.281
		BOTTOM OF THE BOX	=	(2.950	-	0.300	x	2)	x	26.680	x	2					=	125.3%
	*	OUTSIDE FORM (M2)						100										156.283
	- 1		=	2.550	•	. 2	¥	26.680	+	4	х	0.300	v	0.200			=	136.308
	- 1	the first control of the first											^	0.200				1 1
	- 1	THE END OF CULVERT	=	S	x	2	+	5.900	X	0.200	X	4					=	14.890
	-	CENTER	=	S					1.1								=	5.085
1.	+	SCAFFOLDING (M2)	=	2.550	x	2.000	x.	26.680	± .	4.000	x	0.300	x	0.200			. =	136.31
1		SUPPORT			-						•							
1		·		F 000		0.000												
ĺ		AREA (M2)	1			2.000	-	S									=	6.715
	İ	VOLUME (M3)	=	AREA	X	L											=	<u>179.29</u>
																		[
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BOXCULVERT STATION 2+150 QUANTITIES TABLE OF REINFORCEMENT

SEGMENT 1 & 2

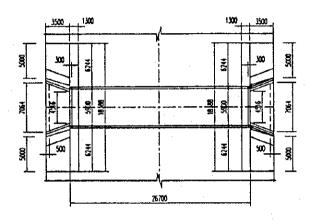
SYMBOL	UNIT LENGTH	SPACE	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT		
OF BAR	(mm)	(mm)	(mm)	OF BAR	(kg/m)	(m)	(kg)		
. 1	4160	125	14	214	1.208	890.24	1075,8		
2	2850	250	12	108	0.888	307.80	273.3		
- 3	6270	250	14	108	1.208	677.16	818.3		
4	1500	250	14	212	1.208	318.00	384.3		
5	1550	125	18	214	1.998	331.70	662.6		
6	1970	250	12	216	0.888	425.52	377.8		
7	2850	125	12	214	0.888	609.90	541.5		
8	1049	250	12	216	0.888	226.58	201.2		
9	1120	250	12	216	0.888	241.92	214.8		
10	13845	250	12	52	0.888	719.94	639.2		
11	13945	250	12	100	0.888	1394.50	1238.1		
12	5780	250	12	2	0.888	11.56	10.3		
13	1440	250	12	26	0.888	37.44	33.2		
14	1180	250	12	320	0.888	377.79	335.4		
15	1280	250	12	320	0.888	409.80	363.8		
REINFORC	EMENT: I)<=14	· · · · · · · · · · · · · · · · · · ·	6506.8	TOTAL FOR SEG	MENT 1:			
REINFORC	EMENT: 16	=D<=25		662.6	REINFORCEMEN	NT (KG):	7169.4		
REINFORC	EMENT: 25	S <d=32< td=""><td></td><td></td><td>CONCRETE (M3)</td><td></td><td>68.19</td></d=32<>			CONCRETE (M3)		68.19		
			TOTAL		SEGMENT 1 & 2				
REINFORC		><=14		13013.56	REINFORCEMEN	NT (KG) :	14338.8		
	EMENT: 16	=D<=25	•	1325.195					
REINFORC	EMENT: 2	S <d=32< td=""><td>-</td><td>· .</td><td>CONCRETE (M3)</td><td><u>:</u></td><td>136.38</td></d=32<>	-	· .	CONCRETE (M3)	<u>:</u>	136.38		

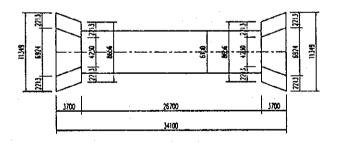


BOX CULVERT STATION 2+150 REINFORCEMENT OF WINGWALL

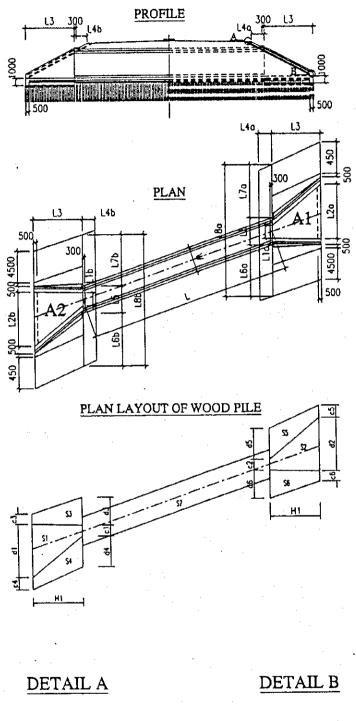
	I INIT I ENGTH	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT
BAR MARK	(MM)	(MM)	OF BAR	(KG/M)	(M)	(KG)
]a	2258	12	20	0.888	45.2	40.1
116	2310	14	20	1.208	46.2	55.8
	3723	12	9	0.888	22.3	19.8
2b	2100	12	16	0.888	33.6	29.8
2c	582	12	20	0.888	11.6	10.3
3	4254	12	2	0.888	8.5	7.6
4	4429	12	20	0.888	88.6	78.6
5a	3043	12	15	0.888	45.6	40.5
5b	2150	12	9	0.888	12.9	11.5
22	2467	20	15	2.466	37.0	91.3
54	1574	20	9	2.466	9.4	23.3
9	2444	14	16	1.208	39.1	47.3
	2301	12	4	0.888	9.2	8.2
8	2301	12	4	0.888	9.2	8.2
6	3605	12	4	0.888	14.4	12.8
10	1304	14	8	1.208	10.4	12.6
11	744	12	11.	0.888	8.2	7.3
12	2143	12	1	0.888	2.1	1.9
		REINFORCEMENT:		D<=14	392.2 KG	KG
		REINFORCEMENT		14< D<=25	114.6 KG	KG
		TOTAL REINFORCEMENT:	CEMENT:		506.8 KG	KG

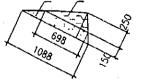
BOX CULVERT FOR DRAINAGE (STATION 2+150)





NOTATIONS FOR QUANTITY CALCULATION OF BOX CULVERT FOR DRAINAGE





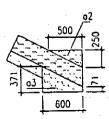


TABLE OF EXPLAINING QUANTITIES OF CULVERT

CULVERT KM2+150

																					•			15.34	
																		-			·	Ħ		II	
	(m2)		(m2)		(m2)	÷	(m2)		(m2)		(m2)		-					(m2)			(m2)) × 0.45 × 0.5	0:000	$) \times 0.45 \times 0.5$	
	20.635		20.635		8.188		7.990		8.188		8.188							20.265			20.265	1.2h	7	7.064	
I	il	H	H	11	11	II	8	II		Ħ	II							11	1	ı i	il	+		+	
4	۲.	7	4	7	7		α.	. 7		7	7		(m2)				6	7	r	7	7	ć	5	7.064	
		••			••	••	••	••	41			٠	20					••				_	1	7.0	
Ī	3,700	HI	3.700	H1	3.700	H	3.700	H	3.700	H	3.700		162.870	•		-	F.1	3.500	,	3	3.500	+	- -	+	
×	×	×	×	×	×	×	×	×	×	×	×						×	×		×	×	, 0,3	ς	× 0.3	
_	_	_		~	~	~	~	~	<u> </u>	~	<u> </u>	11	ll		-		~	<u> </u>	,	_	~	_	_	~	
αī	6.924	d2	6.924	d3	2.213	d4	2.213	q2	2.213	9p	2.213	W + 0.2	6.100				L2a	7.064	č	27	7.064	64	7	20.265	
٠	+	+	+	+	+	+	+	+	+	+	+	×	×				+	+	. •	+ ,	+	4	٠	+	•
ซ	4.230	강	4.230	B	2.213	25	2.106	ъS	2.213	92	2.213	_	26.700	-	RETE:	•	L1a	4.516	; ;	LID	4.516	. 41	ζ	20.265	
) =IS	=	S2= (11	. S3== (11	S4= (ı) =SS= () 	Se= ()	=2S	II		APRON CONCRETE:		A1= (<u> </u>		AZ= (•	-) 	
						٠			-						1. AF										

(m3)

32.57 (m3)

0.5

6.100

= 26.700 \times

0.2

 $L \times (W+0.2) \times$

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oil

				-	(100m)			
	(m3)				244.28			
	7.38		,		7	J		
11	II			#	H			(100m)
0.1	0.1	•		_				
×) x × 0.1			5:100	$\times 25 \times 5:100$			121
				25 x	25 x		٠	41.75
SS	8.188			×	×			
+	+			_	~		H	IJ
				23	2.870			
SS	8.188				162.870		3:10	3:10
+	+			+	+		× 25 × 3:100	$\times 25 \times 3:100$
\$	7.990			Se	8.188			
+	+			+	+		5×4)	
ß	8.188			S5	8.188	·	$(0.8 \times 4.5 \times 4)$	14.4
+	+			+	+		+	+
S2	20.6349		,	32	7.990		25	20.6349
+	+			+	+		+	+
S.I	20.635			83	8.188		· LS	20.635
· II	(1	4. WOOD PILE:	* L=5M	W5= (<u> </u>	* L=3M	W3= (<u> </u>

NOTE: S=0.8 x 4.5 x 4 IS AREA WOOD PILE TOE OF SLOPE

5. SAND BEDDING:

$+ (0.8 \times 4.5 \times 4) \times 0.15 =$	$+(0.8 \times 4.5 \times 4) \times 0.15 =$					
22	162.870					
+	+					
8	8.188					
+	+			-		(m2)
S2	8.188			(m2)	(m2)	0.133
+	+			0.087	0.063	il
\$	7.990			g	#	6.00 ×
+	+			0.5	0.5	0.5 x
83	8.188					×
+	+			×	×	~
+ 52 +	20.635			0.25	0.25	0.371
+	+			×	×	+
SI	20.635	707		0.695	0.5	0.071
.	11	S STONE MASONBY	S. STONE MASSO.	al=	a2=	a3= (

37.66 (m3)

$$a2=$$
 0.5
 \times
 0.5
 \times
 0.063
 $(m2)$
 $a3=$
 $(0.071$
 $+$
 0.371
 $)$
 \times
 0.5
 \times
 0.6
 $=$
 0.133
 $(m2)$
 $a4=$
 $(0.698$
 $+$
 1.088
 $)$
 \times
 0.5
 \times
 0.134
 $(m2)$
 $b1=$
 0.300
 \times
 $L5$
 $=$
 0.300
 \times
 $=$
 0.134
 $(m2)$
 $b2a=$
 (0.300)
 \times
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 $=$
 0.300
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 0.300
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 0.500
 $=$
 0.134
 $(m2)$
 $b2a=$
 (0.44)
 $+$
 0.300
 \times
 (b) IS AREA OF HEAD WALL)

·														
									3.902 (m3)			(m3)		
							(m3)	(m3)	II.	(m3)	(m3)	41.486		÷
	•						1.597	1.597	×5×4	17.195	17.195	41		
									~	u n	II II	= #		
							, II	II	+ 0.133	COS(26.56) 0.894	COS(26.56) 0.894	V3b 17.195		·
	(m2)	(m2)	(m2)	(m2)	(m2)	٠						+ +		
	19.677	19.677	19,677	= 23.904 (m2)	= 23.904 (m2)	(m2)	18.388	18.388	(0.063	× 0.25 × 0.25	× 0.25 × 0.25	V3a 17.195		
	ii II	11 % .	H II	9	Q		×	×	IJ			+ +		
	x 0.5 x 0.5	× 0.5 × 0.5	x 0.5 x 0.5	1.300	1.300	6.000	0.087	0.087	্ধা	b3a 19.677	b3b 19.677	V2 3.902		
	L3 3.500	L3 3.500	L3 3.500	×	*	, H	. 11	11	×	+ +	+ +	+ +		
	××	× ×	× ×	18.388	886.81	6	·		· ×	b2a 19.677	b2b 19.677	V1b 1.597		
	~ ~	~ ~		. II	H	×	•		^	+ +	+ +	+ +		
	5.000	5.000	5.000	L4a	L415	īO	L8a	1.8b	a3	b1 1.770	b1 1.770	V1a 1.597		-
	+ +	+ +	+ +	×	×	×	×	×	. +	1 1		<u> </u>		
	L6b 6.244	L7a 6.244	L7b 6.244	18a	189	9.0	al	al	a2	b4a 23.904	b4b 23.904			
	b2b= (= (b3a= (= (b3b= (= (b4a=	स्वीर्ध स	b5=	Vla=	VIb=	V2= (V3a= (= (V3b= (TOTAL =		
						2 -	7	- 9					÷	

			9.310	(m3)	9.310	(m3)									
		11	11	<u>,</u> #	ļį										
(m3)	(m3)	COS(26.56)	0.894	COS(26.56)	0.894	٠									
2.463	2.463			••	•••			(m3)				-			
2	8	0.15	0.15	0.15	0.15			<u> </u>							
	II .	×	*	×	*		÷	23.55							٠
		, ^	^	_			<u>"</u>								
18.388	18.388	b5	6.000	52	6.000		V5b	9.310		-					
×	×	•		1	ı		+	+			(m2)			(m2)	
0.134	0.134	b3a	19.677	929	19.677		V5a	9.310			21.192			21.192	
11	II	+	+	+	+		+	+		U	11		ij	II	
		b 2a	19.677	b2b	19.677		V4b	2.463		7	2		7	7	
		+	+	+	+		+	+		×	×		×	×	
L8a	18b	b 1	1.770	b1	1.770		V4a	2.463		X 0.75	X 0.75	٠	X 0.75	X 0.75	
×	×	•	1	1	,	•	_	<u> </u>		_	~		_	~	
a4	a4	b4a	23.904	b4b	23.904					L2b)	7.064	· q		7.064	
V4a≍	V4b=	V5a= (<u> </u>	V5b= (ıı		TOTAL =		8. FORM:	= (L2a +	(7.064 +	9. SCAFFOLDING:	= (L2a +	(7.064 +	

7. BASE BEDDING:

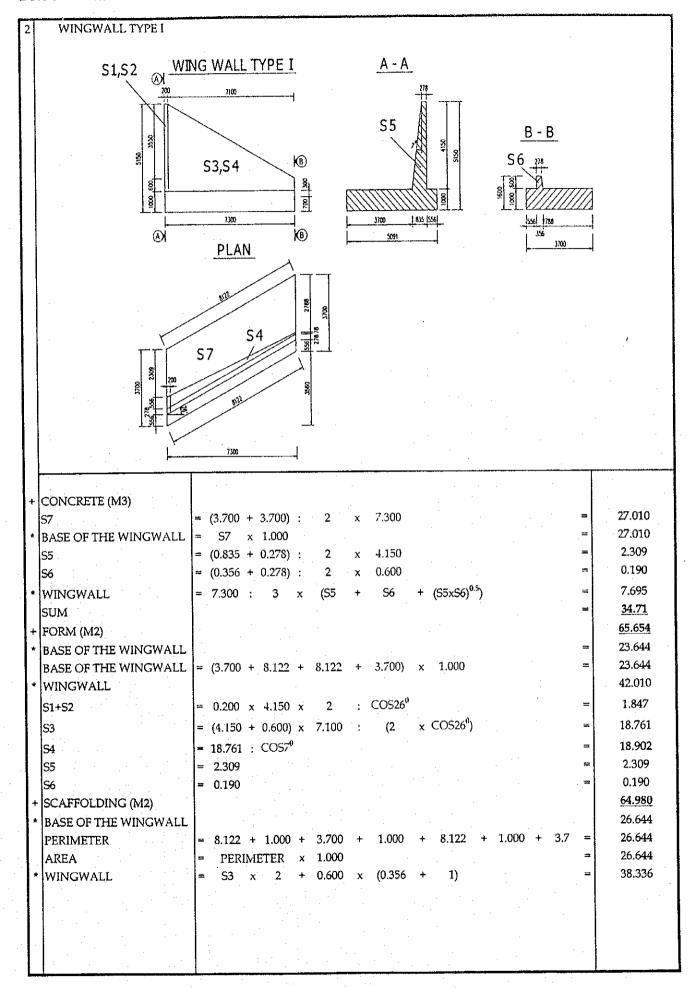
2.8. Box culvert at station 2+620

Γī	BOX CULVERT STAT	ION 02+620	QUANTITIES
	L	= 14.844 + 14.844 + 0.02 = 29.707	
1	CULVERT		
+	CONCRETE (M3)		
	S1	$= 5.800 \times 4.550 - 5.000 \times 3.800 + 2 \times 0.300 \times 0.300 =$	7.570
	S2	= 1.100 x 0.300 + 0.200 x 0.200 : 2 =	0.350
	S	= S1 + S2 = 0.200 m 0.200 m 0.200 m 2	7.920
١	VOLUME	$= S \times (14.844 + 84.844) + 5.800 \times 0.200 \times 0.300 \times 2 =$	235.82
١			
		SINGLE BOX CULVERT	
İ			
		49 500 40	
	-	<u>8, 11</u> <u>11</u>	
		l _{loo} gt S1	
		§ § 1200 Joe / 3500	
1	•	<u>s</u>	
		F 8	
			FOC 500
1	+ FORM		706.72
1	* INSIDE FORM (M2)		406.135
ı	BOX BULWARK	$= (3.800 + 2 \times 0.300 \times (1.SIN45^{\circ} - 1)) \times 29.687 \times 2 =$	1
	BOTTOM OF THE BOX	= (5.000 - 0.300 x 2) x 29.687 x 1	100.020
	RETAINING WALL	$= (1.100 + (1.51N45^{\circ} - 1) \times 0.200) \times 29.69 =$	
ı	* OUTSIDE FORM (M2)	2000	300.580
١	BOX BULWARK	= 4.550 x 2 x 29.687 + 4 x 0.300 x 0.200 =	
	THE END OF BOX	= S x 2 : SIN64 ⁰ + 5.800 x 0.200 x 4 $=$	
١	CENTER	= S	7.920
ı	CCAPTOLDING (A (2)	= 4.550 x 2.000 x 29.687 + 4.000 x 0.300 x 0.200	270.39
- 1	+ SCAFFOLDING (M2) + SUPPORT	= 4.550 X 2.000 X 29.007 + 4.000 X 0.500 X 0.200 -	270.55
İ	AREA (M2)	= 5.800 x 4.550 - S	18.470
1	VOLUME (M3)	= AREA x L =	
۱	VOLONIL (INO)		
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BOXCULVERT STATION 2+620 QUANTITIES TABLE OF REINFORCEMENT

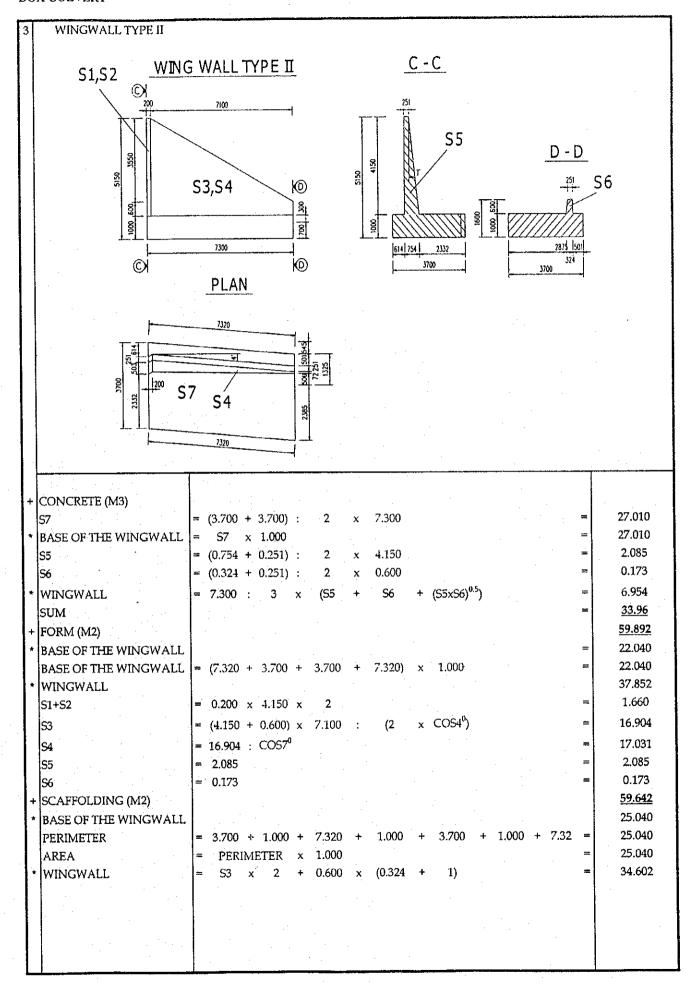
SEGMENT 1 & 2

				SEGMEN	11062		
SYMBOL	UNIT LENGTH	SPACE	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT
OF BAR	(mm)	(mm)	(mm)	OF BAR	(kg/m)	(m)	(kg)
1a	7570	250	20	108	2.466	817.56	2016.2
1b	7926	250	20	12	2.466	95.11	234.6
2	4410	250	20	106	2.466	467.46	1152.8
3a	6604	250	22	53	2.984	350.01	1044.4
3b	7194	250	22	11	2.984	79.13	236.1
4a	6360	250	20	108	2.466	686.88	1693,9
4b	6997	250	20	12	2.466	83.96	207.1
5a	3220	250	12	108	0.888	347.76	308.7
5b	3583	250	12	24	0.888	85.99	76.3
6a	6575	250	20	53	2.466	348.50	859.4
6b	<i>7</i> 155	250	20	11	2.466	78.71	194:1
7	5004	250	17	120	1.782	600.48	1069.9
8a	1567	250	12	108	0.888	169.23	150.2
85	1696	250	12	12	0.888	20.35	18.1
9a	1638	250	12	108	0.888	176.87	157.0
9b	1775	250	12	12	0.888	21.30	18.9
10	1560	250	12	24	0.888	37.44	33.2
11	6297	250	12	2	0.888	12.59	11.2
12	3300	250	12	58	0.888	191.40	169.9
13	1355	250	12	58	0.888	78.58	69.8
14	15489	250	12	48	0.888	743.45	660.0
15	14255	250	12	30	0.888	427.64	379.7
16	16923	250	12	- 30	0.888	507.68	450.7
17	14828	250	12	8	0.888	118.62	105.3
18	15589	250	12	48	0.888	748.25	664.3
19	1410	250	14	237	1.208	334.17	403.8
20	1440	250	12	237	0.888	341.28	303.0
REINFORG	CEMENT: I)<=14		3980.3	TOTAL FOR SEGN		000.0
REINFORG	CEMENT: 16=	=D<=25			REINFORCEMEN		12689.0
REINFORG	CEMENT: 25	<d=32< td=""><td></td><td></td><td>CONCRETE (M³):</td><td></td><td>117.91</td></d=32<>			CONCRETE (M³):		117.91
REINFORG REINFORG	CEMENT: 16=)<=14 =D<=25	TOTA		GMENT 1 & 2 REINFORCEMEN		25378.0
REINFORG	LEMENT: 25	S <d=32< td=""><td></td><td></td><td>CONCRETE (M³)</td><td></td><td>235.82</td></d=32<>			CONCRETE (M³)		235.82



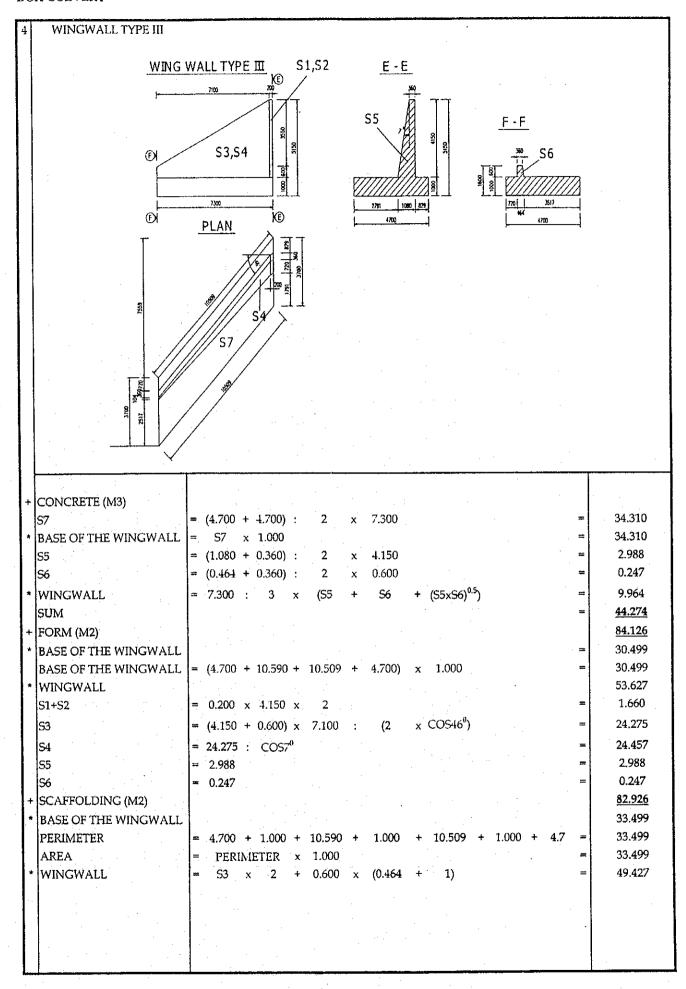
BOX CULVERT STATION 2+620 REINFORCEMENT OF WINGWALL TYPE I

TOTAL WEIGHT	(KG)	128.8	235.6	43.3	143.3	21.8	16.2	273,8	146.2	42.0	392.3	99.2	224.1	14.2	21.3	42.6	17.5	16.5	7.1	5 KG	727.1 KG	7 KG
TOTAL LENGTH	(M)	145.1	149.3	48.7	161.4	24.5	18.3	308.4	164.7	47.3	131.5	33.2	185.5	16.0	24.0	48.0	14.5	18.6	8.0	1158.6 KG	727.1	1885.7 KG
UNIT WEIGHT	(KG/M)	0.888	1.578	0.888	0.888	0.888	0.888	0.888	0.888	0.888	2.984	2.984	1.208	0.888	0.888	0.888	1.208	0.888	0.888	D<=14	14< D<=25	7
NUMBER	OF BAR	42	42	9	36	42	2	34	33	14	33	14	63	4	9	9	14	21	3			CEMENT:
DIAMETER	(MM)	12	1,0	12 .	12	12	12	12	12	12	22	22	14	12	12	12	14	12	12	REINFORCEMENT	REINFORCEMENT:	TOTAL REINFORCEMENT:
TINIT I ENCTH	CANA CANA	3455	2554	8121	7483	784 784	7C1.0	9071	4990	3380	3984	2374	2944	3005	3995	2662	1034	884	2657			
	BAR MARK	7	r Tr	al c	7C	207	27	0	# L	72 75	20	7	nc y	0 1	, α	0	10	7	13	77		



BOX CULVERT STATION 2+620 REINFORCEMENT OF WINGWALL TYPE II

DADAGADY	UNIT LENGTH	DIAMETER	NUMBER	UNIT WEIGHT	LENGTH DIAMETER NUMBER UNIT WEIGHT TOTAL LENGTH TOTAL WEIGHT	TOTAL WEIGHT
DAK MAKK	(MM)	(MM)	OF BAR	(KG/M)	(M)	(KG)
la la	3455	12	38	0.888	131.3	116.6
1b	3553	16	38	1.578	135.0	213.1
2a	7367	12	9	0.888	44.2	39.2
2b	3910	12	36	0.888	140.8	125.0
2c	584	12	38	0.888	22.2	19.7
3	8307	12	2	0.888	16.6	14.8
4	8282	12	38	0.888	314.7	279.4
5a	5354	12	35	0.888	187.4	166.4
5b	3618	12	2	0.888	7.2	6.4
5c	4348	22	35	2.984	152.2	454.1
. 5d	2612	22	2	2.984	5.2	15.6
9	2944	14	69	1.208	203.1	245.5
7	4008	12	4	0.888	16.0	14.2
8	4008	12	9	0.888	24.0	21.4
6	7208	12	9	0.888	43.2	38.4
10	1034	14	14	1.208	14.5	17.5
11	830	12	21	0.888	17.4	15.5
12	3081	12	2.	0.888	6.2	5.5
		REINFORCEMENT	MENT:	D=<14	1125.3 KG	KG
		REINFORCEMENT	MENT:	14< D<=25	682.8 KG	KG
	,	TOTAL REINFORCEMENT	FORCEM	ENT:	1808.1 KG	KG



BOX CULVERT STATION 2+620 REINFORCEMENT OF WINGWALL TYPE III

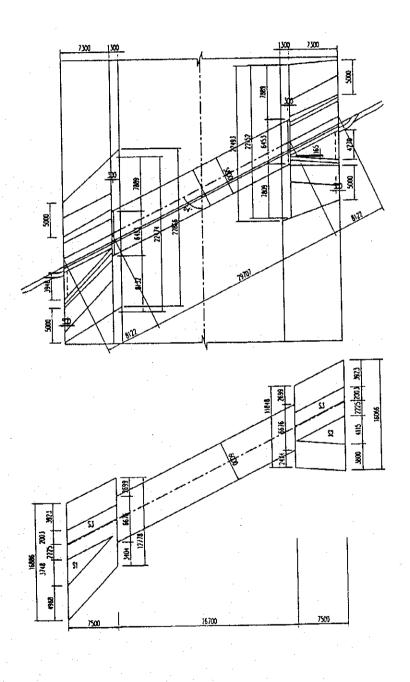
	I INIT LENGTH	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	NUMBER UNIT WEIGHT TOTAL LENGTH TOTAL WEIGHT
BAR MARK		(MM)	OF BAR	(KG/M)	(M)	(KG)
	3455	12	53	0.888	183.1	162.6
1 1	3574	16	53	1.578	189.4	298.9
2a	10479	12	9	0.888	62.9	55.8
2b	5534	12	36	0.888	199.2	176.9
20	582	12	53	0.888	30.8	27.4
60	11651	12	2	0.888	23.3	20.7
4	11422	12	34	0.888	388.3	344.8
, נר	4929	12	35	0.888	172.5	153.2
5h	3424	12	32	0.888	109.6	97.3
) [3923	22	35	2.984	137.3	409.7
59	2418	22	32	2.984	77.4	230.8
9	2944	14	84	1.208	247.3	298.8
7	4959	12	4	0.888	19.8	17.6
∞	4959	12	9	0.888	29.8	26.4
6	10348	12	9	0.888	62.1	55.1
10	1034	14	14	1.208	14.5	17.5
11	1050	12	21	0.888	22.1	19.6
12	2776	12	4	0.888	11.1	9.6
-		REINFORCEMENT	IENT:	D=<14	1483.5 KG	, KG
		REINFORCEMENT:	IENT:	14< D<=25	939.5 KG	KG
		TOTAL REINFORCEMENT:	FORCEME	NT:	2423.0 KG	KG

6 RETAINING WALL		
.:	RETAINING WALL I-I	
	55 <u>5</u> 334 111350 <u>0</u> 3001000	
	SSC 1113 SO 301000 SS 2 72222 SS 2 722222 SS 2 72222 SS 2 722222 SS 2 72222 SS 2 72	
	PLAN	
	9	
+ CONCRETE (M3)		
S	= S1 + S2 + S3	1.700
S1	= 0.300 x (1.100 - 0.200) = = (0.300 + 0.300 + 0.200) x 0.200 : 2.000 =	0.270 0.080
S2 S3	= (0.300 + 0.300 + 0.200) x 0.200 : 2.000 = = 0.750 x 1.800 =	1.350
VOLUME	$= S \times 8.122$	13.807
+ FORM (M2)		33.579
	= 2.003 x 0.750 + 2 x 0.750 x 8.122 =	13.685
· ·	$= (1.100 - 0.200) \times 8.122 \times 2 + (S1 : COS75^{0}) =$	15.663
	$= 8.122 \times 0.2 : SIN45^{\circ} + (S2 : COS75^{\circ}) + 8.122 \times 0.2 =$	4.231
+ SCAFFOLDING (M2)	(22) 332 / 332 / 332	48.410
* BASE OF RETAININGWALL		16.770
PERIMETER	= 2.003 + 1.000 + 8.122 + 1.000 + 8.122 + 1.000 + 1.113 =	22.360
AREA	= PERIMETER × 0.750 =	16.770
* RETAININGWALL	= 2 x 8.122 x 1.800 + 1.800 x (0.334 + 1.000) =	31.640

BOX CULVERT STATION 2+620 REINFORCEMENT OF RETAINING WALL

BAR MARK	UNIT LENGTH	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT
	(MM)	(MM)	OF BAR	(KG/M)	(M)	(KG)
1	5484	12	. 41	0.888	224.8	199.6
2	8233	12	8	0.888	65.9	. 58.5
3	1402	12	41	0.888	57.5	51.0
4a	2572	12	70	0.888	180.0	159.8
4b	1951	12	16	0.888	31.2	27.7
5	8885	12	16	0.888	142.2	126.2
9	2444	14	30	1.208	73.3	9.88
7	2338	12	8	0.888	18.7	16.6
8	8457	12	4	0.888	33.8	30.0
		REIFORCEMENT	ENT	D<=14	758.1 KG	KG
		REIFORCEMENT	LNE	14< D<=25	0.0	0.0 KG
		TOTAL REIN	OTAL REINFORCEMENT	Т:	758.1 KG	KG

BOX CULVERT FOR PATH & DRAINAGE (STATION 2+620)



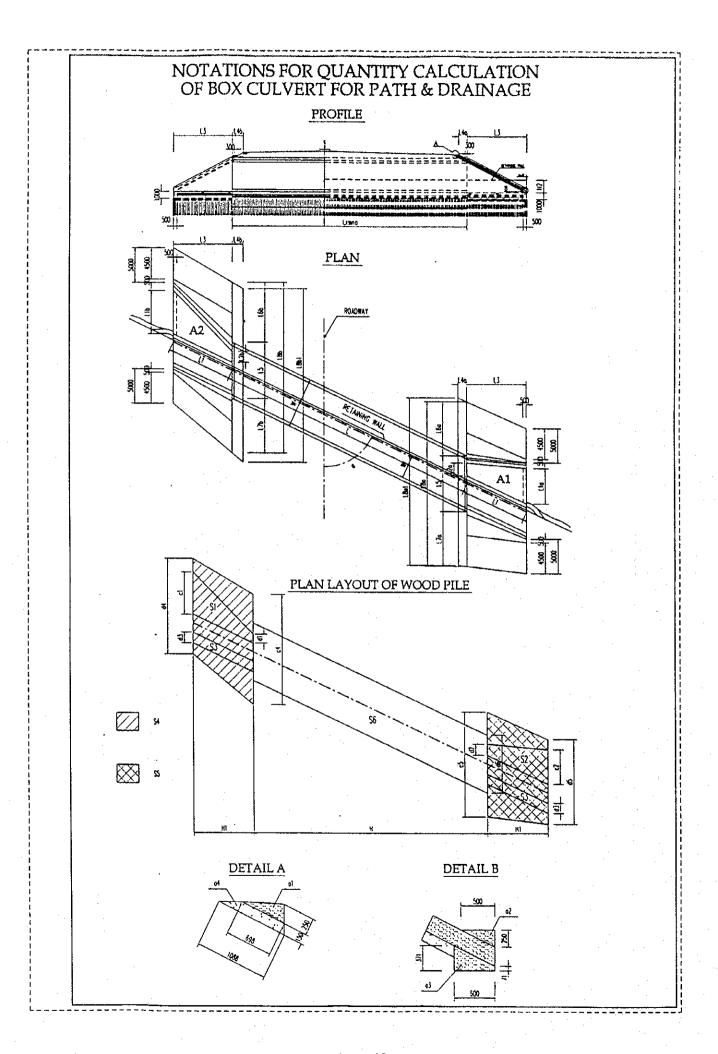


TABLE OF EXPLAINING QUANTITIES OF CULVERT

CULVERT KM 2+620

																				(4.270 +		<u>35.648</u> (m3)			0.100	0.100 = 18.587 (m3)
	(m2)	n2)	m2)	m2)	m2)	m2)	m2)	m2)							(m2)	m2) i	m2)	m2)	.500	.500		11			×	×
•		14.055 (r		15.431. (r		111.240 (r		104.678 (r										14.410 (1				0.2			<u> </u>	
	·	= 14	11	. J.	II	11	tì .	= 10											0.700	0.700		 ×			83	15.023
	2	. 5		: 5	. 5	: 2	:	. 5	(m2)	(m2)	(m ₂)	(m2)			: 2.00	: 2.00	2.00	: 2.00	· +	+		x 6.000				- 15
	Н	7.500	H	7.500	H	7.500	H	7.500		15.023		178.249			<u>.</u>	7.300	ដ	7.300	٠.	0.300	Ë	29.707			SS	104.678
	×	×	×	×	×	×	×	×	II	il :	. H	II			×	×	×	×	×	×	FCULVERT	x 0.2 =			+	+ 10
	Ð	0.000	d 2	0.000	d4	16.886	d5	16.066	HI	7.500	- 9p	9.676		-	L2a	0.165	L2b	0.000	A2	14.410	ATION O	$(w + 0.2) \times$		•	S	15.023
	+	748 +	+	115 +	c4 +	+ 8//	ب +	.848 +	д3 ×	003 ×	×	× 007.	NCRETE		- t	270 +	Jb +	+ . 816	A1 +	16.188 +	E FOUND	`` *	RETE:		%	111.240 -
	SI= (c1 +	SI = (3.	S2= (S2= (4.	St= (S4= (12	S5= (S5= (11	S3=	S3= 2.	=95	S6= 26	APRON CC		_	Ü	_	_		A = (16	2. CONCRETE FOUNDATION OF CUL	T I	3. LEAN CONRETE		_	G = (11
							•	•	٠.		÷		-							-	7	-	60			

(m3)

١	i	j
1		J
1	Ξ	4
ı	-	4
	c	1
ı	C)
	C)
	₹	•
	•	•

$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	- S1 - 52 - 14.055 - 15.431 + (0.8 x 4.5 x 4)) x (25 x 3 : 100) + 14.400) x 0.75 20) : 100.000
+ S5 + 40 + 104.678 + + S2 + 5 + 15.431 + × 25.000 ×	S6 178.249 (2 × S3) 30.045 3.000 ×
+ S5 40 + 104.678 + S2 5 + 15.431 × 25.000	++ ++ ×
++ ++ × :	S5 104.678 S2 15.431 25.000
5. 40	++ ++ ×
44 - 15 r y	1 240 1 155

NOTE: S=0.8 x 4.5 x 4 IS AREA WOOD PILE TOE OF SLOPE

5. SAND BEDDING:

	61.285				
II	H				
0.150	0.150				
×	×				
$(0.8\times4.5\times4))\times$	14.400		(m3)	0.576 (m3)	61.861 (m3)
+	+		it	n	II
95	178.249		2.000	2.000)	K1)
+	.+		×	×	+
53	104.678 +		0.150,	0.150×2.000	×
+	+		×	. ×	<u>, </u>
K = (S4 +	= (111.240	PROTECTION	KI= (S7	(1.920 ×	TOTA! =

(m3)

6. STONE MASONRY

x 0.500) x 0.500 x 0.600) x 0.500 x 0.150 = (m2)
0.500 0.500 × 0.500 × (m2)
0.500 × 0.500 × (m2)
0.500 x (m2)

```
(m3)
(m3)
                                                                                              (m3)
(m3)
(m3)
                                                                                                             34.244
                                                                                                                                          79.148
                                                                                                   33.788
                                                                                                                               3.256
                                                                                              COS(26.565)
0.894
COS(26.565)
0.894
                                                                                                                        2.00 × 0.25
0.50
+ V3c
+ 3.256
                                                                                                                          ×
×
V3b
34.244
                                                                         (m3)
(m3)
(m3)
(m3)
0.250
0.250
0.250
                                                                                                                         S8
1.85
+ +
(m2)
(m2)
(m2)
(m2)
(m2)
(m2)
(m3)
(m3)
(m3)
               17.045
                                              29.019
                                    47.932
                                                         29.471
                         46.753
                                                                          1.963
1.995
                                                                                       3.902
×
×
                                                                                                                         (
(
V3a
33.788
                                                                         22.493
22.866
4.000
4.000
b1
1.936
b1
0.500
0.500
0.500
0.500
0.500
0.500
0.500
0.500
                                                                                                                                     V2
3.902
1.3 (2.300)
1.3 (2.300)
1.3 (2.300)
1.3 (2.300)
1.4 (2.40)
1.300)
2.0000
                                                                          0.087
0.087
5.000
5.000
                                                                           = = x
x x
b4a
29.019
b4b
                                                                                                                       0.600
0.600
V1b
1.995
                                                                          L8a1
L8b1
a3
0.133
b3a
46.753
b3b
5.000
5.000
5.000
5.000
5.000
5.000
5.000
5.200
1.851
1.851
5.000
5.000
5.000
                                                                                                                         0.600
0.600
V1a
1.963
                                                                          V1a = a1 

V1b = a2 

V2 = (a2 

= (0.063 

V3a = (b2a 

= (47.045 

V3b = (47.045 

= (47.045 

PROTECTION 

V3c = (b2b 

= (47.045 

(3.240 )
L6a
7.889
1.6b
7.889
1.7a
7.809
1.7b
8.132
1.8a
22.152
1.8b
1.8b
```

```
(m3)
                                    (m3)
                        19.267
                                    19.540
     (m3)
                                                                     (m3)
(m3)
                              COS(26.565)
0.894
     3.013
                  COS(26.565)
                        0.894
                                                                            45.437
                                                                                                                        (m3)
(m3)
                                                                                                                               112.570
                  0.150
0.150
0.150
0.150
                                                                     V5c
0.554
                                                                                                                         0.400
                                                                                                                                                               (m2)
                                                                                                                                                                                        (m2)
                                                                                                            64.326
                                                                     V5b
19.540
      22.493
22.866
b5
6.000
b5
6.000
                                                 (m3)
(m3)
                                                                                                      0.400
                  b1
1.936
b1
1.936
                                                                     V5a
                                                                           19.267
       0.134
0.134
                                                                                                       W1
3.500
                                                                                                                         W1
3.500
                        + 29.019
                               + b4b
+ 29.471
                                                 × 2.000
× 2.000
                                                                                                                         2 × L1
16.240
       L8a1
L8b1
b3a
46.753
b3b
47.932
                                                                                                       2 × L1
16.240
                                                  0.150
                                                                     V4a
3.013
                                                                                                                                                          L1b
3.948
                                                                                                                                                                                   L1b
3.948
7. BASE BEDDING:
                                                                                                                                                                            10. SCAFFOLDING:
                                     47.045
                                                                                                                          L
29.707
                         47.045
                                                                                                            ( 29.707
                               b2b
                  b2a
                                                  S8
1.85
                                                                                                                                                         L1a
4.270
                                            PROTECTION
                                                                      TOTAL =
                                                                                                                    b. SAND FILL
                                                                                                a. LATERITE
                                                                                                                                                   9. FORM:
                                                                                          8. PATH
             V4a=
```

2.9. Box culvert at station 2+835

I	BOX CULVERT STAT	ION	J		02+835		-,		andres de Companies de la Comp	***************************************					~~~~		QUANTITIES
	. L	=	19.360	+	19,495	+	0.02	=	38.875								
1	CULVERT								-								
+	CONCRETE (M3)					٠											
	S1= S2	=	2,950	x	2.550	_	2.500	X	2.000	+	2	x	0.100	x	0.100	=	2.543
	s	=	S 1	+	S2 ·											=	5.085
	VOLUME	=	S	x	(19.360	+	19.495)	+	5.900	x	0.200	x	0.300	x	2	=	<u>198.29</u>
							001	UBL	E BOX C	ULV	/ERT						
							 		5900		 -						
		ŀ					ļ	2950		2950							
		ł				52	-300	250	300	2500	300	ر ر	2				
					Т	- 2		-			=;;/						
					9	2	100	5									
					2550	2000											
						<u>چ</u>											
						1	9	S1									
	rom.						•										
	FORM																<u>724.71</u>
*	INSIDE FORM (M2)																506.334
	BOX BULWARK								(1:SIN45°	-		X	38.855	X	4	**	323.715
	BOTTOM OF THE BOX	=	(2.950	-	0.300	х	2)	x	38.855	.x	2					=	182.619
*	OUTSIDE FORM (M2)				_		2.1										218.376
٠.	BOX BULWARK	1	2.550				38.855		4	x		х	0.200			=	198.401
	THE END OF CULVERT	=		X	- 2	+	5.900	X	0.200	x	4					=	14.890
	CENTER]=	5			4					٠					=	5.085
	CCAFFOI DINIC (A40)		3.550		2 000		20.000				0.000						100.40
i	SCAFFOLDING (M2)	=	2.550	х	2.000	х	38.833	+	4.000	х	0.300	x	0.200			=	<u>198.40</u>
ľ	SUPPORT		- 000		0.000		•										6 Fla F
	AREA (M2) VOLUME (M3)	- 1	5.900 AREA			-	S				,						6.715
	VOLOME (M3)	-	AKEA	х	L											-	<u>261.05</u>
l																	
ļ																	
				٠													
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	i e	- 1															1

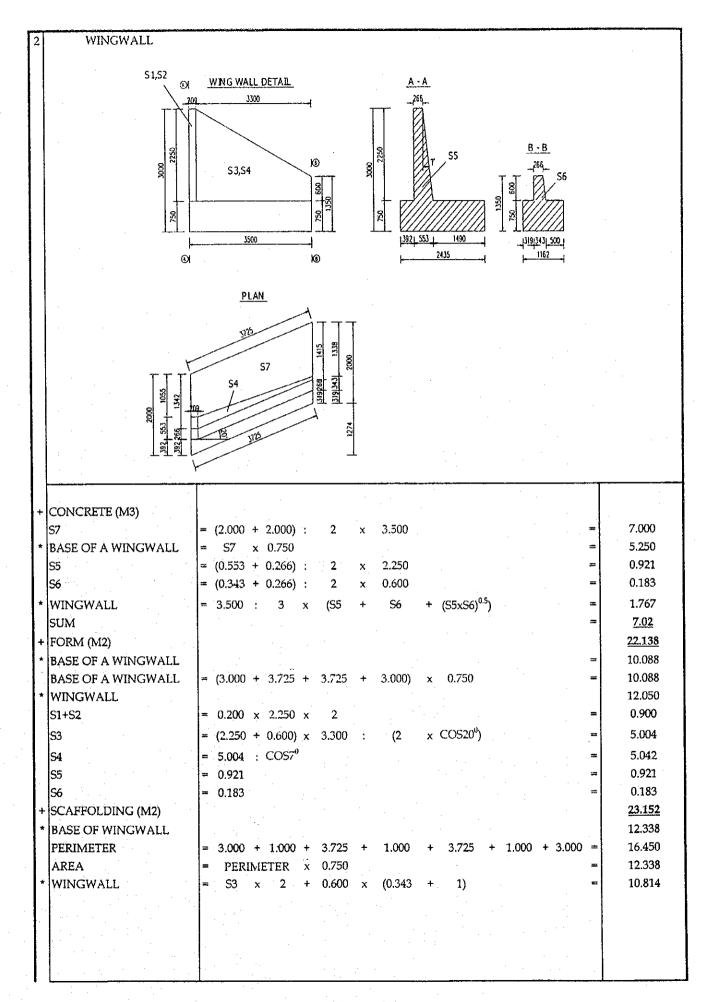
BOXCULVERT STATION 2+835 QUANTITIES TABLE OF REINFORCEMENT

SEGMENT 1

				SEGME	`	The second second second second second second second second second second second second second second second se	
SYMBOL	UNIT LENGTH	SPACE	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT
OF BAR	(mm)	(mm)	(mm)	OF BAR	(kg/m)	(m)	(kg)
1	4160	125	14	310	1.208	1289.60	1558.4
2	2850	250	12	156	0.888	444.60	394.7
3	6270	250	14	156	1.208	978.12	1182.0
4	1500	250	14	308	1.208	462.00	558.3
5	1550	125	18	310	1.998	480.50	959.8
6	1970	250	12	312	0.888	614.64	545.7
7	2850	125	12	310	0.888	883.50	784.4
8	1049	250	12	312	0.888	327.29	290.6
9	1120	250	12	312	0.888	349.44	310.2
10	19865	250	12	52	0.888	1032.98	917.1
11	19965	250	12	100	0.888	1996.50	1772.5
12	5780	250	12	2	0.888	11.56	10.3
13	1440	250	12	26	0.888	37,44	33.2
14	1180	250	12	465	0.888	548.28	486.8
.15	1280	250	12	465	0.888	594.74	528.0
REINFORG	EMENT: I)<=14		9372.1	TOTAL FOR SEC	GMENT 1 :	
		D<=25		959.8	REINFORCEME	NT (KG):	10332.0
		<d=32< td=""><td></td><td></td><td>CONCRETE (M3</td><td>):</td><td>98.80</td></d=32<>			CONCRETE (M3):	98.80

SEGMENT 2

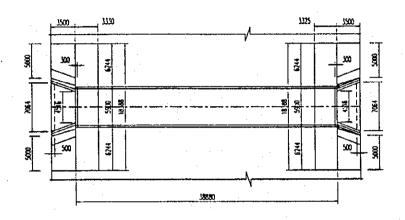
*				SEGME	1 J &		
SYMBOL	UNIT LENGTI	1 SPACE	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT
OF BAR	(mm)	(mm)	(mm)	OF BAR	(kg/m)	(m)	(kg)
1	4160	125	14	314	1.208	1306.24	1578.5
2	2850	250	. 12	158	0.888	450.30	399.8
3	6270	250	14	158	1.208	990.66	1197.1
4	1500	250	14	312	1.208	468.00	565.5
5	1550	125	18	314	1.998	486.70	972.2
6	1970	250	12	316	0.888	622.52	552.7
7	2850	125	12	314	0.888	894.90	794.5
8	1049	250	12	316	0.888	331.48	294.3
9	1120	250	12	316	0.888	353.92	314.2
10	20000	250	12	52	0.888	1040.00	923.3
11	20100	250	12	100	0.888	2010.00	1784.5
12	5780	250	12	2	0.888	11.56	10.3
13	1440	250	12	26	0.888	37.44	33.2
14	1180	250	12	468	0.888	552.10	490.2
15	1280	250	12	468	0.888	598.89	531.7
REINFORG	CEMENT:	D<=14	<u> </u>	9469.8	TOTAL FOR SEC	GMENT 2 :	
REINFORG		6=D<=25		972.2	REINFORCEME	NT (KG):	10442.0
REINFORG		25 <d=32< td=""><td></td><td></td><td>CONCRETE (M3</td><td>):</td><td>99.49</td></d=32<>			CONCRETE (M3):	99.49
			TOTA	L FOR SEC	GMENT 1 & 2		
REINFOR	CEMENT:	D<=14		18841.9	REINFORCEME	NT (KG):	20774.0
1		6=D<=25		1932.1			
REINFOR	CEMENT:	25 <d=32< td=""><td></td><td></td><td>CONCRETE (M³</td><td>):</td><td>198.29</td></d=32<>			CONCRETE (M ³) :	198.29

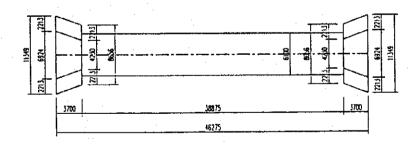


BOX CULVERT STATION 2+835 REINFORCEMENT OF WINGWALL

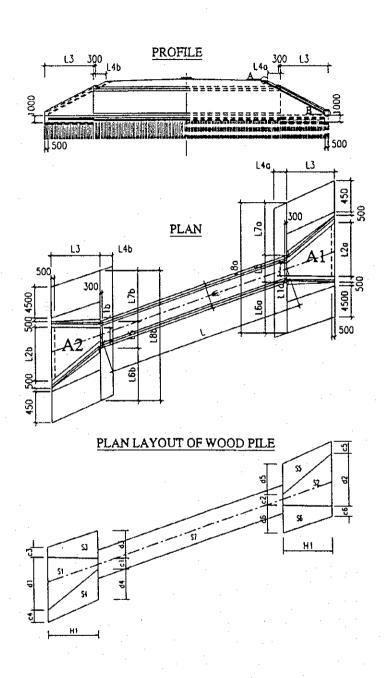
	TIMITICAL	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT
BAR MARK	(MM)	(MM)	OF BAR	(KG/M)	(M)	(KG)
7	2258	12	20	0.888	45.2	40.1
14	22.20	14	20	1.208	46.2	55.8
ID 25	3773	12	9	0.888	22.3	19.8
-1C	2100	12	16	0.888	33.6	29.8
25	582	12	20	0.888	11.6	10.3
277	4389	12	2	0.888	8.8	7.8
0 <	4479	.12	20	0.888	88.6	78.6
r	3043	12	15	0.888	45.6	40.5
Ja Fb	2150	12	9	0.888	12.9	11.5
90	2467	20	15	2.466	37.0	91.3
) - E	1574	20	9	2.466	9.4	23.3
DC ,	2004	14	16	1.208	39.1	47.3
0 [1.026	12	4	0.888	9.2	8.2
,	2301	12	4	0.888	9.2	8.2
0	3605	.12	4	0.888	14.4	12.8
10	1304	14	8	1.208	10.4	12.6
11	744	12	11	0.888	8.2	7.3
1.1	2143	12	-	0.888	2.1	1.9
		REINFORCEMENT		D<=14	392.5 KG	KG
		REINFORCEMENT		14< D<=25	114.6 KG	KG
		TOTAL REINFORCEMENT	CFMFNT		507.0 KG	KG
		TO TWE WELL OF				

BOX CULVERT FOR DRAINAGE (STATION 2+835)

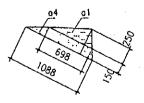




NOTATIONS FOR QUANTITY CALCULATION OF BOX CULVERT FOR DRAINAGE



DETAIL A



DETAIL B

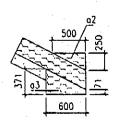


TABLE OF EXPLAINING QUANTITIES OF CULVERT

CULVERT KM2+835

																					70 11	10.34 10.34
							•					٠								II	I	II
	(m2)		(m2)		(m2)		(m2)		(m2)		(m2)					(Cm)	(7111)		(m2)) × 0.45 × 0.5) × 0.45 × 0.5
	20.635		20.635	.*	8.188		8.188		8.188		8.188					370.00	20.70		20.265	1.2b	i ;	7.064
16	12	11	H	11	H.	H	19	I	И.	ij	II				18	1.	ı	9	11	+	•	+
2	7	8	7	7	7	7	2	5	2	5	7		(m2)		C	1 0	1	2	2	, c		64
		• •		••									38			•	•				i i	7.0
HI	3.700	Ŧ	3.700	H	3.700	H	3.700	HI	3.700	Ħ	3,700		237.138		<u>~</u>	3 6	2.200	13	3.500	. +	۰ ۰	+
×	×	×	×	×	×	×	×	×	×	×	×				>	< ;	κ .	×	×	x 0.3) () (x 0.3
~	~	~	~	~	~	~	_	_	~	_		H	11		_	~ ~	<u>,</u>	~	~	_		_
d1	6.924	d 2	6.924	cb3	2.213	d4	2.213	d5	2.213	ge ge	2.213	(W + 0.2)	6.100		· 6	1061	+ 00.7	L2b	7.064	A2	1 6	20.265
+	+	+	+	+	+	+	+	+	+	+,	+	×	×		4	+ +	ŀ	+	+	+		+
C	4.230	7	4.230	ଫ	2.213	c4	2.213	ß	2.213	93	2.213	ب	38.875	<u>RETE:</u>	1 10	L14	4.310	L1b	4.516	Ą		20.265
S1= (ıı	S2= (]	S3= (ı) = 85	11) ≥2≥= () =9S	11	 S7==	Я	1. APRON CONCRETE:) L V) <u>-</u> IV) 	A2= ("
:								٠			2		9	~ ' 7								

(m3)

47.43 (m3)

 $= 38.875 \times$

0.2

 $L \times (W+0.2) \times$

2. CONCRETE FOUNDATION OF CULVERT:

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= (
$$S_1$$
 + S_2 + S_3 + S_4 + S_5 + S_6) × 0.1 =
= (20.635 + 20.6349 + 8.188 + 8.188 + 8.188 + 8.188) × 0.1 = 2.40 (m3)

4. WOOD PILE:

		(100md)			
		337.36			
	II	Ħ			(100md)
	$\times 25 \times 5 : 100$	$\times 25 \times 5 : 100$			41.75
÷	_	<u> </u>			
	22	237.138		3:100 =	3:100 =
	+	+		$\times 25 \times 3:100$	$\times 25 \times 3:100$
	S6	8.188		^	~
	+	+		5×4)	2
	S5	8.188		$(0.8 \times 4.5 \times 4)$	14.400
	+	+		+	. †
	22	8.188		S2	20.6349
	+	+		+	+
	SS	8.188		S	20.635
* L=5M	W5= (tt	* L=3M	W3= (
					-

NOTE: S=0.8 x 4.5 x 4 IS AREA WOOD PILE TOE OF SLOPE

5. SAND BEDDING:

$= (S1 + S2 + S3 + S4 + S5 + S6 + S7 + (0.8 \times 4.5 \times 4) \times 0.15 = (20.635 + 20.635 + 8.188 + 8.188 + 8.188 + 237.138 + (0.8 \times 4.5 \times 4) \times 0.15 = (20.635 + 20.635 + 8.188 + 8.188 + 237.138 + (0.8 \times 4.5 \times 4) \times 0.15 = (20.635 + 20.635 + 8.188 + 8.188 + 237.138 + (0.8 \times 4.5 \times 4) \times 0.15 = (20.635 + 20.635 + 8.188 + 8.188 + 237.138 + (0.8 \times 4.5 \times 4) \times 0.15 = (20.635 + 20.635 + 8.188 + 8.188 + 237.138 + (0.8 \times 4.5 \times 4) \times 0.15 = (20.635 + 20.635 + 8.188 + 8.188 + 237.138 + (0.8 \times 4.5 \times 4) \times 0.15 = (20.635 + 20.635 + 8.188 + 8.188 + 8.188 + 237.138 + (0.8 \times 4.5 \times 4) \times 0.15 = (20.635 + 20.635 $, , ,		1
+ S2 + S3 + S4 + S5 + S6 + S7 + 20.635 + 8.188 + 8.188 + 8.188 + 237.138																
2S + 9S + S2 + 7S + 8S	$+(0.8 \times 4.5 \times 4) \times 0.15 =$	237.138	+	8.188	+	8.188	+	8.188	+	8.188	+	20.635	+	20.635	_	Ш
	$+ (0.8 \times 4.5 \times 4) \times 0.15 =$	S7	+	S	+	S2	+	22	+	23	+	25	+	SI	· •	II

(m3)

				(b) IS AREA OF HEAD WALL)
		(m2)	n2)	1.770 (m2)
			(m2)	.770
(71117)	(m2)	0.133	0.134	
0.00	0.063			
		Ħ	11	5.900
		0.5×0.6	0.5×0.15	5.9
ŧ	(1	×	×	
E C'D	0.5	0.5	0.5	×
		×	×	0.300
×	×	~	$\widehat{}$	11
0.63	0.25	0.371	1.088	. 3
×	×	+	+	×
		0.071		0.300
<u>U_</u>	H.	a3≖ () =1	=[q
æ	œ	'n	Ď,	.

										3.902 (m3)			(m3)	
								(m3)	(m3)	11	(m3)	(m3)	62.337	
								1.597	1.597	×5×4	27.607	27.633		
								11)1	^	II II	11 11	S =	
٠								a	,,	0.133	COS(26.56) 0.894	COS(26.56) 0.894	V3b 27.633	
	(m2)	(m2)	(m2)	(m2)	(m2)	(m2)				+		** **	+ +	
	19.677	19.677	19.677	19.677	= 61.140 (m2)	= 61.232 (m2)	(m2)	18.388	18.388	(, 0.063	× 0.25 × 0.25	× 0.25 × 0.25	V3a 27.607	
	11 18	н н	ji ti	H II	ξ.	9	8	×	×	ĸ		~~	+ +	
	× 0.5	× 0.5 × 0.5	× 0.5 × 0.5	× 0.5 × 0.5	3.325	3.330	6.000	0.087	0.087	4	b3a 19.677	b3b 19.677	V2 3.902	
	L3 3.500	L3 3.500	L3 3.500	L3 3.500	, ×	×	19	0	0 =	, x	+ +	+ +	+ +	
٠	× ×	× ×	××	* ×	18,388	18.388	2			×	b2a 19.677	b2b 19.677	V1b 1.597	
		~ ~	~ ~		ll .	· : II	×			_	+ +	+ +	+ +	
	5.000	5.000	5.000	5.000	L4a	L4b	ъ	L8a	T8b	a3	b1 1.770	b1 1.770	V1a 1.597	
	+ +	+ +	+ +	+ +	×	×	×	×	×	+		1 1	<u> </u>	
	L6a 6.244	L6b 6.244	L7a 6.244	L7b 6.244	L8a	T8b	9.0	a1	al	a2	b4a 61.140	b4b 61.232		
	b2a= (= (b2b= (= (h3a= (= (b3b= (l×ta=	54b≈	=5 q	Vla=	V1b=	V2= (V3a= (== (V3b= (= (TOTAL =	
									÷					

			= 15.558 (m3)	= 15.573 # (m3)			
	(m ₃)	(m3)	COS(26.56) 0.894	COS(26.56) 0.894			·
	2.463	2.463	0.15 : 0.15	0.15 : 0.15 :	(m3)		
	II	t!	* *	× ×	36.06		
	18.388	18.388	b5 6.000	6.000	V5b 15.573		
	×	×	1 1	ii	+ +	(m2)	(m2)
	0.134	0.134	b3a 19.677	b3b 19.677	V5a 15.558	21.192	21.192 (m2)
	11	IJ	+ +	+ +	<u>,</u> + +	11 11	. 11 11
			b2a 19.677	b2b 19.677	V4b 2.463	n n	. 44
			+ +	+ +	+ +	× ×	, × ×
÷ .	L8a	18b	b1 1.770	b1 1.770	V4a 2.463	X 0.75 X 0.75	X 0.75 X 0.75
	· ×	×	1 k k	F . F	,		~~
, id	9 4	a4	b4a 61.140	b4b 61.232		L2b) 7.064	1. L2b) 7.064
7. BASE BEDDING:	V4a=	V4b=	V5a= (= (V5b= (TOTAL =	8. FORM: = (L2a + (7.064 +	9. SCAFFOLDING: = (L2a + (7.064 +

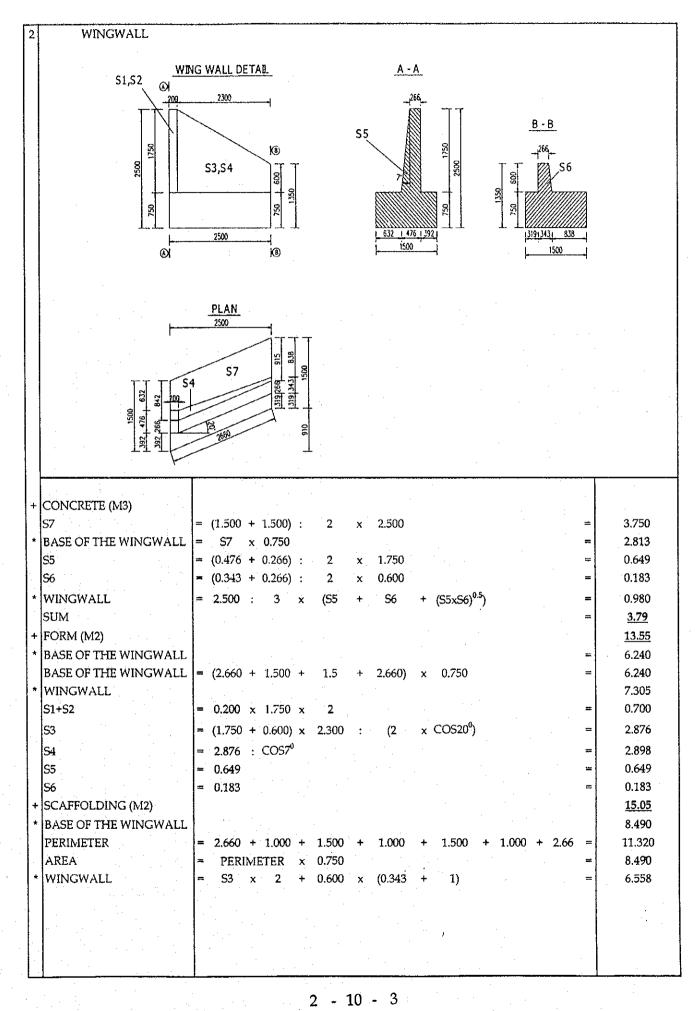
2.10. Box culvert at station 3+170

I	BOX CULVERT STATI	ON	I		03+170	~ -							······				QUANTITIE
	L	==	13.584	+	13.584 ·	+	0.02	=	27.188								
1	CULVERT																
4-	CONCRETE (M3)						•										
	S1=S2		2,950	x	2.050	_	2,500	x	1.500	+	2	х	0.100	х	0.100) =	2.318
	S	_	S1		S2											=	4.635
	VOLUME	_	S			Τ.	13 5941	_	5.900	v	0.200	v	0.300	v	2	=	1
	VOLUME			х	(15.564)	Ψ.	15.564)	7	5.500	х	0.200	Х	0.300	х	2.		<u>126.64</u>
							ĎΟΙ	101	E DOV	~111	VEDT						·
	·						DOL) DL	E BOX (. U L	VERI						
		1					-		5900		· · · · · · · · · · · · · · · · · · ·						
							ļ	2950		29	150						ł
					-		300	2500	300	15	00 300		S2				
					250	3	11	2300	ŤŤ			- /	/				
						-		1				/					
					2050	3	100	ᅙ,									·
					22 52	1											
					上景	}											
						•	S	í									
	nan chan																
	FORM (M2)						,										<u>427.24</u>
*	INSIDE FORM (M2)																296.983
	BOX BULWARK	=	(1.500	+	2 :	x	0.100	x	(1:SIN45 ⁰	-	1))	x	27.168	x	4	=	172.011
	BOTTOM OF THE BOX	1			0.100				27.168		2		•			=	124.973
÷	OUTSIDE FORM (M2)		(÷			, –,		_,		_						130.254
		_	2.050	٠.	2		27169	_	4	.,	0.300	.,	0.200			=	111.629
•	1	1										Х	0.200				1
	THE END OF CULVERT	=	_	х	2	*	3.900	х	0.200	x	4 .					=	10.,,,
•	CENTER	=	S													=	4.635
			5 -														
+	SCAFFOLDING (M2)	=	2.050	X	2.000	X	27.168	+ .	4.000	x	0.300	x	0.200	•		==	111.63
+	SUPPORT	1															
	AREA (M2)	=	5.900	×	1.500	-	S	-								=	4.215
	VOLUME (M3)	=	AREA	x	L											=	114.60
																	1
																	1
		'															
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BOXCULVERT STATION 3+170 QUANTITIES TABLE OF REINFORCEMENT

SEGMENT 1 & 2

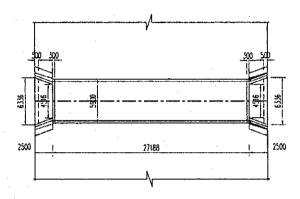
			L)	ECMMENT :	1 (4)		,
SYMBOL	UNIT LENGTH	SPACE	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT
OF BAR	(mm)	(mm)	(mm)	OF BAR	(kg/m)	(m)	(kg)
1	3660	125	14	218	1.208	797.88	964.2
2	2350	250	12	110	0.888	258.50	229.5
3	6270	250	14	110	1.208	689.70	833.4
4	1500	250	14	216	1.208	324.00	391.5
5	1550	125	18	218	1.998	337.90	675.0
6	1970	250	12	220	0.888	433.40	384.8
. 7	2350	125	12	218	0.888	512.30	454,8
8	1049	250	12	220	0.888	230.78	204.9
9	1120	250	12	220	0.888	246.40	218.8
10	14089	250	12	52	0.888	732.63	650.4
11	14189	250	12	88	0.888	1248.63	1108.6
12	5780	250	12	. 2	0.888	11.56	10.3
13	1440	250	12	26	0.888	37.44	33.2
14	1180	250	12	326	0.888	384.70	341.5
REINFORG		D<=14	<u></u>	5825.9	TOTAL FOR SEC	GMENT 1:	
REINFORG		=D<=25		675.0	REINFORCEME	NT (KG):	6500.9
REINFORG		25 <d=32< td=""><td></td><td></td><td>CONCRETE (M3</td><td>):</td><td>63.32</td></d=32<>			CONCRETE (M3):	63.32
TESTIVI OICE		<u> </u>	TOTA		MENT 1 & 2		
REINFORG	CEMENT:	D<=14		11651.84	REINFORCEME	NT (KG):	13001.8
REINFORG	CEMENT: 10	5=D<=25	-	1349.965	1		
REINFORG	CEMENT:	25 <d=32< td=""><td></td><td></td><td>CONCRETE (M3</td><td>):</td><td>126.64</td></d=32<>			CONCRETE (M3):	126.64

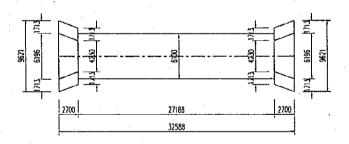


BOX CULVERT STATION 3+170 REINFORCEMENT OF WINGWALL

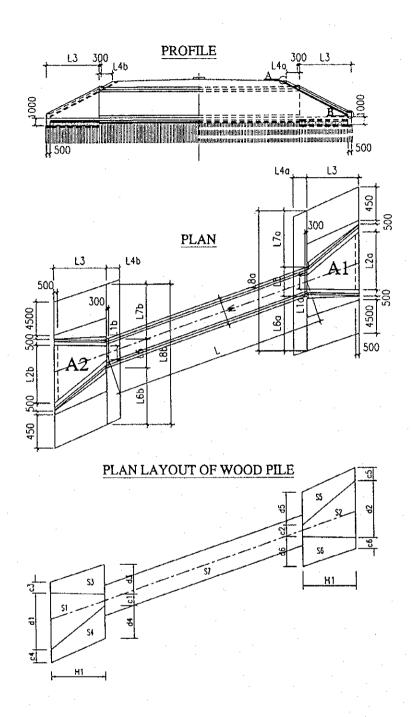
BAR MARK	UNITLENGTH	DIAMETER	NUMBER	UNIT WEIGHT	NUMBER UNIT WEIGHT TOTAL LENGTH TOTAL WEIGHT	TOTAL WEIGHT
	(MM)	(MM)	OF BAR	(KG/M)	(M)	(KG)
1a	2011	12	15	0.888	30.2	26.8
1b	2060	14	15	1.208	30.9	37.3
2a	2651	12	9	888.0	15.9	14.1
2b	1552	12	12	888.0	18.6	16.5
2c	582	12	15	0.888	8.7	7.8
m.	3005	12	2	0.888	6.0	5.3
4	3378	12	16	0.888	54.0	48.0
5a	3824	12	11	0.888	42.1	37.3
5b	1867	12	4	0.888	7.5	6.6
5c	3248	20	11	2.466	35.7	88.1
5d	1291	20	4	2.466	5.2	12.7
9	2444	14	8	1.208	19.6	23.6
7	1814	12	4	0.888	7.3	6.4
8	1814	12	4	0.888	7.3	6.4
. 6	2554	12	4	0.888	10.2	9.1
10	1304	14	5	1.208	6.5	7.9
11	724	12	6	0.888	6.5	5.8
12	1791	12	1	0.888	1.8	1.6
•	R	REINFORCEMENT:	Γ:	D=<14	260.7 KG	
	R	REINFORCEMENT:		14< D<=25	100.8 KG	KG
	L	TOTAL REINFORCEMENT	CEMENT:		361.5 KG	KG

BOX CULVERT FOR DRAINAGE (STATION 3+170)

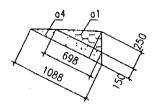




NOTATIONS FOR QUANTITY CALCULATION OF BOX CULVERT FOR DRAINAGE



DETAIL A



DETAIL B

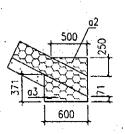


TABLE OF EXPLAINING QUANTITIES OF CULVERT

CULVERT KM3+170

	- 5	;	•											
)	4.230	+	6.196	_	×	2.700		2	11	14.075	(m2)		
22	<u> </u>	73	+	d2	~	×	HI		7	EÍ				
B) =	4.230	+	961.9		×	2.700	••	2	II	14.075	(m2)		
SS	_	පු	+	d 3	_	×	H		7	tř				
		1.713	+	1.713	~	×	2.700	••	7	Ħ	4.625	(m2)		
S4=	<u> </u>	2	+	d4	_	×	Ħ		2	il				
		1.713	+	1.713		×	2.700		2	Ħ	4.625	(m2)		
S5=		13	+	d5		×	H		5	!I				
	<u> </u>	1.713	+	1.713		×	2.700		7	II	4.625	(m2)		
=9S		93	+	g	_	×	Ħ		2	Įì				
•		1.713	+	1.713		×	2.700		7	. 11	4.625	(m2)		
=22=	_11	_1	×	W + 0.2										
		27.188	×	6.100	II		165.847	7	(m2)					
						٠								
1. APRON CONCRETE:	CONCR	ETE:												
Ą	A1= (Lla	+	L2a		×	[3		7	. 11				
		4.516	+	6.336	. ~	×	2.500		2	Ħ	13.565	(m2)		
							,		Ć					
A2=	_ ".	1.18	+	L2b	~	×	ព្ឋ	••	7	H .				
) =	4.516	+	6.336	_	×	2.500	••	7	it	13.565	(m2)		
	_	A1	+	A2	. ~	x 0.3	+	H	g	+	. L2b	$\times 0.45 \times 0.5$	il	
	<u> </u>	13.565	+	13.565	~	x 0.3	+	6.336	36	+	6.336	$\times 0.45 \times 0.5$	II	10.99

(m3)

33.17 (m3)

0.5

6.100

27.168 ×

× (W+0.2) ×

 $) \times 0.15 =$ $) \times 0.15 =$

S7 165.847

				~	
	(m3)			230.43	
	4.67			230	
	II Ji		· II	II	(100m)
	0.1		0	0	
	××		5:10	5:10	11
	. R		×25×5:100	25 x	21.11
	S6 4.625		×		•
			^	$\widehat{}$	
	+ +		_	165.847	
	S5 4.625		S	165	3: 100
	+ +		+	+	× 25 × 3 : 100 × 25 × 3 : 100
	• •		•	•	, × ×
	S4 4.625		,ç	4.625	
	S	-	တ	4.6	
	+ +		+	+	
					0.000
	S3 4.625		55	4.625	
	+ +		+	+	+ +
	S2 14.0751		35	4.625	S2 14.0751
	 .			٠ +	+ +
			. '		
.;I	S1 14.075		Ŝ	4.625	S1 14.075
	1 II	PILE	* L=5M W5= (1	$\frac{*L=3M}{W3} $
S. L.E.AIN CONCINCTE.		. WOOD PILE:	* 5		* ->
. T.		₹.			
		٠			
					^

(100m)

NOTE: S=0.8 × 4.5 × 4 IS AREA WOOD PILE TOE OF SLOPE

5. SAND BEDDING:

)	S	+		+	83	+	ቖ	+	55	+	8
	14.075	+	14.075	+	4.625	+	4.625	+	4.625	+	4.62
6. FORM				:							
= (L2a +	L2b)	_	X 0.75	×	7	II					
(6.336 +		~	X 0.75	×	.7	Ħ	19.008	(m2)			
							٠.				
7. SCAFFOLDING				-							
= (L2a +		~	X 0.75	х	2	П					
(6.336 +	6.336	_	X 0.75	×	7	13	19.008 (m2)	(m2)	٠.		

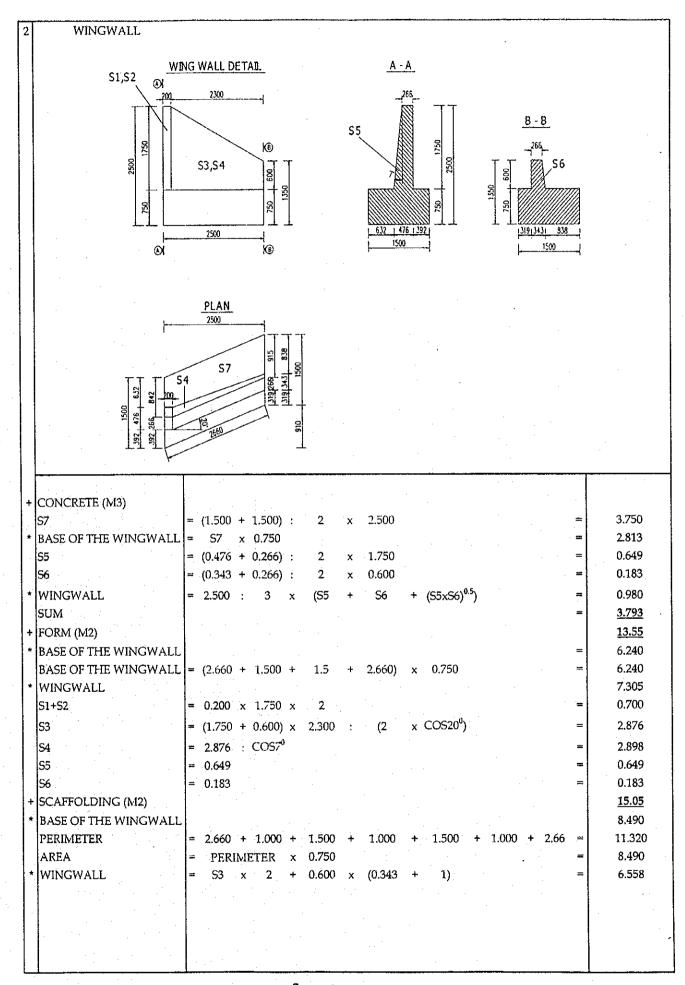
2.11. Box culvert at station 4+125

]	BOX CULVERT STAT	ION			04+125	• · · · · · · · · · · · · · · · · · ·			· · · · · · ·	······································						QUANTITIES
L	L	==	14.390	+	14.390 +	0.02	==	28.800								
1	CULVERT															
+	CONCRETE (M3)															
	S1=S2	=	2.950	х	2.050 -	2.500	x	1.500	+	2	x	0.100	x	0.100	==	2.318
	S	=	S1	+	S2										==	4.635
	VOLUME	=	s	x	(14.390 +	14.390)	+	5.900	x	0.200	x	0.300	x	2	==	134.10
				•	(2 2.070					0.200		0.500	,,	-		222122
						DO	JBL	E BOX C	CUL	VERT						·
	·					-		5900								
						1	<u> 2950</u>		29	50						
					250	300	2500	300	250	<u>co 300</u>	_	_/ S2				
					十二十						/	,				
					9 8	100	ਨੂ	\mathbb{N}								
					2050	111100			-							
	,															
1						5	1									
						_	-									
1	FORM (M2)															<u>451.47</u>
1	INSIDE FORM (M2)													•		314.605
	BOX BULWARK	=	(1.500	+	2 x	0.100	x	(1:SIN45 ⁰	•	1))	x	28.780	x	4	=	182.217
	BOTTOM OF THE BOX	=	(2.500	-	0.100 x	2)	x	28.780	x	2					=	132.388
,	OUTSIDE FORM (M2)				•											136.863
		-	2.050	x	2 x	28.780	+	4	x	0.300	X	0.200			=	118.238
	THE END OF CULVERT	=	S	x	2 +	5.900	x	0.200	x	4					=	13.990
	CENTER	=	S .							÷					=	4.635
1.																. 71177
4	SCAFFOLDING (M2)	=	2.050	x	2.000 x	28,780	+	4.000	x	0.300	х	0.200			=	118.2 <u>4</u>
	SUPPORT	'		•					•	0.000						
	AREA (M2)		5 000	v	1.500 -	s									=	4.215
ŀ	VOLUME (M3)		AREA			Ü									=	121.39
	VOLOME (MO)		1 34 1221 1	^												<u> </u>
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BOXCULVERT STATION 4+125 QUANTITIES TABLE OF REINFORCEMENT

SEGMENT 1 & 2

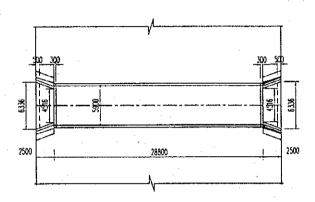
UNIT LENGTH	SPACE	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT
(mm)	(mm)	(mm)	OF BAR	(kg/m)	(m)	(kg)
3660	125	14	230	1.208	841.80	1017.2
2350	250	12	116	0.888	272.60	242.0
6270	250	14	116	1.208	727.32	878.9
1500	250	14	228	1.208	342.00	413.3
1550	125	18	230	1.998	356.50	712.1
1970	250	12	232	0.888	457.04	405.8
2350	125	12	230	0.888	540.50	479.9
1049	250	12	-232	0.888	243.37	216.1
1120	250	12	232	0.888	259.84	230.7
14895	250	12	52	0.888	774.54	687.6
14995	250	12	88	0.888	1319.56	1171.5
5780	250	12	2	0.888	11.56	10.3
1440	250	12	26	0.888	37.44	33.2
1180	250	12	345	0.888	407.52	361.8
EMENT: D)<=14	-	6148.3	TOTAL FOR SEC	GMENT 1:	
EMENT: 16=	D<=25		712,1	REINFORCEME	NT (KG):	6860.4
CEMENT: 25	<d=32< td=""><td></td><td>***</td><td>CONCRETE (M3</td><td>):</td><td>67.05</td></d=32<>		***	CONCRETE (M3):	67.05
		TOTAL	FOR SEC	MENT 1 & 2		
EMENT:)<≔14		12296.6	REINFORCEME	NT (KG):	13720.9
EMENT: 16=	D< = 25		1424.275			
	<d=32< td=""><td></td><td></td><td>CONCRETE (M3</td><td>):</td><td>134.10</td></d=32<>			CONCRETE (M3):	134.10
	(mm) 3660 2350 6270 1500 1550 1970 2350 1049 1120 14895 14995 5780 1440 1180 EMENT: I6= EMENT: 25 EMENT: I6= E	(mm) (mm) 3660 125 2350 250 6270 250 1500 250 1550 125 1970 250 2350 125 1049 250 1120 250 14895 250 14995 250 1440 250 1180 250 EMENT: D<=14	(mm) (mm) (mm) 3660 125 14 2350 250 12 6270 250 14 1500 250 14 1550 125 18 1970 250 12 2350 125 12 1049 250 12 1120 250 12 14895 250 12 14995 250 12 1440 250 12 1180 250 12 EMENT: D<=14	(mm) (mm) (mm) OF BAR 3660 125 14 230 2350 250 12 116 6270 250 14 116 1500 250 14 228 1550 125 18 230 1970 250 12 232 2350 125 12 230 1049 250 12 232 1120 250 12 232 14895 250 12 52 14995 250 12 88 5780 250 12 2 1440 250 12 26 1180 250 12 345 EMENT: D<=14	(mm) (mm) (mm) OF BAR (kg/m) 3660 125 14 230 1.208 2350 250 12 116 0.888 6270 250 14 116 1.208 1500 250 14 228 1.208 1550 125 18 230 1.998 1970 250 12 232 0.888 2350 125 12 232 0.888 1049 250 12 232 0.888 1120 250 12 232 0.888 14895 250 12 232 0.888 14995 250 12 52 0.888 14995 250 12 2 0.888 1440 250 12 2 0.888 1180 250 12 345 0.888 EMENT: D<=14	(mm) (mm) (mm) OF BAR (kg/m) (m) 3660 125 14 230 1.208 841.80 2350 250 12 116 0.888 272.60 6270 250 14 116 1.208 727.32 1500 250 14 228 1.208 342.00 1550 125 18 230 1.998 356.50 1970 250 12 232 0.888 457.04 2350 125 12 230 0.888 540.50 1049 250 12 232 0.888 243.37 1120 250 12 232 0.888 259.84 14895 250 12 232 0.888 774.54 14995 250 12 52 0.888 1319.56 5780 250 12 2 0.888 11.56 1440 250 12 26

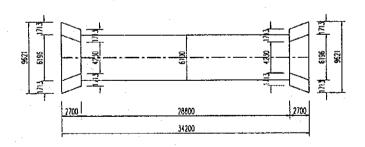


BOX CULVERT STATION 4+125 REINFORCEMENT OF WINGWALL

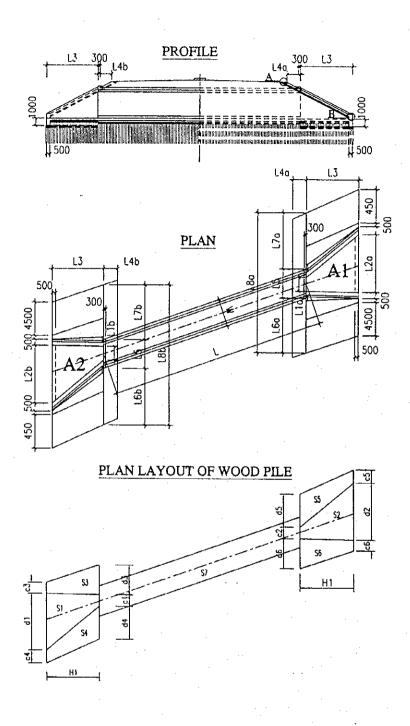
NUMBER UNIT WEIGHT TOTAL LENGTH TOTAL WEIGHT	(KG)	26.8	37.3	14.1	16.5	7.8	5.3	48.0	37.3	9.9	88.1	12.7	23.6	6.4	6.4	9.1	7.9	5.8	1.6	KG	KG	KG
TOTAL LENGTH	(M)	30.2	30.9	15.9	18.6	8.7	6.0	54.0	42.1	7.5	35.7	5.2	19.6	7.3	7.3	10.2	6.5	6.5	1.8	260.7 KG	100.8 KG	361.5 KG
UNIT WEIGHT	(KG/M)	0.888	1.208	0.888	0.888	0.888	0.888	0.888	0.888	0.888	2.466	2.466	1.208	0.888	0.888	0.888	1.208	0.888	0.888	D=<14	14< D<=25	**
NUMBER	OF BAR	15	15	9	12	15	2	16	11	4	11	4	8	4	4	4	52	6	-	۲T:	LT:	RCEMENT
DIAMETER	(MM)	12	14	12	12	12	12	12	12	12	20	20	14	12	12	12	14	12	12	REINFORCEMENT	REINFORCEMENT:	TOTAL REINFORCEMENT:
HINIT ENGTH	(MM)	2011	2060	2651	1552	582	3005	3378	3824	1867	3248	1291	2444	1814	1814	2554	1304	724	1791			
	BAR MARK	[]	1b		2b	2c	3	4	5.9	િ	50	5d	9	7	∞	6	10	11	12			

BOX CULVERT FOR DRAINAGE (STATION 4+125)

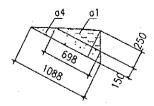




NOTATIONS FOR QUANTITY CALCULATION OF BOX CULVERT FOR DRAINAGE



DETAIL A



DETAIL B

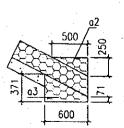


TABLE OF EXPLAINING QUANTITIES OF CULVERT

CULVERT KM4+125

																					10.99	
					-															II	11	
	(m2)		(m2)	-	(m2)		(m2)		(m2)		(m2)						(m2)		(m2)) × 0.45 × 0.5	$) \times 0.45 \times 0.5$	
	14.075		14.075		4.625		4.625		4.625		4.625						13.565		13.565	L2b	6.336	
R	11	Ji	II	II	11	II		Ħ	ij	II	II					ij	ii	. 11	11	+	+	
7	,7	8	2	7	7	7	7	8	7	7	7		(m2)			2	7	6	7	2a	6.336	
••			••	••			••					•	089				••	•	••	- □	9	
HI	2.700	H	2.700	HI	2.700	H1	2.700	H1	2.700	H	2.700	.4.	175.680			ខា	2.500	<u></u>	2.500	+	+	
×	×	×	×	×	×	×	×	×	×	×	×					×	×	×	×	× 0.3	× 0.3	
~		_	_	^	~	~	_		_	_	~	#	IJ			~	$\widehat{}$	_	-	~	$\widehat{}$	
tp	961.9	d2	961.9	d3	1.713	d4	1.713	q2	1.713	9p	1.713	(W + 0.2)	6.100			L2a	6.336	124	6.336	A2	13.565	
+	+	+	+	+	+	+	+	+	+	+	+	×	×			+	+	+	+	+	+	
<u>ច</u>	4.230	7	4.230	<u>හ</u>	1.713	64	1.713	τΩ.	1.713	93	1.713		28.800	\$ \$ \$	KEIE	L1a	4.516	1.1b	4.516	A1	13.565	
) =IS	11	S2= () 	S3== () :		_ =) =S2= () =98	11	S7=	11	(1. APRON CONCRETE:	A1= (11	A2= () II	<u> </u>	11	

(m3)

35.14 (m3)

II

0.2

6.100

28.800 ×

0.7

 $x (W + 0.2) \times$

2. CONCRETE FOUNDATION OF CULVERT:

 $) \times 0.15 =$ $) \times 0.15 =$

S7 175.680

3. LEAN CONCRETE:	

$$= (S1 + S2 + S3 + S4 + S5 + S6) \times 0.1 =$$

$$= (14.075 + 14.0751 + 4.625 + 4.625 + 4.625) \times 0.1 = 4.67$$
 (m3)

				(100m)			
(m3)				242.73			
II II		. *	11	II			(100m)
4.625) × 0.1			$\times 25 \times 5:100$	$\times 25 \times 5:100$			21.11
			<u> </u>	<u> </u>			
55 + 4.625 +			S7	175.680		x25 x 3:100 ==	3:100 =
+ +	÷	-	+	+		× 25 ×	x 25 x
S4 4.625			%	4.625		· ~	~
+ +			+	+			00
S3 4 625			S5	4.625		0	0.0
+ +	•	٠	+	+		+	+
+ S2 + 14.0751			22	+ 4.625		25	14.0751
+ +			+	+		+	+
S1 14.075			S3	4.625		Si	14.075
н п	4. WOOD PILE:	* L=5M	W5== (. <u> </u>	* L=3M	W3= (II

NOTE: S=0.8 x 4.5 x 4 IS AREA WOOD PILE TOE OF SLOPE

5. SAND BEDDING:

19,008 (m2)

$$\frac{7.5CAFFOLDING}{= (1.2a + 1.2b)} \qquad \times 0.75 \times 2 =$$

2.12. Box culvert at station 4+318

BOX CULVERT STA		QUANTITIES
L	= 13.770 + 23.770 + 0.02 = 37.560	
CULVERT		
CONCRETE (M3)		
S1	= $5.250 \times 5.600 - 4.500 \times 5.000 + 2 \times 0.300 \times 0.300 =$	7.080
5	= S1 + S2 =	14.160
VOLUME	= 5 x (13.770 + 13.770) + 11.200 x 0.200 x 0.300 x 2 =	<u>532.91</u>
	DOUBLE BOX CULVERT	
·	11200 5600 , 5600	
	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
	1550	
		4
		•
1		•
FORM (M2)	ş Şî	1489.24
INSIDE FORM (M2)		1043.391
BOX BULWARK	= $(4.500 + 2 \times 0.300 \times (1:SIN45^{\circ} - 1)) \times 37.540 \times 4$ =	713.039
BOTTOM OF THE BOX	= (5.000 - 0.300 x 2) x 37.540 x 2 =	330.352
OUTSIDE FORM (M2)		445.850
BOX BULWARK	= 5.250 x 2 x 37.540 + 4 x 0.300 x 0.200 =	394.410
THE END OF CULVERT	$= S \times 2 + 11.200 \times 0.200 \times 4 = $	37.280
CENTER	= S =	14.160
SCAFFOLDING (M2)	= 5.250 x 2.000 x 37.540 + 4.000 x 0.300 x 0.200 =	<u>394.41</u>
+ SUPPORT		
AREA (M2)	= 10.500 x 5.000 - S =	38.340
VOLUME (M3)	= AREA x L =	<u>1440.05</u>
		,
		·
1		<u> </u>

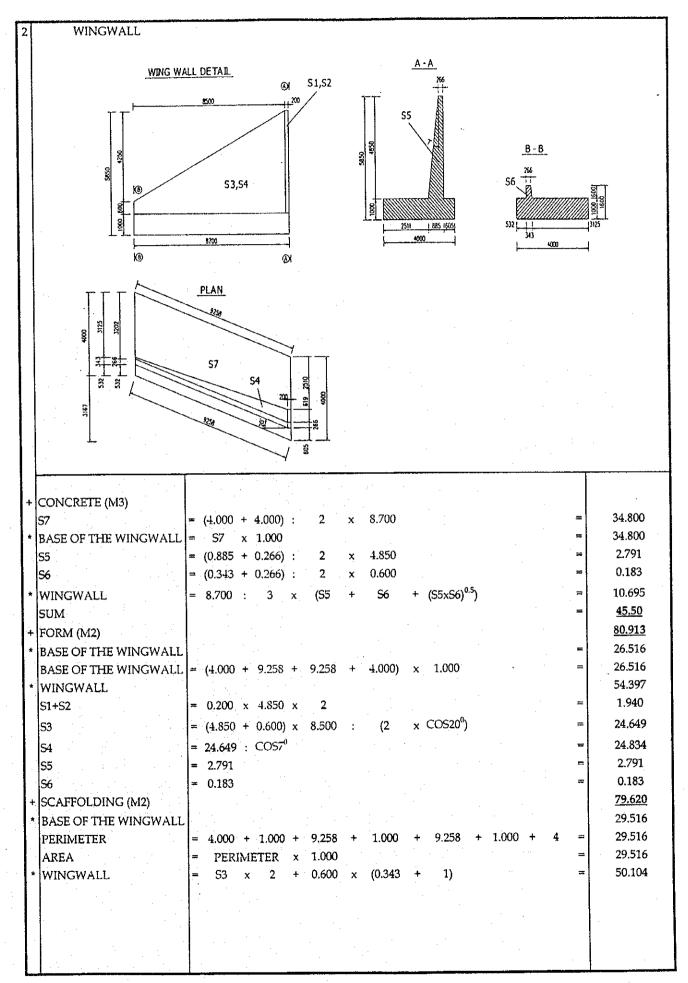
BOXCULVERT STATION 4+318 QUANTITIES TABLE OF REINFORCEMENT

SEGMENT 1

SYMBOL	UNIT LENGTH	SPACE	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT
OF BAR	(mm)	(mm)	(mm)	OF BAR	(kg/m)	(m)	(kg)
1	8270	125	20	382	2.466	3159.14	7790,9
2	56 7 0	250	16	192	1.578	1088.64	1718.2
3	11760	250	20	192	2.466	2257.92	5568.4
4	3000	250	22	380	2.984	1140.00	3401.8
5	2900	125	25	382	3.853	1107.80	4268.7
6	3220	250	12	384	0.888	1236.48	1097.8
7	5740	125	18	192	1.998	1102.08	2201.5
8	1284	250	12	384	0.888	493.06	-137.7
. 9	1355	250	12	384	0.888	520.32	461.9
10	24415	250	12	92	0.888	2246.18	1994.2
11	24515	250	12	200	0.888	4903.00	4352.9
12	11060	250	12	2	0.888	22.12	19.6
13	1560	250	12	46	0.888	71.76	63.7
14	1340	250	12	856	0.888	1146.66	1018.0
15	1440	250	12	8 56	0.888	1232.24	1094.0
REINFORC	EMENT:	D<=14		10540.0	TOTAL FOR SEC	GMENT 1:	
REINFORC		=D<=25		24949.6	REINFORCEME	NT (KG):	35489.5
REINFORC	EMENT: 2	5 <d=32< td=""><td></td><td></td><td>CONCRETE (M3</td><td>):</td><td>337.26</td></d=32<>			CONCRETE (M3):	337.26

SEGMENT 2

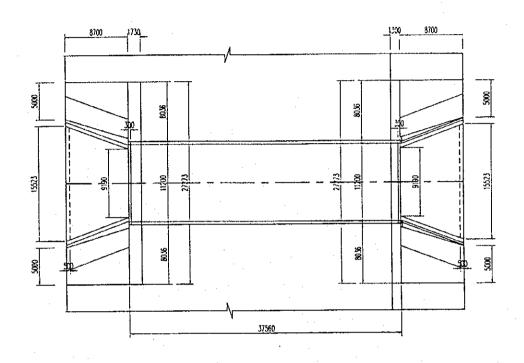
UNIT LENGTH	I SPACE	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT
(mm)	(mm)	(mm)	OF BAR	(kg/m)	(m)	(kg)
8270	125	22	222	2.984	1835.94	5478.5
5670	250	16	112	1.578	635.04	1002.3
11760	250	20	112	2.466	1317.12	3248.2
3000	250	22	220	2.984	660.00	1969.5
2900	125	25	222	3.853	643.80	2480.8
3220	250	12	224	0.888	721.28	640.4
5740	125	18	112	1.998	642.88	1284.2
1284	250	12	224	0.888	287.62	255.3
1355	250	12	224	0.888	303.52	269.5
14415	250	12	92	0.888	1326.18	1177.4
14515	250	12	200	0.888	2903.00	2577.3
11060	250	12	2	0.888	22.12	19.6
1560	250	12	46	0.888	71.76	63.7
1340	250	12	495.72	0.888	664.26	589.7
1440	250	12	495.72	0.888	713.84	633.8
2086		12	2	0.888	4.17	3.7
CEMENT:	D<=14		6226.7	TOTAL FOR SEC	GMENT 2 :	
	6=D<=25		15463.5	REINFORCEME	NT (KG):	21690.2
CEMENT:	25 <d=32< td=""><td></td><td></td><td>CONCRETE (M3</td><td>):</td><td>195.66</td></d=32<>			CONCRETE (M3):	195.66
		TOTAL	FOR SEC	MENT 1 & 2		
CEMENT:	D<=14		16766.7	REINFORCEME	NT (KG):	57179.8
	6=D<=25		40413.1		. * *	
CEMENT:	25 <d=32< td=""><td></td><td></td><td>CONCRETE (M3</td><td>Υ:</td><td>532.91</td></d=32<>			CONCRETE (M3	Υ:	532.91
֡	(mm) 8270 5670 11760 3000 2900 3220 5740 1284 1355 14415 14515 11060 1560 1340 1440 2086 CEMENT: CEMENT: CEMENT: 10EMENT: 110EMENT: 110E	(mm) (mm) 8270 125 5670 250 11760 250 3000 250 2900 125 3220 250 5740 125 1284 250 1355 250 14415 250 14515 250 11060 250 1340 250 1440 250 2086 250 CEMENT: D<=14	(mm) (mm) (mm) 8270 125 22 5670 250 16 11760 250 20 3000 250 22 2900 125 25 3220 250 12 5740 125 18 1284 250 12 1355 250 12 14415 250 12 14515 250 12 11060 250 12 1340 250 12 1440 250 12 2086 12 CEMENT: D<=14	UNIT LENGTH (mm) (mm) (mm) OF BAR 8270 125 22 222 5670 250 16 112 11760 250 20 112 3000 250 22 220 2900 125 25 222 3220 250 12 224 5740 125 18 112 1284 250 12 224 1355 250 12 224 14415 250 12 224 14415 250 12 224 14415 250 12 200 11060 250 12 200 11060 250 12 200 11060 250 12 46 1340 250 12 495.72 1440 250 12 495.72 2086 12 2 CEMENT: D<=14 6226.7 CEMENT: D<=14 6266.7 CEMENT: D<=14 16766.7 CEMENT: D<=14 16766.7	UNIT LENGTH (mm) (mm) (mm) OF BAR (kg/m) 8270 125 22 222 2984 5670 250 16 112 1.578 11760 250 20 112 2.466 3000 250 22 220 2.984 2900 125 25 22 220 2.984 2900 125 25 222 3.853 3220 250 12 224 0.888 5740 125 18 112 1.998 1284 250 12 224 0.888 1355 250 12 224 0.888 14415 250 12 224 0.888 14415 250 12 224 0.888 14515 250 12 224 0.888 14615 250 12 200 0.888 11660 250 12 20 0.888 11600 250 12 20 0.888 1340 250 12 20 0.888 1340 250 12 46 0.888 1340 250 12 46 0.888 1340 250 12 495.72 0.888 1440 250 12 495.72 0.888 1286 12 2 0.888 CEMENT: D<=14 6226.7 TOTAL FOR SECUENT: 16=D<=25 15463.5 REINFORCEME CEMENT: D<=14 16766.7 REINFORCEME TOTAL FOR SEGMENT 1 & 2 CONCRETE (M³ TOTAL FOR SEGMENT 1 & 2 CEMENT: 16=D<=25 CONCRETE (M³	(mm) (mm) OF BAR (kg/m) (m) 8270 125 22 222 2.984 1835.94 5670 250 16 112 1.578 635.04 11760 250 20 112 2.466 1317.12 3000 250 22 220 2.984 660.00 2900 125 25 222 3.853 643.80 3220 250 12 224 0.888 721.28 5740 125 18 112 1.998 642.88 1284 250 12 224 0.888 287.62 1335 250 12 224 0.888 303.52 14415 250 12 92 0.888 1326.18 14515 250 12 92 0.888 2903.00 11060 250 12 2 0.888 71.76 1340 250 12 495.72 0

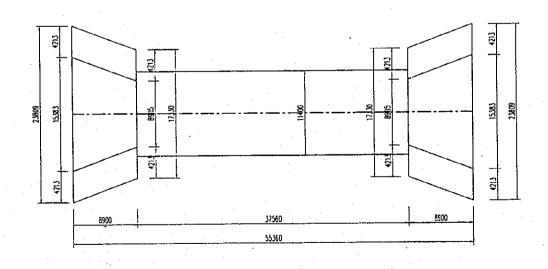


BOX CULVERT STATION 4+318 REINFORCEMENT OF WINGWALL

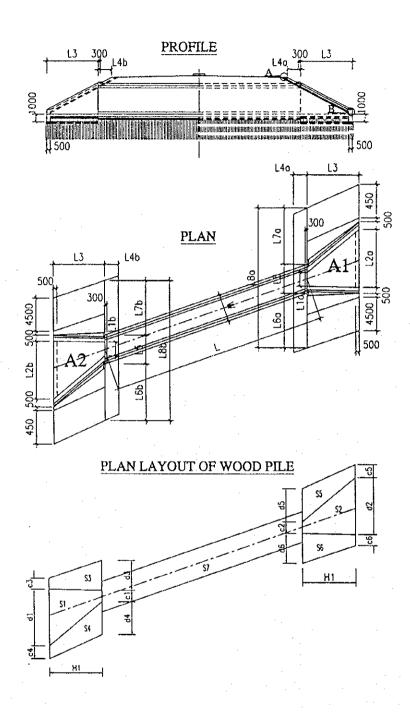
RAR MARK	UNIT LENGTH	DIAMETER	NUMBER	UNIT WEIGHT	NUMBER UNIT WEIGHT TOTAL LENGTH TOTAL WEIGHT	TOTAL WEIGHT
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	(MM)	(MM)	OF BAR	(KG/M)	(M)	(KG)
1a	3808	12	48	0.888	182.8	162.3
1b	3952	18	48	1.998	189.7	378.9
2a	9267	12	9	0.888	55.6	49.4
2b	4914	12	42	0.888	206.4	183.2
2c	582	12	48	0.888	27.9	24.8
3	10213	12	2	0.888	20.4	18.1
4	10213	12	38	0.888	388.1	344.6
5a	5423	12	39	0.888	211.5	187.8
5b	3516	12	12	0.888	42.2	37.5
5c	4417	22	39	2.984	172.3	514.0
5d	2510	22	12	2.984	30.1	89.9
9	2944	14	87	1.208	256.1	309.5
7	4301	12	4	0.888	17.2	15.3
8	4301	12	9	0.888	25.8	22.9
6	9139	12	9	0.888	54.8	48.7
10	1304	14	16	1.208	20.9	25.2
11	906	12	24	0.888	21.7	19.3
12	3177	12	. 3	0.888	9.5	8.5
	I	REINFORCEMENT:	IENT:	D=<14	1456.9 KG	KG
		REINFORCEMENT	IENT:	14< D<=25	982.8 KG	KG
		TOTAL REINFORCEMENT:	FORCEME	:NT:	2439.7 KG	KG

BOX CULVERT FOR DRAINAGE (STATION 4+318)

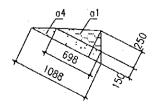




NOTATIONS FOR QUANTITY CALCULATION OF BOX CULVERT FOR DRAINAGE



DETAIL A



DETAIL B

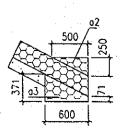


TABLE OF EXPLAINING QUANTITIES OF CULVERT

CULVERT KM4+318

																٠.	
	(m2)		(m2)		(m2)		(m2)		(m2)		(m2)					(m2)	
	108.082		108.082	•	37.496		37.496		37.496		37.496					107.502	
n	II	H	21	11	II	II	U	. 11	n	1 3	11				1	31	
2	2	7	5	5	8	2	7	7	2	5	2		(m2)		7	7	
•	••							••		•••			84			••	
王	8,900	H	8.900	H1	8.900	HI	8.900	HI	8.900	HI	8.900		428.184		, r.	8.700	
×	×	×	×	×	×	×	×	×	×	×	×				×	: ×	
	· ~	_	~	~	_	~	~	~	~		<u></u>	IJ	E		_	` ~	
d1	15.383	d 2	15.383	d3	4.213	d4	4.213	Q 2	4.213	9p	4.213	W + 0.2	11.400	•	12a	15.523	
+	+	+	+	+	+	+	+	+	+	+	+	×	×		+	+	
็บ	8.905	7	8.905	8	4.213	c4	4.213	S	4.213	93	4.213	7	37.56	II.	<u> </u>	6.190	
	<i>,</i> _	_			_	_	J	_	_	_	<u> </u>			NCRE	,		
i) (7)	II E	S2=	ii	S3=	it	S2=	Ш	S5=	II	S = 8	IJ	S7=		APRON CONCRETE	Α1=	!	
. •								ŕ					٠.	1. APRC			

(m3)

75.37

) × 0.7 × 0.5) × 0.7 × 0.5

L2b 15.523

L2a 15.523

× 0.3 × 0.3

A1 + A2 107.502 + 107.502

(m2)

107.502

L3 8.700

+ L2b + 15.523

L1b 9.190 85.64 (m3)

3. LEAN CONCRETE:	

NOTE: S=0.8 × 4.5 × 4 IS AREA WOOD PILE TOE OF SLOPE

(100m)

172.92

 $\times 25 \times 3:100$ $\times 25 \times 3:100$

 $(0.8 \times 4.5 \times 4)$ 14.400

+ S2 + + 108.0816 +

S1 108.082

* L=3/M

₩3=

5. SAND BEDDING:

$$= (51 + 52 + 53 + 54 + 55 + 56 + 57.496 + 37.496 + 37.496 + 37.496 + 37.496 + 37.496 + 37.496 + 37.496 + 37.496 + 37.496 + 37.496 + 37.496 + 37.496 + 37.496 + 37.496 + 37.496 + 37.496 + 428.184 + (0.8 \times 4.5 \times 4) \times 0.15 = (108.082 + 37.496 + 37.496 + 37.496 + 37.496 + 428.184 + (0.8 \times 4.5 \times 4) \times 0.15 = (37.496 +$$

(m3)

6. STONE MASONRY

				(bi is area of head wall)
-		<u> </u>		3.360 (m2)
		(m2	(m2)	99
m2)	m2)	133	134	3.3
_		= 0.133	o	11
0.087	0.063	11	II	_
		9.0	0.15	11.200
11	H	×	×	
0.5	0.5	0.5 x	0.5 x	, x
		×	×	0.300
×	×	<u>. </u>	~	Ħ
0.25	0.25	0.371	1.088	3
×	×	+	+	×
0.695	0.5	0.071	869.0	0.300
		_	. 🖵	
a]=	a2=	a3=	a4=	=[q

										(m3)						
										3.902			(m3)			
								(m3)	(Em3)	l i	(m3)	(m3)	93.301			
					·			2.369	2.369	x 5 x 4	40.690	43.970	⊘ i			
										~	ji it	e u	H H			
									ii	+ 0.133	COS(26.56) 0.894	COS(26.56) 0.894	V3b 43.970	÷		
	(m2)	(m2)	(m2)	(m2)	(m2)	(m2)			·			• • • • •	+ +		•	
	56.7066	56.7066	56.7066	56.7066	= 35.455	= 47.182 (m2)	(m2)	27.273	27.273	(0.063	× 0.25 × 0.25	× 0.25 × 0.25	V3a 40.690			
	9 II	n k	ja II	11 11	-			×	×	II	. ~ ~		+ +			
	× 0.5 × 0.5	× 0.5 × 0.5	x 0.5 x 0.5	× 0.5 × 0.5	1,300	1.730	900.9	0.087	0.087	4	b3a 56.7066	b3b 56.7066	V2 3.902			·
·	L3 8.700	L3 8.700	1.3	L3 8.700	×	×	U .)) II	κλ	+ +	+ +	+ +			
	× × ,	× ×	× ×	× ×	27.273	27.273	8			×	b2a 56.7066	b2b 56.7066	V1b 2.369			
			~ ~	~ ~	н	u	×			~	+ +	+ +	+ +			
	5.000	5.000	5.000	5.000	L4a	L4b	rC	T.8a	L8b	a3	b1 3.360	b1 3.360	V1a 2.369			
	+ +	+ +	+ +	+ +	×	· ×	×	. ×	×	+	1 1	1 1				
•	L6a 8.036	L6b 8.036	L7a 8.036	L7b . 8.036	L8a	1.86	9.0	a T	a1	a2 .	b4a 35.455	b4b 47.182				
er e	h2a= (= (62b= (= (b3a= (= (b3b= (h4a=	<u>국</u>	Þ5≔	VIa=	V1b=	V2= (V3a= (V3b= (TOTAL ==			
				·			٠									
						2	- 12	2 -	9			•				

			23.407 (m3)		25.375	(m3)							
		II	Ħ	Ħ	11								
(m3)	(m3)	COS(26.56)	0.894	COS(26.56)	0.894								
3.653	3.653	••			••		(m3)						
e6 -	ró	0.15	0.15	0.15	0.15		ت						
9	II	×	×	×	×		56.09						
			<u> </u>		<u> </u>	<u> </u>		٠.					
27.273	27.273	b5	90009	p2	9.000	VSh	25.375						
× .	×	•		. 1		. +	†			(m2)	÷		(m2)
0,134	0.134	b3a	56.7066	929 939	56.7066	V5.9	23.407			62.092 (m2)			62.092 (m2)
H	II	+	+	+	+	+	+		IJ	8		11	II.
		b2a	56.7066	b2b	56.7066	V4b	3.653	٠	2	7		2	7
		+	+	+	+	+	+		×	×		×	×.
L8a	T8b	b1	3.360	P.I	3.360	. V4a	3.653		X 1	X	-	×	X 1
×	×	•	•			_			<u></u>	_		_	
a4	a4	b4a	35.455	54 b	47.182				L2b)	15.523			15.523
V4a=	V4b=	V5a = (<u> </u>	V5b= (. 11	- IATAT		8. FORM:	= (L2a +	(15.523 +	9. SCAFFOLDING:	= (L2a +	(15.523 +
			2	-	12	: -	10						

6. BASE BEDDING:

2.13. Box culvert at station 4+640

Γī	BOX CULVERT STATI	ON 4+640	QUANTITIES
	Ľ	= 15.123 + 23.493 + 0.02 = 38.636	
1	CULVERT		
+	CONCRETE (M3)		
	S1	$= 7.400 \times 5.350 - 4.500 \times 6.500 + 2 \times 0.500 \times 0.500 =$	10.840
	S2	= 1.800 x 0.300 + 0.300 x 0.300 : 2 =	0.585
1	S	= S1 + S2 =	11.425
	VOLUME	= S x (15.123 + 23.493) + 7.400 x 0.200 x 0.300 x 2 =	442.08
		SINGLE BOX CULVERT	
		7400	
ŀ		\$ ₁ 5500 1500	
		S1	
		sad s2	
1		3 8 1 1500 1500 2700	
		\$ 2	
	FORM (M2)		1120.67
*	INSIDE FORM (M2)		664.674
	BOX BULWARK	$= (4.500 + 2 \times 0.500 \times (1.5IN45^{\circ} - 1)) \times 38.616 \times 2 =$	379.578
	BOTTOM OF THE BOX	= (6.500 - 0.500 x 2) x 38.616 x 1 =	212.388
	RETAINING WALL	$= (1.800 + (1.SIN45^{\circ} - 1) \times 0.200) \times 38.62 =$	72.708
*	OUTSIDE FORM (M2)		455.995
	BOX BULWARK	= 5.350 x 2 x 38.616 + 4 x 0.300 x 0.200 =	413.431
1	THE END OF CULVERT	$= S \times 2 : SIN65^{\circ} + 7.400 \times 0.200 \times 4 = $	31.139
	CENTER OF CULVERT	= S	11.425
			227
.	SCAFFOLDING (M2)	= 5.350 x 2.000 x 38.616 + 4.000 x 0.300 x 0.200 =	<u>413.43</u>
	SUPPORT		
	AREA (M2)	= 7.400 x 5.350 - S =	28.165
	VOLUME (M3)	= AREA x L	1088.18
ŀ			
1			
1			
L			·

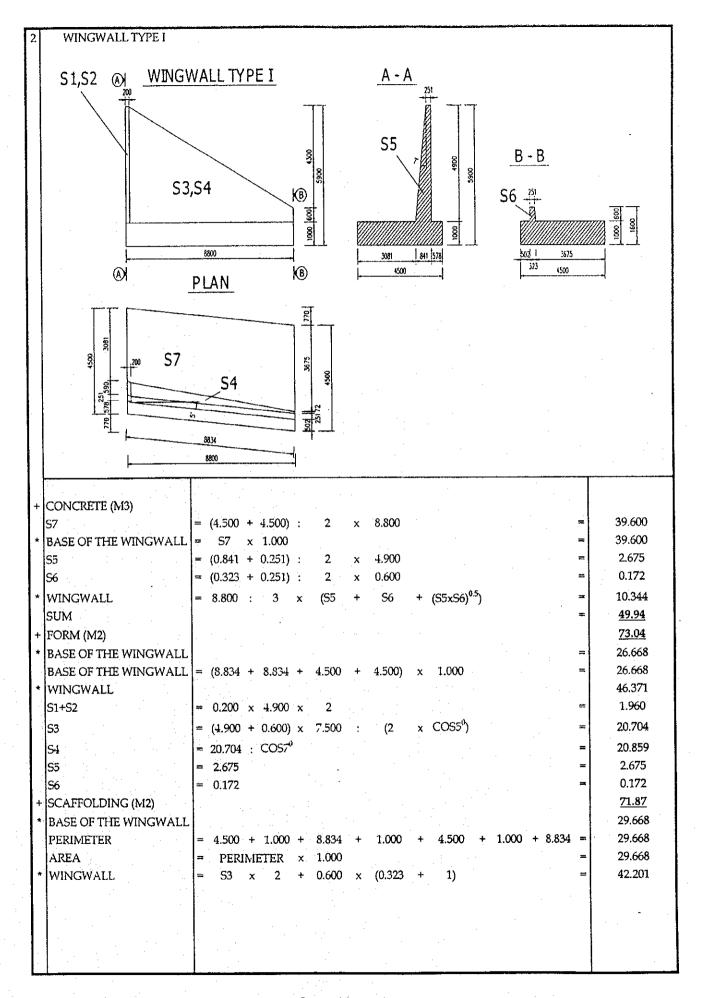
BOXCULVERT STATION 04+640 QUANTITIES TABLE OF REINFORCEMENT

SEGMENT 1

SYMBOL	UNIT LENGTH	SPACE	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT
OF BAR	(mm)						·····
1a		(mm)	(mm)	OF BAR	(kg/m)	(m)	(kg)
	9220	250	25	108	3.853	995.8	3837.0
1b	9635	250	25	15	3.853	144.5	556.9
2	5210	250	20	106	2.466	552.3	1362.0
3a	8349	250	25	53	3.853	442.5	1705.2
3b	9045	250	25	14	3.853	126.6	488.0
4a	8134	250	25	108	3.853	878.5	3385.1
4b	8885	250	25	15	3.853	133.3	513.6
5a	3970	250	12	108	0.888	428.8	380.7
5b	4380	250	12	30	0.888	131.4	116.7
6a	8217	250	20	53	2.466	435.5	1074.0
6b	8903	250	20	14	2.466	124.6	307.4
7	5 77 0	250	16	123	1.578	709.7	1120.2
8a	1 99 1	250	12	108	0.888	215.0	190.9
8b	2154	250	12	15	0.888	32.3	28.7
9a	2062	250	12	108	0.888	222.7	197.7
9b	2232	250	12	15	0.888	33.5	29.7
10	1660	250	12	30	0.888	49.8	11.2
11	8011	250	12	2	0.888	16.0	14.2
12	4800	250	12	60	0.888	288.0	255.7
13	1567	250	12	60	0.888	94.0	83.5
14	15868	250	12	60	0.888	952.1	845.2
15	14331	250	12	36	0.888	515.9	458.0
16	17605	250	12	36	0.888	633.8	562.7
17	15481	250	12	14	0.888	216.7	192.4
18	15968	250	12	60	0.888	958.1	850.6
19	1510	250	14	302	1.208	456.0	551.1
20	1540	250	12	302	0.888	465.1	412.9
REINFORC	EMENT: D	<=14	· · · · · · · · · · · · · · · · · · ·	5214.8	TOTAL FOR SE		714.7
REINFORC	EMENT: 16=	D<=25		14349.1	REINFORCEME	ENT (KG):	19564.0
REINFORC	EMENT: 25	<d=32< td=""><td></td><td>0.0</td><td>CONCRETE (M</td><td></td><td>173.22</td></d=32<>		0.0	CONCRETE (M		173.22

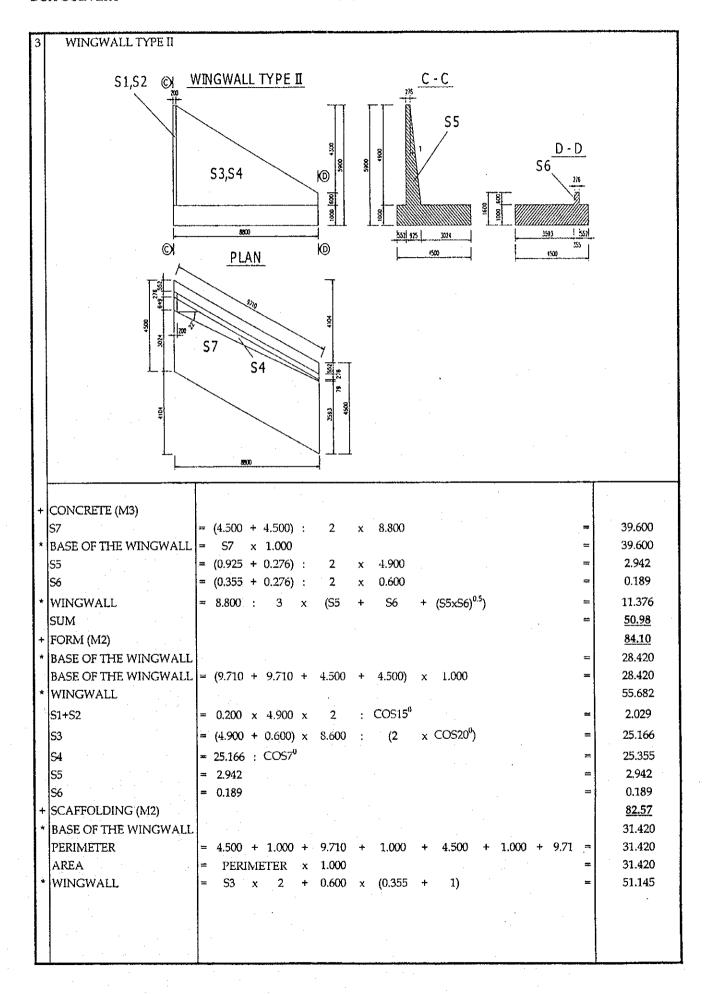
SEGMENT 2

				SEGMEN	11.2		in the first section are sa-
SYMBOL	UNIT LENGTH	SPACE	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT
OF BAR	(mm)	(mm)	(mm)	OF BAR	(kg/m)	(m)	(kg)
1a	9220	250	25	176	3.853	1622.72	6252.9
1b	9635	250	25	15	3.853	144.52	556.9
2	5210	250	- 20	174	2.466	906.54	2235.7
3a	8349	250	25	87	3.853	726.40	2799.1
3Ъ	9045	250	25	14	3.853	126.64	488.0
-₄a	8134	250	25	176	3.853	1431.58	5516.4
4b	8885	250	25	15	3.853	133.28	513.6
5a	3970	250	12	176	0.888	698.72	620.3
5b	4380	250	12	30	0.888	131.40	116.7
6a	8217	250	20	87	2.466	714.86	1763.0
6b	8903	250	20	14	2.466	124.64	307.4
7	5770	250	16	191	1.578	1102.07	1739.4
8a	1991	250	12	176	0.888	350.45	311.1
8b	2154	250	12	15	0.888	32.31	28.7
9a	2062	250	12	176	0.888	362.90	322.2
9b	2232	250	12	15	0.888	33.47	29.7
10	1660	250	12	30	0.888	49.80	44.2
11	8011	250	12	2	0.888	16.02	14.2
12	4800	250	12	94	0.888	451.20	400.6
13	1567	250	12	94	0.888	147.29	130.8
14	23873	250	12	60	0.888	1432.38	1271,7
15	22337	250	12	36	0.888	804.11	713.9
16	25610	250	12	36	0.888	921.94	818.5
17	23487	250	12	14	0.888	328.81	291,9
18	23353	250	12	60	0.888	1401.18	1244.0
19	1510	250	14	470	1.208	709.70	857.6
20	1540	250	12	470	0.888	723.80	642.6
REINFORC	EMENT: I)<=14		7858.7	TOTAL FOR SE		0.12.0
REINFORC	EMENT: 16=	D<=25		22172.2	REINFORCEMI		30030.9
REINFORC	EMENT: 25	<d=32< td=""><td>1 1</td><td>0.0</td><td>CONCRETE (M</td><td></td><td>268.85</td></d=32<>	1 1	0.0	CONCRETE (M		268.85
			TOTAL	FOR SEGI	MENT 1 & 2	7	200.00
REINFORC		>=14	· 		REINFORCEMI	ENT (KG):	49594.9
		D<=25		36521.4			2,0,14.7
REINFORC	EMENT: 25	<d=32< td=""><td></td><td>0.0</td><td>CONCRETE (M</td><td>³):</td><td>442.08</td></d=32<>		0.0	CONCRETE (M	³):	442.08
	-		2	10	3		



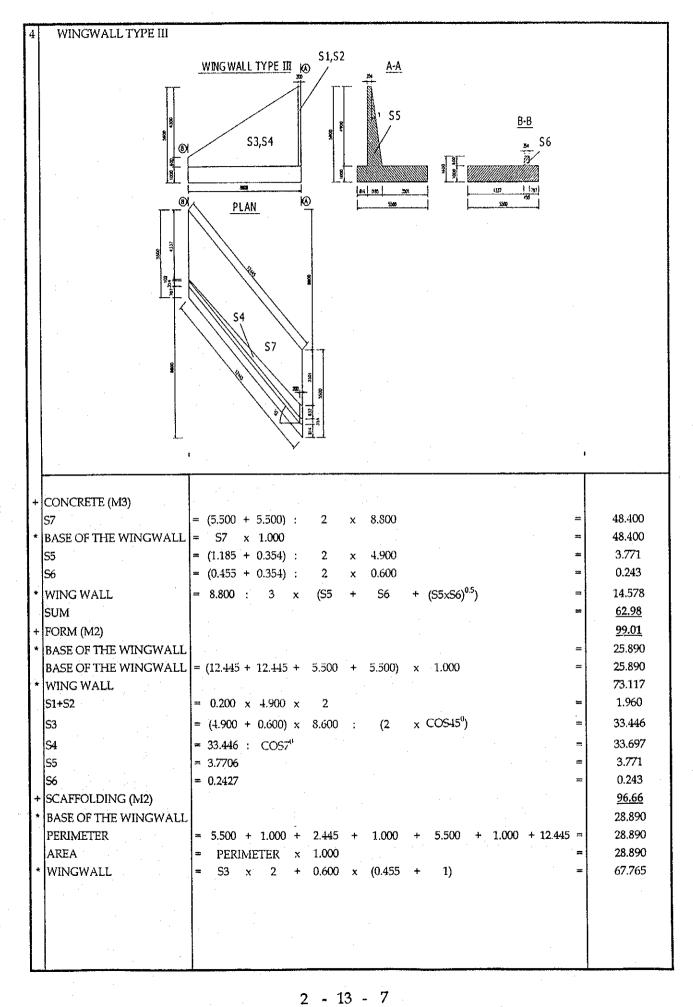
BOX CULVERT STATION 4+640 REINFORCEMENT OF WINGWALL TYPE I

	UNIT LENGTH	DIAMETER	NUMBER	UNIT WEIGHT	NUMBER UNIT WEIGHT TOTAL LENGTH TOTAL WEIGHT	TOTAL WEIGHT
BAK MAKK	(MM)	(MM)	OF BAR	(KG/M)	(M)	(KG)
1a	3849	12	45	0.888	173.2	153.8
. 1b	3980	18	45	1.998	1,79.1	357.8
	8963	12	9	0.888	53.8	47.7
2b	4897	12	42	0.888	205.7	182.6
2c	552	12	45	0.888	24.8	22.1
3	9917	12	2	0.888	19.8	17.6
4	9795	12	46	0.888	450.6	400.0
5a	6147	12	42	0.888	258.2	229.2
5b	3888	12	3	0.888	11.7	10.4
<u>ئ</u> ر	5141	22	7t.	2.984	215.9	644.3
54	2882	22	3.	2.984	9.6	25.8
9	2944	14	112	1.208	329.7	398.4
7	4808	12	4	0.888	19.2	17.1
8	4808	12	9	0.888	28.8	25.6
6	8721	12	9	0.888	52.3	46.5
10	1304	14	16	1.208	20.9	25.2
11	871	12	24	0.888	20.9	18.5
12	2931	12	3	0.888	8.8	7.8
		REINFORCEMENT:	ENT:	D=<14	1602.5 KG	KG
		REINFORCEMENT:	ENT:	14< D<=25	1027.9 KG	KG
		TOTAL REINFORCEMENT:	ORCEMEN	. L7	2630.4 KG	KG



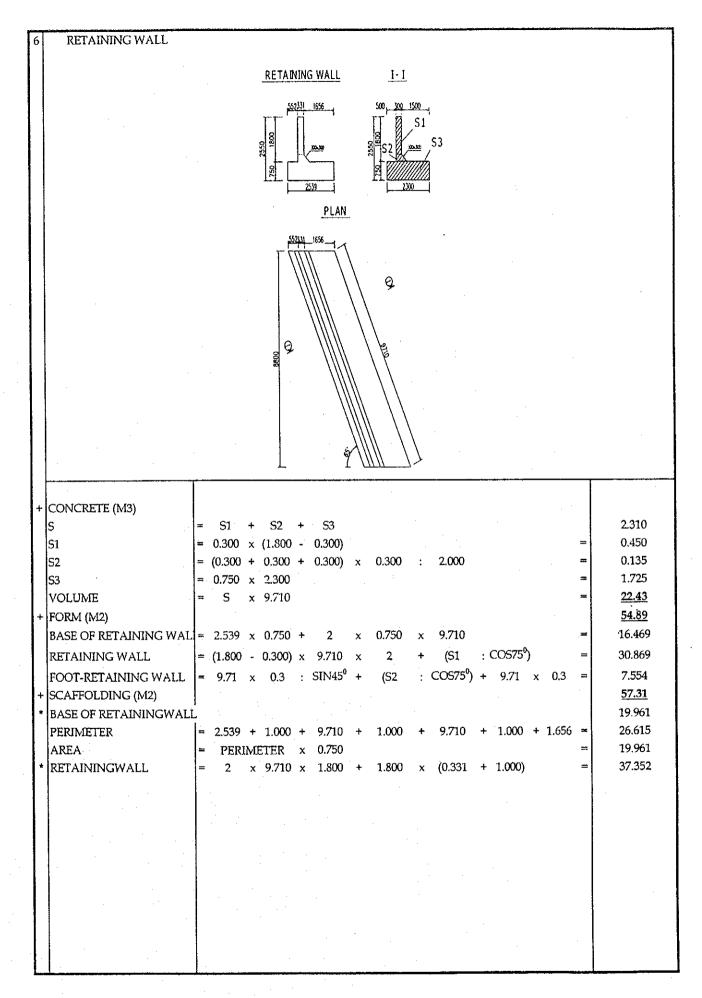
BOX CULVERT STATION 4+640 REINFORCEMENT OF WINGWALL TYPE II

	UNIT LENGTH	DIAMETER	NUMBER	UNIT WEIGHT	NUMBER UNIT WEIGHT TOTAL LENGTH TOTAL WEIGHT	TOTAL WEIGHT
BAR MARK	I ~	(MM)	OF BAR	(KG/M)	(M)	(KG)
Ja	3850	12	49	0.888	188.6	167.5
1b	3986	18	49	1.998	195.3	390.2
	9823	12	9	0.888	58.9	52.3
2b	5358	12	42	0.888	225.0	199.8
2c	552	12	49	0.888	27.0	24.0
3	10861	12	2	0.888	21.7	19.3
4	10660	12	42	0.888	447.7	397.5
5a	5742	12	39	0.888	223.9	198.8
5b	3880	12	17	0.888	66.0	58.6
50	4736	22	36€;	2.984	184.7	551.2
5d	2874	22	35.45 SE	2.984	48.8	145.8
9	2944	14	103	1.208	303.2	366.4
7	4796	12	4	0.888	19.2	17.0
8	4796	12	9	0.888	28.8	25.5
6	9286	12	9	0.888	57.5	51.1
10	1304	14	16	1.208	20.9	25.2
11	927	12	24	0.888	22.2	19.7
12	3314	12	3	0.888	9.9	8.8
•		REINFORCEMENT:	ENT:	D=<14	1631.6 KG	KG
		REINFORCEMENT	ENT:	14< D<=25	1087.1 KG	KG
		TOTAL REINFORCEMENT	FORCEME	. L7	2718.7 KG	KG



BOX CULVERT STATION 4+640 REINFORCEMENT OF WINGWALL TYPE III

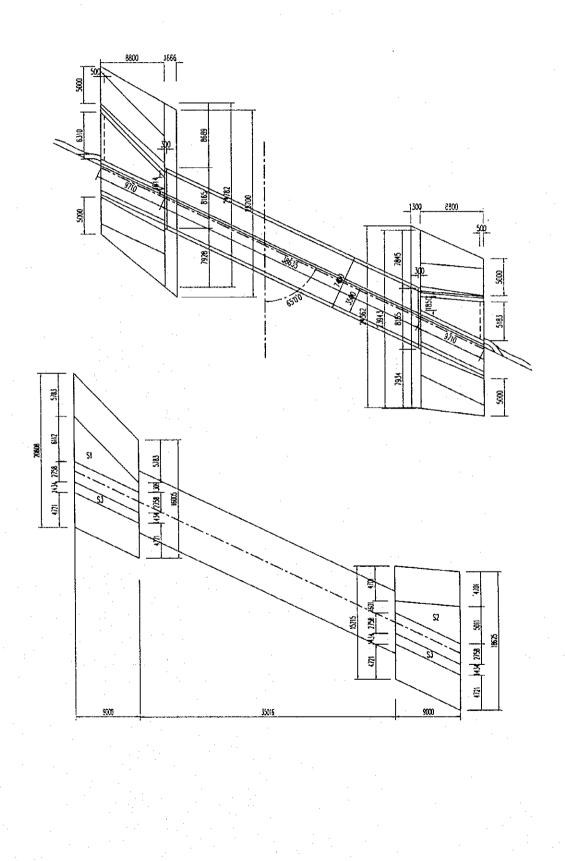
		DIANCTED	NITINARED	THULL WEIGHT	NITMBER LINIT WEIGHTTOTAL I ENGTH TOTAL WEIGHT	TOTAL WEIGHT
BAR MARK	OIVII CENGILI	CANALIEN	OFRAD	(KG/M)	(M)	(KG)
	(MIN)	(IVIIVI)	Or DAIN	(100/101)	(far)	(2)
la	3851	12	62	0.888	238.7	211.9
1b	4007	18	62	1.998	248.4	496.2
2a	12873	12	9	0.888	77.2	68.6
25.1	6209	12	40	0.888	260.4	231.2
262	11293	12	2	0.888	22.6	20.1
2c	552	12	62	0.888	34.2	30.4
3	14176	12	2	0.888	28.4	25.2
4	13726	12	40	0.888	549.0	487.4
5a	5553	12	42	0.888	233.2	207.1
55	3808	12	36	0.888	137.1	121.7
5c	4547	22	42	2.984	191.0	569.9
5d	2802	22	36	2.984	100.9	301.0
9	2944	14	145	1.208	426.9	515.8
7	5762	12	4	0.888	23.0	20.5
8	5762	12	9	0.888	34.6	30.7
6	12652	12	9	0.888	75.9	67.4
10	1304	14	16	1.208	20.9	25.2
11	1101	12	24	0.888	26.4	23.4
12	3425	12	4	0.888	13.7	12.2
		REINFORCEMENT:	ENT:	D=<14	2098.7 KG	KG
		REINFORCEMENT:	ENT:	14< D<=25	1367.1 KG	KG
		TOTAL REINFORCEMENT	ORCEME	.T.	3465.8 KG	KG



BOX CULVERT STATION 4+640 REINFORCEMENT OF RETAINING WALL

KG	1064.6 KG	T :	OTAL REINFORCEMENT	TOTAL REIN		
0.0 KG	0.0	14< D<=25	ENT	REIFORCEMENT		
KG	1064.6 KG	D<=14	ENT	REIFORCEMENT		
35.7	40.2	0.888	4	12	10046	8
20.4	23.0	0.888	8	12	2875	7
141.8	117.3	1.208	48	14	2444	9
186.0	209.5	0.888	20	12	10474	S
27.9	31.4	0.888	16	12	1964	4b
240.1	270.4	0.888	88	12	3073	4a
61.0	68.7	0.888	49	12	1402	33.
113.2	127.5	0.888	14	12	9110	2
238.6	268.7	0.888	49	12	5484	,
(KG)	(M)	(KG/M)	OF BAR	(MM)	(MM)	
TOTAL WEIGHT	TOTAL LENGTH	UNIT WEIGHT	NUMBER	DIAMETER	BAR MARK UNIT LENGTH	BAR MARK

BOX CULVERT FOR PATH & DRAINAGE (STATION KM 4+640)



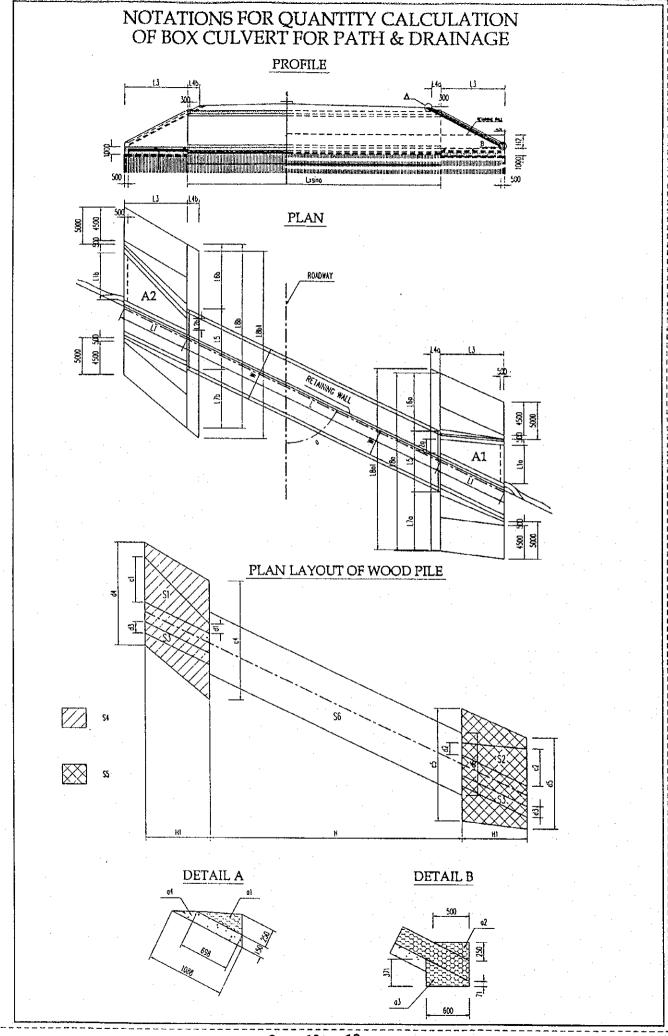


TABLE OF EXPLAINING QUANTITIES OF CULVERT CULVERT KM 4 + 640

	SI=	(C	+	당	$\widehat{}$	×	Ξ		7	II		(m2)						
	=IS	(6.11	+	1.309	<u> </u>	×	9.000	••	2	lt	33.395	(m2)						
	S2 −	. (c2	+	42		×	HI		2	11	-	(m2)						
	S2==	(5.01	+	1.601		×	9.000		2	Ħ	29.754	(m2)						
	3	(. +	d4	^	×	H1			ti		(m2)	•				٠	
	<u>%</u>	(0.91)	(S)	20.808	8	×	9.000		2	D .	165.659	(m2)	-					
	S5==		+	d5.		×	HI		7	11		(m2)						
	S5=	(15.2	15 +	18.625	2.	×	9.000		2	11	152.280	(m2)						
	=ES	d3	×	Ħ		1			(m2)									
	S3=	1.48	×	9.000	_	Ŋ	12.906		(m2)									
	=9S	H	×	9p		U			(nn2)								-	
	=9S	35.0	36 x	8.386		H	293.644		(m2)									
	1. APRON CONCRETE:	ONCON	CRET	įij	٠				:									
٠																		
	A1=	_	+ a	. L2a	^	×	ជ		2.00	IJ		(m2)						
	ATæ		+	1.850	_	×	8.800		2.00	П	30.945	(m2)						
	A2=		+	. L2b		×	E3		2.00	n		(m2)						
	A2=	_	+ 01	1.614	_	×	8.800	••	2.00	11	34.866	(m2)						
	 V	_	+	. A2		×	+	+	\	0.700	×	0.500	× (<u> </u>	Lia	+ L1b	=	
	Α =	(30.945	45 +	. 34.866	(9	×	0.300	+	<u> </u>	0.700	×	0.500	×	_	5.183	+ 6.310	=	23.766
	200	(Opene)		YOUT VO	7 20 1	Task its	P.T.				٠							
	5. CO.	CMELL		2. CONCRETE FOUNDATION OF C	5													
	ir.	L ×		w +0.2)	×	0.2 =	38.635	×	7.600	×	0.2	11	58.725		(m3)			
	1 H	2 I EAN CONBETE.	C7.C															
	100 m	N COLVE												٠				
	ii O	~ &	ا ۔	SS	+		SS	1	S			×	0.100	0	11			
	= 5	(165.659	- 629	12.90	+ 9	. 15	152.280	1	12.906	90	<u> </u>	×	0.10	0	n	29.213	(m3)	
				•														

(m3)

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653.278 (100m)			•			
H II						
(2×53))× (25×5:100) 25.812)× 1.250		(100m)		(100m)	(100m)	
- (2×S3) - 25.812		77.520			2.880	
	11	II		II	U	
- S2 - 29.754	$) \times (25 \times 3 : 100)$) × 0.75		100:000	100.000	
S1 33.395	$(0.8\times4.5\times4)$	14.400			:	80.400 (100m)
	+	+		2.0	2.0	Ħ
S6 293.644		25.812		3.000 ×	× 25.000 × 3.000 ×	W31)
+ +	+	+		×	×	+
55 152.280	25	29.754	٠	25.000	25.000	W3
+ +	+	+		×	×	Ų
	(S1	(33.395	CTION	/S)	(1.920	TAL =
$\frac{L=5M}{W5=}$ $W5=$ $W5=$ $L=3M$	W3=	W3=	PROTE	W31=		OT

NOTE: S=0.8 x 4.5 x 4 IS AREA WOOD PILE TOE OF SLOPE

5. SAND BEDDING:

u	H				
0.150	0.150				
×	×				
$(0.8\times4.5\times4)$	14.400	-	(m3)	0.576 (m3)	94.473 (m3)
+	+		II	H	11
S6	293.644		2.000)	2.000)	K1)
+	+		×	×	+
SS	152.280		0.150	0.150	×
. +	+		×	×	_
K = S4	= (165.659	PROTECTION	K1= (S7	(1.920	TOTAL =

(m3)

93.897

6. STONE MASONRY

. :					1				0
0.698	×	0.250		×	0.500			H	0.08/
0.500	×	0.250		×	0.500			Ц	0.063
0.071	.+	0.371	_	×	0.500	×	0.600	11	0.133
0.698	+			×	0.500	×	0.150	1	0.134
0.300	×		11		(m2)				
0300	>		n	2.450	(m2)				

(m2) (m2) (m2)

```
(m3)
(m3)
(m3)
                                                                                                   (m3)
(m3)
                                                                                  COS(26.565)
0.894
                                                                          COS(26.565)
0.894
                                                                                                x
x
V3b
13.647
                                                                          0.250
0.250
0.250
0.250
                                                          (m3)
(m3)
(m3)
60.232
                    56.910
                                     31.398
                                             41.485 6.000
                             56.883
                                                         2.126
2.199
                                                                     3.902
×
×
                                                         24.362
25.200
4.000
4.000
b1
2.450
b1
2.450
0.500
0.500
0.500
0.500
0.500
0.500
0.500
0.500
0.500
0.500
0.500
1.3 8.800 1.3 8.800 1.3 8.800 1.44 1.300 1.660 2.000 2.000
                                                          0.087
0.087
5.000
5.000
5.000
5.000
5.000
5.000
5.000
5.000
5.000
1.8a1
1.8b1
1.8b1
25.200
5.000
                                                         L8a1
L8b1
a3
0.133
b3a
56.910
b3b
56.883
                                                                                               0.600
0.600
Vla
2.126
                                                         L6a
8.689
L7a
1.7a
7.934
L7b
7.928
L8a
23.943
L8b
0.600
```

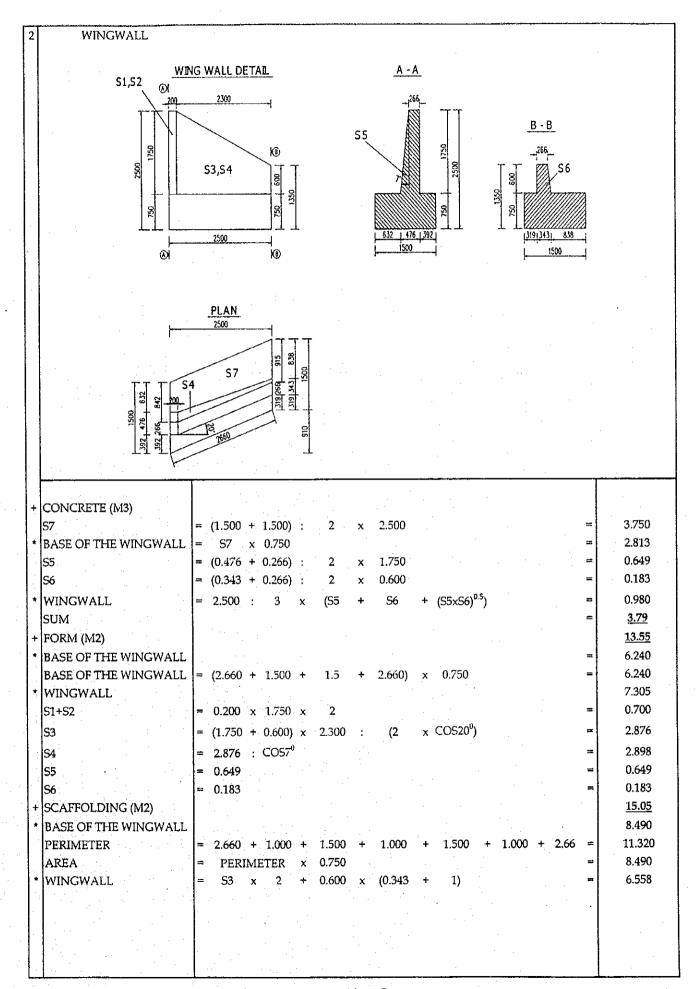
				(m3)		(m3)																					
				22.872		25.182																					
	(m3)	(m3)	H	ÌI	Ħ	tt																					
	= 3.263	= 3.376	: COS(26.565)	. 0.894	: COS(26.565)	: 0.894					(m3)	55.408 (m3)							(Em3)	(m3)			•				
			0.150	0.150	0.150	0.150					=									= 284.470							
			×	×	x	×					V5c	0.716							~			٠					
			~	~	^	<u> </u>					+	+					(m3)		0.400	0.400	."			(m2)			(m2)
	24.362	25.200	P2	6.000	52	000.9					V5b	25.182					81.277		1	•				22.986			22.986
	×	×	1		•	•		(m3)	0.716 (m3)		+	+				II	H		H2	1.800			11	II.		Я	H ·
	0.134	0.134	b 1	2.450	19	2.450	٠	S)	= 0.716		V5a	22.872				x 0.400	× 0.400		×) ×			x 2	x 2		×	× .
	ı	II		,	1			· ·	<u> </u>		+	+		÷		W1	3.500		W	3.500				1		.	_
		•	+ b4a	+ 31.398	+ b4b	+ 41.485		× 2.000	× 2.000		+ V4b	+ 3.376	4			×	×		×	×			×	×		×	×
	L8a1	L8b1	b3a	56.910	p3b	56.883		0.150	0:150		V4a	3.263				2 × L1	19.420		$2 \times L1$	19.420			L1b	6.310		L1b	6.310
Ö	×	×	+	+ &	+	+ 2		×	×	•	Ų	<u> </u>				+	+		+	+			+	+	اق	+	+
7. BASE BEDDING:		-	V5a= (b2a	= (56.518	V5b = (b2b)	= (60.232	PROTECTION	V5c= (S8	(2.39		TOTAL =			8. PATH	a. LATERITE	M= ((38.635	b. SAND FILL) "Z	(38.635		9. FORM:	= (L1a	(5.183	10. SCAFFOLDING:	= (L1a	(5.183

2.14. Box culvert at interchang 2
- ramp "A" - station 0+300

'	BOX CULVERT STATION L =		QUANTITIES
1	CULVERT		
	CONCRETE (M3)	· · · · · · · · · · · · · · · · · · ·	
1		$3.100 \times 2.050 - 2.500 \times 1.500 + 2 \times 0.100 \times 0.100 =$	2.625
	VOLUME =		26.94
Ì	V CEGINE	S X S SINOV X SINOV X SINOV X I	30.71
		SINGLE BOX CULVERT	
		3100	
		S 300 1 2500 1 300 S	
		1500	
4	FORM (M2)		104.77
- 1	INSIDE FORM (M2)		55.313
		$= (1.500 + 2 \times 0.100 \times (1.5IN45^{0} - 1)) \times 10.120 \times 2 =$	32.037
	1	= (2.500 - 0.100 x 2) x 10.120 x 1 =	23.276
,	OUTSIDE FORM (M2)		49.462
	1	= 2.050 x 2 x 10.120 + 4 x 0.300 x 0.200 =	41.732
		$= S \times 2 + 3.100 \times 0.200 \times 4 =$	<u> </u>
		= 2.050 x 2.000 x 10.120 + 4.000 x 0.300 x 0.200 =	i
- 1	SUPPORT		
	1	= 3.100 × 2.050 - S =	3.730
	1 1	= AREA x L ==]
1	A OFFINE (MY2)	TINETY X C	<u>37.75</u>
1	VOCOME (MS)	MILIT A C	<u>37.75</u>
	VOLUME (MD)	MILIT A C	<u>37.75</u>
	VOLUME (MS)	TINEN A C	<u>37.75</u>
	VOLUME (MS)	TINELY X	<u>37.75</u>
	VOLUME (MS)		<u>37.75</u>
	VOLUME (M3)		<u>37.75</u>
	VOLUME (MS)		<u>37.75</u>

BOXCULVERT AT INTERCHANGE 2-RAMP "A" 0+300 QUANTITIES TABLE OF REINFORCEMENT

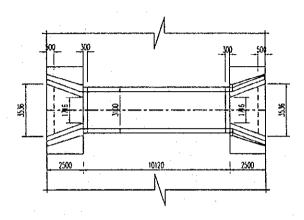
SYMBOL	UNIT LENGTH	SPACE	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT
OF BAR	(mm)	(mm)	(mm)	OF BAR	(kg/m)	(m)	(kg)
1	3660	250	12	82	0.888	300.12	266.5
2	1930	250	12	80	0.888	154.40	137.1
3	3648	250	16	40	1.578	145.92	230.3
4	3400	250	12	82	0.888	278.80	247.5
5	1970	250	12	82	0.888	161.54	143.4
6	5349	250	14	40	1.208	213.96	258.6
7	2350	250	12	82	0.888	192.70	1 <i>7</i> 1.1
8	1049	250	12	82	0.888	86.04	76.4
9	1120	250	12	82	0.888	91.84	81.5
10	1440	250	12	28	0.888	40.32	35.8
- 11	2980	180	12	4	0.888	11.92	10.6
12	10260	250	12	28	0.888	287.28	255.1
13	10360	250	12	52	0.888	538.72	478.3
14	1180	250	12	121	0.888	142.78	126.8
15	1280	250	12	121	0.888	154.88	137.5
REINFORC	CEMENT: I)<=14		2426.0	TOTAL FOR SI	EGMENT 1:	
REINFORC		D<=25		230.3	REINFORCEM	ENT (KG):	2656.3
REINFORC	TEMENT: 25	<d=32< td=""><td></td><td></td><td>CONCRETE (N</td><td>(\mathbf{I}^3):</td><td>26.94</td></d=32<>			CONCRETE (N	(\mathbf{I}^3) :	26.94

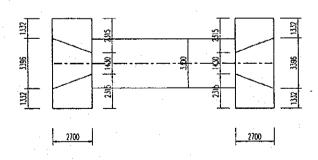


BOX CULVERT AT INTERCHANG 2-RAMP "A" 0+300 REINFORCEMENT OF WINGWALL

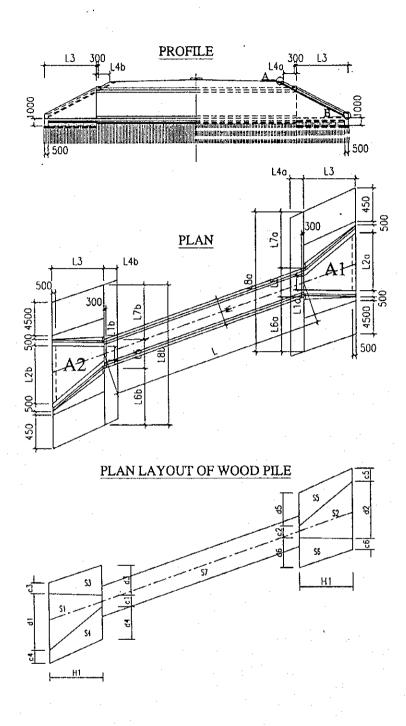
DANK MARK (MM) 1a 2011 1b 2060 2a 2651 2b 1552 3 3005 4 3378 5a 3824 5b 1867 5d 1291 6 2444 7 1814 8 1814 9 2554 10 1304 77 1304	(MM) 12 12 12 12 12 12 12 12 12	OF BAR 15 15 6 6 12 15 2 2 16 11	(KG/M) 0.888 1.208 0.888 0.888	(M) 30.2	(KG)
		15 15 6 6 12 15 15 16 11 4	0.888 0.888 0.888 0.888	30.2	
		15 6 6 12 15 2 2 16 11 11	1.208 0.888 0.888		26.8
	12 12 12 12 12 12 12 12 12 12 12	6 12 15 2 2 16 11 4	0.888	30.9	37.3
	12 12 12 12 12 12 12 12 12	12 15 2 2 16 11 4	0.888	15.9	14.1
	12 12 12 12 20	15 2 16 11 4	0.888	18.6	16.5
	12 12 20	2 16 11 4		8.7	7.8
	12 12	16	0.888	6.0	5.3
	12 12	11	0.888	54.0	48.0
	12	4	0.888	42.1	37.3
	00		0.888	7.5	6.6
	7	11	2.466	35.7	88.1
	20	4,	2.466	5.2	12.7
	14	8	1.208	19.6	23.6
	12	4	0.888	7.3	6.4
	12	4	0.888	7.3	6.4
	12	4	0.888	10.2	9.1
	14	5	1.208	6.5	7.9
	12	6	0.888	6.5	5.8
12 1791	12	-1	0.888	1.8	1.6
	REINFORCEMENT:		D=<14	260.7 KG	KG
	REINFORCEMENT:		14< D<=25	100.8 KG	KG
	TOTAL REINFORCEMENT	EMENT:		361.5 KG	KG

BOX CULVERT FOR DRAINAGE (STATION 0+300 RAMP "A" INTERCHANGE 2)

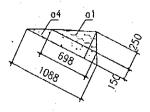




NOTATIONS FOR QUANTITY CALCULATION OF BOX CULVERT FOR DRAINAGE



DETAIL A



DETAIL B

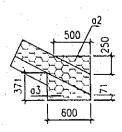


TABLE OF EXPLAINING QUANTITIES OF CULVERT

CULVERT KM0+300 RAMP"A" INTERCHANGE 2

					٠			-														5.53	-
																					II	11	
	(m2)		(m2)		(m2)		(m2)		(m2)		(m2)					-		(m2)		(m2)) × 0.45 × 0.5) × 0.45 × 0.5	
	6.515		6.515		4.625		4.625		4.625		4.625							6.565		6.565	1.26	3.536	-
1	н	ij	11	B	Ħ	11	11	II	II	II	11 -						II	Ħ	ā	li	+	+	
5	7	7	7	7	2	7	2	7	2	2	7		(m2)				7	7	2	7		36	,
•			•••							••			92					••	•		2	3.536	
H	2.700	H	2.700	H	2.700	H	2.700	Ħ	2.700	H	2.700		33.396				E3	2.500	[3	2.500	+	+	•
×	×	×	×	×	×	×	×	×	×	×	×			٠			×	×	×	×	× 0.3	x 0.3	
· 	_	<u> </u>	<u>~</u>	~	~	~	$\widehat{}$	<u> </u>	<u> </u>	~	~	# ()	IJ				^	· _ ·		`	_	~	
, LD	3.396	d 2	3.396	G	1.713	d4	1.713	d5	1.713	9 p	1.713	(W + 0.2)	3.300				L2a	3.536	[2b	3.536	A2	6.565	
+	+	+	+	+	+	+	+	+	+	+	+	×	×				+	+	+	+	+	+	
ซ	1.430	23	1.430	හ	1.713	64	1.713	ც	1.713	90	1.713		10.120		RETE:		Lla	1.716	L16	1.716	V V	6.565	
) =IS		S2= () II	S3== (_ =	S4= (=	.) =58) II) ==9S	III	S7=	H		1. APRON CONCRETE:		A1= (=	A2= ("	
			Ξ,				-		*				-										

(m3)

(Em) 89'9

0.7

= 10.120

0.2

 $L \times (W + 0.2) \times$

2 CONCRETE FOUNDATION OF CULVERT:

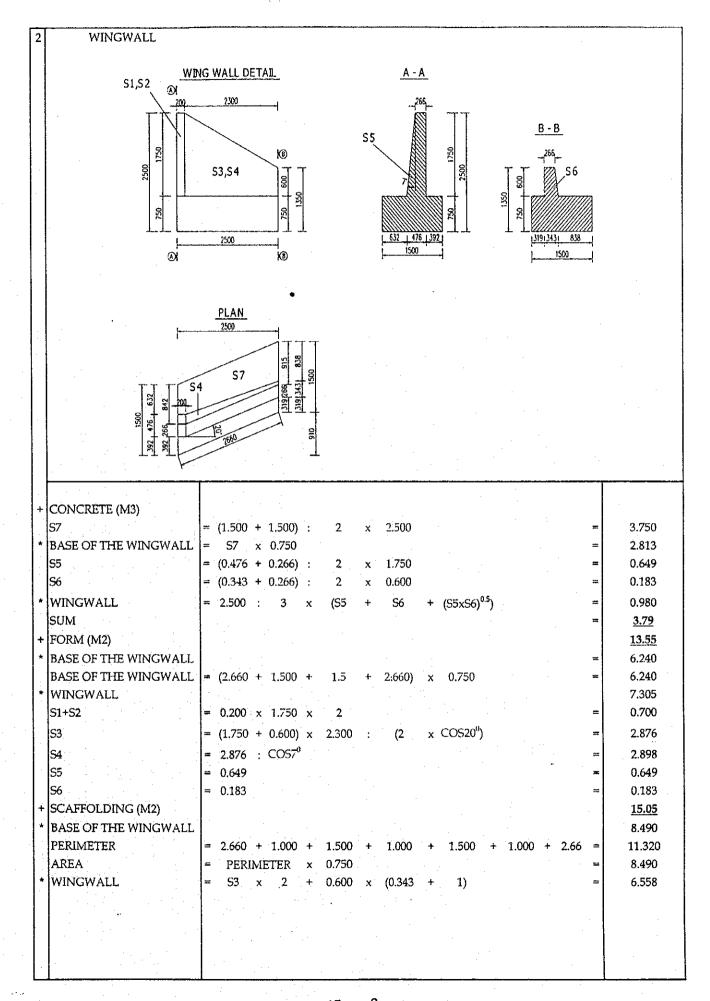
			(100m)	•			}}		
	(m3)		2) x 0.15 =) x 0.15 =		
	3.15		64.87		• .				
	II II		H II	(100m)			57 33.396		
	0.1		88	•			3 88		
	× ×		×25×5:100 ×25×5:100	9.77			+		
	S6 4.625		× ×				S6 4.625		
	+ +			II II			+ +		
	S5 4.625	,	57 33.396	1:100		٠.			
	+ +		+ +	$\times 25 \times 3:100$ $\times 25 \times 3:100$			S5 4.625		- -
	S4 4.625		6 25	~~			+ + .	(m2)	(m2)
	S 4.6		S6 4.625				S4 4.625	10.608 (m2)	10.608 (m2)
	,+ +		+ +	_ 0	SLOPE		2, 4,		
	S3 4.625		S5 4.625	0.000	DE OF		+ +	11 11	ll 11
	4		ू स		PILE TO	•	S3 4.625	44	7 7
	+ +		+ +	+ +	00D I		+ +	××	××
•	S2 6.5151		54 4.625	S2 6.5151	EA W		S2 6.515	X 0.75 X 0.75	X 0.75 X 0.75
	+ +		+ +	+ +	4 IS A		+ +		~ ~
μij	S1 6.515		S3 4.625	S1 6.515	NOTE: S≈0.8 × 4.5 × 4 IS AREA WOOD PILE TOE OF SLOPE		S1 6.515	L2b) 3.536	L2b) 3.536
VCRET	<u> </u>	ப்	≅ ~ ~ ≅	; 	Ē: S≂0.{	DING	9		
NCO	n H	DD PII	W5 = 0 $W5 = 0$ $W5 = 0$	W3==	NOTI	D BED	<u> </u>	M (12a + (3.536 +	FFOLDIN (L2a + (3.536 +
3. LEAN CONCRETE:		4. WOOD PILE	· .		٠,	5. SAND BEDDING:	IL ĮI	6. FORM = (3	7. SCAFFOLDING = (1.2a + (3.536 +
	e ^r	٠	· ·	•					
				2 -	14 -	8			

2.15. Box culvert at interchang 2 – ramp "B" – station 0+220

I	BOX CULVERT STATIO	ON 0+220 RAMP B = 10.120	QUANTITIES
1	CULVERT		
1			
}	CONCRETE (M3)	3100 . 3000 . 3000 . 4000	2.05
	S	= 3.100 x 2.050 - 2.500 x 1.500 + 2 x 0.100 x 0.100 =	1
	VOLUME	= S x L + 3.100 x 0.200 x 0.300 x 2	= <u>26.94</u>
	-	SINGLE BOX CULVERT	
		3100	
		300 2500 700	
		- 8 300 11 2500 S	
		1200	
+	FORM (M2)		104.77
i	INSIDE FORM (M2)		55.313
	BOX BULWARK	$= (1.500 + 2 \times 0.100 \times (1.5IN45^{\circ} - 1)) \times 10.120 \times 2$	= 32.037
	BOTTOM OF THE BOX		= 23.276
*	OUTSIDE FORM (M2)	,	49.462
1	BOX BULWARK	= 2.050 x 2 x 10.120 + 4 x 0.300 x 0.200	= 41.732
		1	i
].	THE END OF CULVERT		= 7.730
1	SCAFFOLDING (M2)	= 2.050 x 2.000 x 10.120 + 4.000 x 0.300 x 0.200	= <u>41.73</u>
+	SUPPORT		
'	AREA (M2)	= 3.100 x 2.050 - S	= 3.730
	VOLUME (M3)	= AREA x L	= <u>37.75</u>
		·	
١.			1
	•		!

BOXCULVERT AT INTERCHANGE 2-RAMP "B" 0+220 QUANTITIES TABLE OF REINFORCEMENT

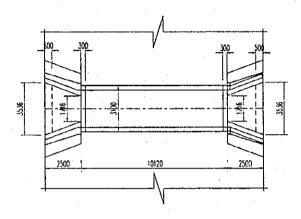
SYMBOL	UNIT LENGTH	SPACE	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	TOTAL WEIGHT
OF BAR	(mm)	(mm)	(mm)	OF BAR	(kg/m)	(m)	(kg)
1	3660	250	12	82	0.888	300.12	266.5
2	1930	250	12	80	0.888	154.40	137.1
3	3648	250	16	40	1.578	145.92	230.3
4	3400	250	12	82	0.888	278.80	247.5
5	1970	250	12	82	0.888	161.54	143.4
6	5349	250	14	40	1.208	213.96	258.6
7	2350	250	12	82	0.888	192.70	171.1
8	1049	250	. 12	82	0.888	86.04	76.4
9	1120	250	12	82	0.888	91.84	81.5
10	1440	250	12	28	0.888	40.32	35.8
11	2980	180	12	.4	0.888	11.92	10.6
12	10260	250	12	28	0.888	287.28	255.1
13	10360	250	12	52	0.888	538.72	478.3
14	1180	250	12	121	0.888	142.78	126.8
15	1280	250	12	121	0.888	154.88	137.5
REINFOR	CEMENT:	D<=14		2426.0	TOTAL FOR S	EGMENT 1:	
REINFOR	CEMENT: 16	=D<=25		230.3	REINFORCEM	MENT (KG):	2656.3
REINFOR	CEMENT: 2	5 <d=32< td=""><td></td><td></td><td>CONCRETE (I</td><td>M³):</td><td>26.94</td></d=32<>			CONCRETE (I	M³):	26.94

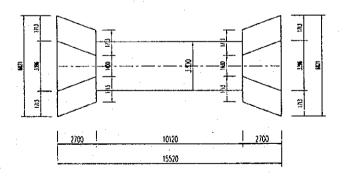


BOX CULVERT AT INTERCHANG 2-RAMP "B" 0+220 REINFORCEMENT OF WINGWALL

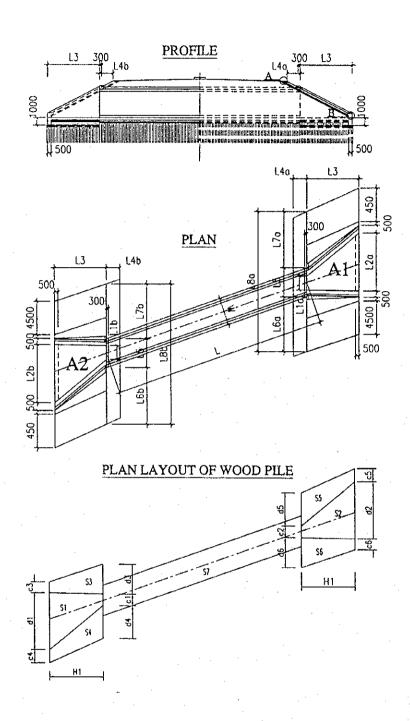
DANNAPH	UNIT LENGTH	DIAMETER	NUMBER	UNIT WEIGHT	TOTAL LENGTH	NUMBER UNIT WEIGHT TOTAL LENGTH TOTAL WEIGHT
AMAINI MAG	(MM)	(MM)	OF BAR	(KG/M)	(M)	(KG)
. 1a	2011	12	15	0.888	30.2	26.8
16	2060	14	15	1.208	30.9	37.3
2a	2651	12	9	0.888	15.9	14.1
2b	1552	12	12	0.888	18.6	16.5
2c	582	12	15	0.888	8.7	7.8
3	3005	12	2	0.888	6.0	5.3
4	3378	12	16	0.888	54.0	48.0
5a	3824	12	Π	0.888	42.1	37.3
5b	1867	12	4	0.888	7.5	9:9
5c	3248	20	11	2.466	35.7	88.1
5d	1291	20	4	2.466	5.2	12.7
9	2444	14	8	1.208	19.6	23.6
7	1814	12	4	0.888	7.3	6.4
8	1814	12	4	0.888	7.3	6.4
6	2554	12	4	0.888	10.2	9.1
10	1304	14	5	1.208	6.5	7.9
11	724	12	6	0.888	6.5	5.8
12	1791	12	1	0.888	1.8	1.6
		REINFORCEMENT	Γ.	D=<14	260.7 KG	KG
		REINFORCEMENT:	ſ:	14< D<=25	100.8 KG	KG
		TOTAL REINFORCEMENT:	CEMENT:		361.5 KG	KG

BOX CULVERT FOR DRAINAGE (STATION 0+220 RAMP "B" INTERCHANGE 2)

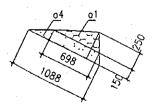




NOTATIONS FOR QUANTITY CALCULATION OF BOX CULVERT FOR DRAINAGE



DETAIL A



DETAIL B

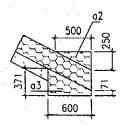


TABLE OF EXPLAINING QUANTITIES OF CULVERT

CULVERT KM0+220 RAMP"B" INTERCHANGE 2

																					5.53	
																				II	IJ	
	(m2)	-	(m2)		(m2)		(m2)		(m2)		(m2)					(m2)		(m2)	()	$) \times 0.45 \times 0.5$	$) \times 0.45 \times 0.5$	
	6.515		6.515		4.625		4.625		4.625		4.625					6.565		6 565		L2b	3.536	
II	II	II	II	a ·	U	II	11	II	ıt	Ħ	11				11	B	. !!	II		+	+	
7	7	7	2	2	7	7	7	7	7	7			(m2)		2	7	Ç	1 0	į	g	36	
	••		.,		•;	••			··		••		98						•	H	3.536	
H1	2.700	H	2.700	HI	2.700	H	2.700	H	2.700	H	2.700		33.396		E3	2,500	2) 1005 c		+	→ +	
×	×	×	×	×	×	×	×	×	×	 ×	×		Ž.		×	×	>	· < >	<	× 0.3	× 0.3	•
_	· ~	~	~	·	~	·	- -	_	~	<u></u>	~	- 11	H		_	~	-	~ ~	`	^	<u> </u>	
d 1	3.396	d 2	3.396	d3	1.713	d4	1.713	d5	1.713	9p	1.713	(W + 0.2)	3,300		Ľ2a	3.536		457 F	200	A2	6.565	
+	+	+	+	+	+	+	+	+	+	+	+	×	×		+	+	. +	. +	-	+	+	
て	1.430	7	1.430	භ	1.713	55 55	1.713	5	1.713	93	1.713	J	10.120	RETE:	Lla	1.716	. 1. 1.	71.7		A1	6.565	
) =[S) 	S2= (11) =83 83=	ıı	S4= (ì	S ₂ = (11) =98		=2.5 	H	1. APRON CONCRETE:	A1= () _C V) =	I .		<u> </u>	
					1				٠.				_				•					

(m3)

6.68 (m3)

0.2

3.300

= 10.120

0.2

 $L \times (W + 0.2) \times$

2. CONCRETE FOUNDATION OF CULVERT:

3.15 (m3)		64.87 (100m)) x 0.15 =) x 0.15 =		·
0.1 = 0.1		\$ II	(100m)			57 33.396		
S6) × 0 4.625) × 0		×25×5:100 ×25×5:100	<u>9.77</u>			S6 + 4.625 +		
+ +		S7) 33.396)	11 II			+ +		
+ 55 + 4.625		+ +	×25×3:100 ×25×3:100			S5 4.625		
54 4.625		S6 4.625	~~	: .		+ +	10.608 (m2)	10.608 (m2)
+ +		+ + .	0.000	TOE OF SLOPE		+ \$4 + 4.625	10	110.
S3 4.625	·	S5 4.625		PILE TOE (S3 4.625	2 2	0 0
S2 + 6.5151 +		S4 + 4.625 +	S2 + 6.5151 +	NOTE: S=0.8 × 4.5 × 4 IS AREA WOOD PILE T		S2 + 6.515 +	X 0.75 × X 0.75 ×	X 0.75 × X 0.75 ×
+ +		. + +	++	4 IS AF		.+ +	~~	~ ~
S1 6.515		S3 4.625	S1 6.515	0.8 × 4.5 ×	<u>ن</u>	S1 6.515	L2b) 3.536	L2b) 3.536
11 #	4. WOOD PILE:) = (M ₂ = (W ₂ = (W3= (W3= (NOTE: S=	5. SAND BEDDING:		6. FORM = (L2a + (3.536 +	2. SCAFFOLDING = (L2a + (3.536 +