



JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)



MINISTRY OF PUBLIC WORKS  
REPUBLIC OF INDONESIA

**DETAILED DESIGN STUDY  
OF  
NORTH JAVA CORRIDOR FLYOVER PROJECT  
IN THE REPUBLIC OF INDONESIA**

**FINAL REPORT  
QUANTITY CALCULATION**

**PACKAGE II  
(NAGREG - GEBANG)**

**DECEMBER 2006**



**KATAHIRA & ENGINEERS INTERNATIONAL**



JAPAN INTERNATIONAL  
COOPERATION AGENCY



DIRECTORATE GENERAL OF HIGHWAY  
MINISTRY OF PUBLIC WORKS  
REPUBLIC OF INDONESIA

DETAILED DESIGN STUDY  
OF  
NORTH JAVA CORRIDOR FLYOVER PROJECT  
IN THE REPUBLIC OF INDONESIA

QUANTITY CALCULATION  
NAGREG FLYOVER

CONTRACT PACKAGE 2  
( NAGREG - GEBANG )



KATAHIRA & ENGINEERS INTERNATIONAL

**THE NORTH JAVA CORRIDOR FLYOVER PROJECT  
QUANTITY CALCULATION  
NAGREG FLYOVER**

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**DIVISION 1.**  
**General**



**DIVISION 2.**  
**Drainage**

CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared	Sheet : 1 of 1
PROJECT : NAGREG FLYOVER NORTH JAVA CORRIDOR FLYOVER PROJECT		BACK UP DRAINAGE	
KATAHIRA AND ENGINEERS INTERNATIONAL			
DRAWING NO :		ESTIMATOR :	CHECKED BY :
SKETCH DRAWING	CALCULATION		REMARKS
Drainage Schedule at Flyover	<b>Drawing No. NDV 001:</b> Drainage Schedule - Deck drain Type II ( L ) = 6 Each - Deck drain Type II ( R ) = 4 Each - PVC dia 200 mm = 88.1 M Approach 1 - Deck drain Type II ( L ) = 9 Each - Deck drain Type II ( R ) = 11 Each - PVC dia 200 mm = 56.24 M Approach 2 - Deck drain Type II ( L ) = 4 Each - Deck drain Type II ( R ) = 7 Each - PVC dia 200 mm = 29.2 M		
Drainage Schedule Under Flyover	<b>Drawing No. NDV 002 :</b> - Uditch DS 1 = 92.3 M - Uditch DS 5 = 560 M - PVC dia 250 mm = 210.2 M - RCP dia 600 mm = 38.9 M ( Type B ) - Manhole Type VII = 13 Each - Manhole Type VIII = 2 Each - Catch Basin Type I = 7 Each		
<b>SUMMARY QUANTITY OF DRAINAGE</b>	<b>Drawing No. NDG 001 :</b> Drainage Slope Right - Uditch DS 3 = 808.2 M - Uditch DS 3A = 12.5 M - RCP dia 800 mm = 93 M ( Type A ) - RCP dia 800 mm = 68.2 M ( Type B ) - Manhole Type I = 41 Each - Manhole Type II = 0 Each - Manhole Type III = 4 Each - Manhole Type IV = 1 Each - Manhole Type V = 4 Each - Manhole Type VI = 0 Each Drainage Slope Left - Uditch DS 3 = 808.7 M - RCP dia 800 mm = 96.8 M ( Type A ) - Manhole Type I = 27 Each - Manhole Type II = 0 Each - Manhole Type III = 4 Each - Manhole Type IV = 1 Each - Manhole Type V = 7 Each - Manhole Type VI = 1 Each		
- PVC Drain Pipe dia 150 mm	0.00 M		
- PVC Drain Pipe dia 200 mm	173.54 M		
- PVC Drain Pipe dia 250 mm	210.20 M		
- RCP dia 600 mm ( Type B )	38.90 M		
- RCP dia 800 mm ( Type A )	93.00 M		
- RCP dia 800 mm ( Type B )	68.20 M		
- Manhole Type I	68.00 Each		
- Manhole Type II	0.00 Each		
- Manhole Type III	8.00 Each		
- Manhole Type IV	2.00 Each		
- Manhole Type V	11.00 Each		
- Manhole Type VI	1.00 Each		
- Manhole Type VII	13.00 Each		
- Manhole Type VIII	2.00 Each		
- Catch Basin Type I	7.00 Each		
- Uditch DS 1	92.30 M		
- Uditch DS 3	1616.99 M		
- Uditch DS 3A	12.50 M		
- Uditch DS 5	560.00 M		
- Deck Drain Type I	0.00 Each		
- Deck Drain Type II	41.00 Each		
- Steel Gutter	0.00 M		
- Outer Gutter	0.00 M		

CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared	BACK UP QUANTITY OF MORTARED STONE WORK		Sheet : of				
PROJECT : NAGREG FLYOVER									
NORTH JAVA CORRIDOR FLYOVER PROJECT									
KATAHIRA AND ENGINEERS INTERNATIONAL									
DRAWING NO :			ESTIMATOR :		CHECKED BY :				
SKETCH DRAWING			CALCULATION		REMARKS				
<p style="text-align: center;">MORTARED STONE WORK TYPE II</p>			PROJECT : NAGREG FLYOVER						
			Drawing NDG - 001 ( Drainage Schedule at grade )						
			DMH to DMH	Heigh	Length	Area	Quantity		
				M	M	Sq.M	Cu. M		
			DMH-12	DMH-11	1.022	14.000	1.298	18.166	Type II
			DMH-25	DMH-24	0.946	12.000	1.237	14.842	Type II
			DMH-21	DMH-20	0.985	13.000	1.268	16.484	Type II
			DMH-91	DMH-91A	0.952	9.000	1.242	11.174	Type II
			TOTAL				60.666		
			QUANTITY OF MORTARED STONWORK =				60.666	Cu. M	



**DIVISION 3.**  
**Earthworks**

CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared 9/21/2006 16:49	Sheet : of		
PROJECT : NAGREK PROJECT NORTH JAVA CORRIDOR FLYOVER PROJECT					
KATAHIRA AND ENGINEERS INTERNATIONAL					
DRAWING NO : NRS-019, NRD-020, NRD-021, NRD-022, NRD-023, NRD024		ESTIMATOR :	CHECKED BY :		
SKETCH DRAWING		CALCULATION Nagrek Fly Over - Contract Package 2			REMARKS
Item No. 3.1(1) - Clearing and Grubbing					
<b>MAIN ROAD / FLYOVER</b>					
STA	LEFT SIDE WIDTH	AVE. LEFT WIDTH	LENGTH	AREA	
0+000.000	0.000	0.000	0.000	0.000	
0+013.264	1.205	0.603	13.264	7.992	
0+032.852	1.608	1.407	19.588	27.551	
0+040.000	1.985	1.797	7.148	12.841	
0+052.279	2.095	2.040	12.279	25.049	
0+060.000	2.369	2.232	7.721	17.233	
0+080.000	3.784	3.077	20.000	61.530	
0+100.000	4.963	2.482	20.000	49.630	
0+120.000	5.242	5.103	20.000	102.050	
0+140.000	4.725	4.984	20.000	99.670	
0+874.000	10.476	10.476	0.000	0.000	
0+960.460	4.200	4.209	0.460	1.936	
0+962.253	5.050	4.625	1.793	8.293	
0+962.865	7.535	6.292	0.612	3.851	
0+965.772	8.894	8.214	2.907	23.879	
0+966.601	6.181	7.538	0.829	6.249	
0+969.129	3.497	4.839	2.528	12.233	
0+971.486	2.557	3.027	2.357	7.135	
1+000.000	1.625	2.091	28.514	59.623	
1+020.000	0.244	0.935	20.000	18.690	
1+031.307	0.000	0.122	11.307	1.379	
SUB TOTAL LEFT AREA				1,509.095	
STA	RIGHT SIDE WIDTH	AVE. RIGHT WIDTH	LENGTH	AREA	
-0+008.283	0.000	0.000	0.000	0.000	
0+000.000	0.882	0.441	8.283	3.653	
0+020.000	1.672	1.277	20.000	25.540	
0+040.000	2.780	2.226	20.000	44.520	
0+060.000	4.465	3.623	20.000	72.450	
0+080.000	7.037	5.751	20.000	115.020	
0+100.000	9.605	8.321	20.000	166.420	
0+120.000	1.306	5.456	20.000	109.110	
0+140.000	12.787	7.047	20.000	140.930	
0+000.000	0.000	0.000	0.000	0.000	
SUB TOTAL RIGHT AREA				677.643	
<b>SERVICE ROAD</b>					
STA	LEFT SIDE WIDTH	AVE. LEFT WIDTH	LENGTH	AREA	
0+140.000	4.725	2.363	0.000	0.000	
0+160.000	4.085	4.405	20.000	88.100	
0+180.000	2.358	3.222	20.000	64.430	
0+200.000	0.830	1.594	20.000	31.880	
0+214.000	0.000	0.415	14.000	5.810	
0+254.096	0.000	0.000	40.096	0.000	
0+260.000	0.264	0.132	5.904	0.779	
0+280.000	1.195	0.730	20.000	14.590	
0+300.000	1.616	1.406	20.000	28.110	
0+320.000	1.852	1.734	20.000	34.680	

CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared 9/21/2006 16:49		Sheet : of		
PROJECT : NAGREK PROJECT NORTH JAVA CORRIDOR FLYOVER PROJECT						
KATAHIRA AND ENGINEERS INTERNATIONAL						
DRAWING NO : NRS-019, NRD-020, NRD-021, NRD-022, NRD-023, NRD024		ESTIMATOR :		CHECKED BY :		
SKETCH DRAWING		CALCULATION Nagrek Fly Over - Contract Package 2				REMARKS
Item No. 3.1(1) : Clearing and Grubbing						
0+340.000	2.063	1.958	20.000	39.150		
0+360.000	2.482	2.273	20.000	45.450		
0+380.000	3.134	2.808	20.000	56.160		
0+400.000	3.054	3.094	20.000	61.880		
0+420.000	3.763	3.409	20.000	68.170		
0+440.000	4.483	4.123	20.000	82.460		
0+460.000	4.800	4.642	20.000	92.830		
0+480.000	4.764	4.782	20.000	95.640		
0+500.000	4.910	4.837	20.000	96.740		
0+520.000	4.763	4.837	20.000	96.730		
0+540.000	4.095	4.429	20.000	88.580		
0+560.000	3.883	3.989	20.000	79.780		
0+580.000	3.786	3.835	20.000	76.690		
0+600.000	1.417	2.602	20.000	52.030		
0+607.942	0.000	0.709	7.942	5.627		
0+616.323	0.000	0.000	8.381	0.000		
0+616.715	0.896	0.448	0.392	0.176		
0+619.000	0.190	0.543	2.285	1.241		
0+620.000	1.140	1.018	3.285	3.344		
0+621.792	11.820	6.460	1.792	11.612		
0+625.448	7.606	9.713	3.656	35.511		
0+626.779	1.814	0.907	0.000	0.000		
0+627.761	0.000	0.907	0.982	0.891		
0+634.731	0.000	0.000	6.970	0.000		
0+640.000	1.674	0.837	5.269	4.410		
0+660.000	4.823	3.249	20.000	64.970		
0+663.042	5.278	5.051	3.042	15.364		
0+680.000	4.990	5.134	16.958	87.062		
0+698.601	4.998	4.994	18.601	92.893		
0+700.000	5.315	5.157	1.399	7.214		
0+703.016	7.844	6.580	3.016	19.844		
0+703.973	12.189	10.016	0.957	9.586		
0+717.307	11.648	11.918	13.334	158.918		
0+718.552	6.567	9.108	1.245	11.339		
0+720.000	5.773	6.170	1.448	8.934		
0+720.330	5.597	5.685	0.330	1.876		
0+723.262	4.969	5.283	2.932	15.490		
0+740.000	5.002	4.986	16.738	83.447		
0+749.990	4.991	4.997	9.990	49.915		
0+754.282	6.890	5.941	4.292	25.497		
0+755.889	11.399	9.145	1.607	14.695		
0+779.132	11.783	11.591	23.243	269.410		
0+780.000	8.300	10.042	0.868	8.716		
0+781.007	6.782	7.541	1.007	7.594		
0+784.109	5.079	5.931	3.102	18.396		
0+800.000	5.000	5.040	15.891	80.083		
0+840.000	5.000	0.000	0.000	0.000		
0+860.000	4.993	4.997	20.000	99.930		
0+874.000	4.950	4.972	14.000	69.601		
0+000.000	0.000	0.000	0.000	0.000		
SUB TOTAL LEFT AREA				2,584.254		
STA	RIGHT SIDE WIDTH	AVE. RIGHT WIDTH	LENGTH	AREA		
0+140.000	4.986	2.493	0.000	0.000		

CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared 9/21/2006 16:49	Sheet : of			
PROJECT : NAGREK PROJECT NORTH JAVA CORRIDOR FLYOVER PROJECT						
KATAHIRA AND ENGINEERS INTERNATIONAL						
DRAWING NO : NRS-019, NRD-020, NRD-021, NRD-022, NRD-023, NRD024		ESTIMATOR :		CHECKED BY :		
SKETCH DRAWING		CALCULATION				REMARKS
		Nagrek Fly Over - Contract Package 2				
		Item No. 3.1(1) - Cleaning and Grubbing				
	0+160.000	5.000	4.993	20.000	99.860	
	0+180.000	4.882	4.941	20.000	98.820	
	0+200.000	4.872	4.877	20.000	97.540	
	0+220.000	5.097	4.985	20.000	99.690	
	0+240.000	5.565	5.331	20.000	108.620	
	0+249.532	6.354	5.960	9.532	56.806	
	0+253.149	11.322	8.838	3.617	31.966	
	0+255.305	14.477	12.899	2.156	27.811	
	0+259.422	9.453	11.965	4.117	49.260	
	0+260.000	8.700	9.077	0.578	5.246	
	0+261.823	7.679	8.190	1.823	14.929	
	0+264.989	7.050	7.365	3.166	23.316	
	0+280.000	7.050	7.050	15.011	105.828	
	0+340.000	7.050	7.050	60.000	423.000	
	0+360.000	7.038	7.044	20.000	140.880	
	0+380.000	7.063	7.051	20.000	141.010	
	0+400.000	7.056	7.060	20.000	141.190	
	0+420.000	7.044	7.050	20.000	141.000	
	0+435.820	7.104	7.074	15.820	111.911	
	0+438.440	8.221	7.663	2.620	20.076	
	0+440.000	9.653	8.937	1.560	13.942	
	0+440.754	13.832	11.743	0.754	8.854	
	0+444.734	16.542	15.187	3.980	60.444	
	0+445.502	9.303	12.923	0.768	9.924	
	0+447.443	6.766	8.035	1.941	15.595	
	0+450.342	5.559	6.163	2.889	17.865	
	0+460.000	5.501	5.530	9.658	53.409	
	0+480.000	5.506	5.533	29.658	164.083	
	0+500.000	5.497	5.502	20.000	110.030	
	0+510.309	5.439	5.468	10.309	56.370	
	0+513.309	6.525	5.982	3.000	17.946	
	0+516.795	11.055	8.790	3.486	30.642	
	0+517.814	19.076	15.066	1.019	15.352	
	0+520.000	20.826	19.951	2.186	43.613	
	0+521.508	21.057	20.942	1.508	31.580	
	0+523.719	15.014	18.036	2.211	39.876	
	0+526.321	13.816	14.415	2.602	37.508	
	0+532.009	13.366	13.586	5.688	77.276	
	0+535.072	7.796	10.576	3.063	32.394	
	0+539.467	6.475	7.136	4.395	31.361	
	0+540.000	6.528	6.502	0.533	3.465	
	0+560.000	6.535	6.532	20.000	130.630	
	0+565.085	6.527	6.531	5.086	33.210	
	0+580.000	4.222	5.375	14.915	80.161	
	0+600.000	4.039	4.131	20.000	53.530	
	0+619.763	4.072	4.056	19.763	80.149	
	0+620.000	3.882	3.977	0.237	0.943	
	0+625.379	0.000	1.941	5.379	10.441	
	0+627.677	0.000	0.000	2.298	0.000	
	0+632.579	3.183	1.592	4.902	7.802	
	0+640.000	0.969	2.076	7.421	15.406	
	0+643.343	0.000	0.485	3.343	1.620	
	0+691.484	0.000	0.000	48.141	0.000	
	0+700.000	0.007	0.004	8.516	0.030	
	0+720.000	0.965	0.486	20.000	9.720	

CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared 9/21/2006 16:49		Sheet : of		
PROJECT : NAGREK PROJECT NORTH JAVA CORRIDOR FLYOVER PROJECT						
KATAHIRA AND ENGINEERS INTERNATIONAL						
DRAWING NO : NRS-019, NRD-020, NRD-021, NRD-022, NRD-023, NRD024		ESTIMATOR :		CHECKED BY :		
	SKETCH DRAWING	CALCULATION Nagrek Fly Over - Contract Package 2				REMARKS
		Item No. 3.1(1) - Clearing and Grubbing				
		0+740.000	1.304	1.135	20.000	22.690
		0+760.000	1.573	1.439	20.000	28.770
		0+780.000	1.909	1.741	20.000	34.820
		0+800.000	2.339	2.124	20.000	42.480
		0+820.000	2.030	2.185	20.000	43.690
		0+840.000	0.503	1.267	20.000	25.330
		0+852.539	0.000	0.252	12.539	3.154
		SUB TOTAL RIGHT AREA				3,432.859
		Total Area		= 8,203.85 sqm.	✓	

<b>CONSTRUCTION COST ESTIMATE WORKSHEET</b>		Date Prepared :		Sheet : 1 of 2	
PROJECT : NAGREG FLYOVER		BACK QUANTITY SELECTED TREE REMOVAL			
NORTH JAVA CORRIDOR FLYOVER PROJECT					
KATAHIRA AND ENGINEERS INTERNATIONAL					
DRAWING NO :		ESTIMATOR :		CHECKED BY	
SKETCH DRAWING		QUANTITY CALCULATION			REMARKS
		PROJECT : NAGREG FLYOVER			
		Selected Tree Removal Dia ≤ 300 mm			
		Main Road			
		Sta	L/R	Quantity	Unit
		0 + 065	R	1.00	Each
		0+ 093	R	1.00	Each
		0+ 101	R	1.00	Each
		TOTAL		3.00	Each
		Service Road			
		Sta	L/R	Quantity	Unit
		0 + 216	R	1.00	Each
		0 + 276	L	1.00	Each
		0 + 302	R	1.00	Each
		0 + 310	R	1.00	Each
		0 + 335	R	1.00	Each
		0 + 351	R	1.00	Each
		0 + 354	R	1.00	Each
		0 + 400	L R	1.00	Each
		0 + 429	L	1.00	Each
		0 + 436	L	1.00	Each
		0 + 448	R	1.00	Each
		0 + 452	R	1.00	Each
		0 + 458	R	1.00	Each
		0 + 466	R	1.00	Each
		0 + 514	R	1.00	Each
		0 + 528	L	1.00	Each
		0 + 535	L	1.00	Each
		0 + 545	R	1.00	Each
		0 + 557	R	1.00	Each
		0 + 641	R	1.00	Each
		0 + 645	R	1.00	Each
		0 + 650	L	1.00	Each
		0 + 768	L	1.00	Each
		0 + 829	L	1.00	Each
		0 + 841	L R	1.00	Each
		TOTAL		25.00	Each

<b>CONSTRUCTION COST ESTIMATE WORKSHEET</b>		Date Prepared :		Sheet : 2 of 2	
PROJECT : NAGREG FLYOVER		BACK QUANTITY SELECTED TREE REMOVAL			
NORTH JAVA CORRIDOR FLYOVER PROJECT					
KATAHIRA AND ENGINEERS INTERNATIONAL					
DRAWING NO :		ESTIMATOR :		CHECKED BY	
SKETCH DRAWING		QUANTITY CALCULATION PROJECT : NAGREG FLYOVER			REMARKS
		Selected Tree Removal Dia $\geq$ 300 mm			
		Main Road			
		Sta	L/R	Quantity	Unit
		0 + 073	R	1.00	Each
		0+ 116	R	1.00	Each
		0+ 120	L	1.00	Each
		0+ 124	L	1.00	Each
		TOTAL		4.00	Each
		Servive Road			
		Sta	L/R	Quantity	Unit
		0 + 279	L	1.00	Each
		0+ 414	L	1.00	Each
		0+ 488	L	1.00	Each
		0+ 509	R	1.00	Each
		0+ 570	R	1.00	Each
		0+ 585	R	1.00	Each
		0+ 691	R	1.00	Each
		TOTAL		7.00	Each
		<b>SUMMARY QUANTITY SELECTED TREE REMOVAL</b>			
		Selected Tree Removal Dia $\leq$ 300 mm	=	28.00	Each
		Selected Tree Removal Dia $\geq$ 300 mm	=	11.00	Each





CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared 10/4/2006 17:44			Sheet : of		
PROJECT : NAGREK PROJECT NORTH JAVA CORRIDOR FLYOVER PROJECT							
KATAHIRA AND ENGINEERS INTERNATIONAL							
DRAWING NO : NRS-019, NRD-020, NRD-021, NRD-022, NRD-023, NRD024		ESTIMATOR :			CHECKED BY :		
SKETCH DRAWING		CALCULATION Nagrek Fly Over - Contract Package 2					REMARKS
<b>Item No. 3.2 (1) - Common Excavation</b>							
<b>MAIN ROAD / FLYOVER</b>							
STA	LEFT SIDE AREA	AVE. LEFT AREA	LENGTH	VOLUME			
0+000.000	0.000	0.000	0.000	0.000			
0+013.264	1.024	0.512	13.264	6.793			
0+032.852	1.367	1.196	19.588	23.418			
0+040.000	1.687	1.527	7.148	10.915			
0+052.279	1.781	1.734	12.279	21.292			
0+060.000	2.014	1.897	7.721	14.648			
0+080.000	3.216	2.615	20.000	52.301			
0+100.000	4.219	2.109	20.000	42.186			
0+120.000	4.456	2.226	20.000	44.557			
0+140.000	4.016	2.008	20.000	40.163			
0+874.000	8.904	8.904	0.000	0.000			
0+880.000	13.627	6.814	6.000	40.882			
0+900.000	12.645	6.322	20.000	126.446			
0+920.000	10.389	5.194	20.000	103.887			
0+940.000	5.878	2.939	20.000	58.778			
0+960.000	3.585	1.793	20.000	35.853			
0+960.460	3.570	1.785	0.460	0.821			
0+962.253	4.293	2.146	1.793	3.848			
0+962.865	6.404	3.202	0.612	1.960			
0+965.772	7.560	3.780	2.907	10.988			
0+966.601	5.254	2.627	0.829	2.178			
0+969.129	2.972	1.486	2.528	3.757			
0+971.486	2.173	1.087	2.357	2.561			
1+000.000	1.381	0.691	28.514	19.692			
1+020.000	0.207	0.104	20.000	2.074			
1+031.307	0.000	0.000	11.307	0.000			
SUB TOTAL LEFT VOLUME				669.997			
STA	RIGHT SIDE AREA	AVE. RIGHT AREA	LENGTH	VOLUME			
-0+008.283	0.000	0.000	0.000	0.000			
0+000.000	0.750	0.375	8.283	3.105			
0+020.000	1.421	1.085	20.000	21.709			
0+040.000	2.363	1.892	20.000	37.842			
0+060.000	3.795	3.079	20.000	61.583			
0+080.000	5.981	4.888	20.000	97.767			
0+100.000	8.164	7.073	20.000	141.457			
0+120.000	1.110	4.637	20.000	92.744			
0+140.000	10.869	5.990	20.000	119.791			
SUB TOTAL RIGHT VOLUME				575.996			
<b>SERVICE ROAD</b>							
STA	LEFT SIDE AREA	AVE. LEFT AREA	LENGTH	VOLUME			
0+140.000	4.016	2.008	0.000	0.000			
0+160.000	3.472	3.744	20.000	74.885			
0+180.000	2.004	2.738	20.000	54.766			
0+200.000	0.706	1.355	20.000	27.098			
0+214.000	0.000	0.353	14.000	4.939			
0+254.096	0.000	0.000	40.096	0.000			
0+260.000	0.224	0.112	5.904	0.662			

CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared 10/4/2006 17:44			Sheet : of		
PROJECT : NAGREK PROJECT NORTH JAVA CORRIDOR FLYOVER PROJECT							
KATAHIRA AND ENGINEERS INTERNATIONAL							
DRAWING NO : NRS-019, NRD-020, NRD-021, NRD-022, NRD-023, NRD024		ESTIMATOR :			CHECKED BY :		
SKETCH DRAWING		CALCULATION Nagrek Fly Over - Contract Package 2					REMARKS
		<b>Item No. 3.2 (1) - Common Excavation:</b>					
	0+280.000	1.016	0.620	20.000	12.402		
	0+300.000	1.374	1.195	20.000	23.894		
	0+320.000	1.574	1.474	20.000	29.478		
	0+340.000	1.754	1.664	20.000	33.278		
	0+360.000	2.110	1.932	20.000	38.633		
	0+380.000	2.664	2.387	20.000	47.736		
	0+400.000	2.596	2.630	20.000	52.598		
	0+420.000	3.199	2.897	20.000	57.945		
	0+440.000	3.811	3.505	20.000	70.091		
	0+460.000	4.080	3.945	20.000	78.906		
	0+480.000	4.049	4.065	20.000	81.294		
	0+500.000	4.174	4.111	20.000	82.229		
	0+520.000	4.049	4.111	20.000	82.221		
	0+540.000	3.481	3.765	20.000	75.293		
	0+560.000	3.301	3.391	20.000	67.813		
	0+580.000	3.218	3.259	20.000	65.187		
	0+600.000	1.204	2.211	20.000	44.226		
	0+607.942	0.000	0.602	7.942	4.783		
	0+616.323	0.000	0.000	8.381	0.000		
	0+616.715	0.762	0.381	0.392	0.149		
	0+619.000	0.162	0.462	2.285	1.055		
	0+620.000	0.969	0.565	1.000	0.565		
	0+621.792	10.047	5.508	1.792	9.870		
	0+625.448	6.465	8.256	3.656	30.184		
	0+626.779	1.542	0.771	0.000	0.000		
	0+627.761	0.000	0.771	0.982	0.757		
	0+634.731	0.000	0.000	6.970	0.000		
	0+640.000	1.423	0.711	5.269	3.749		
	0+660.000	4.100	2.761	20.000	55.225		
	0+663.042	4.486	4.293	3.042	13.059		
	0+680.000	4.242	4.364	16.958	74.003		
	0+698.601	4.248	4.245	18.601	78.959		
	0+700.000	4.518	4.383	1.399	6.132		
	0+703.016	6.667	5.593	3.016	16.867		
	0+703.973	10.360	8.514	0.957	8.148		
	0+717.307	9.901	10.131	13.334	135.080		
	0+718.552	5.582	7.741	1.245	9.638		
	0+720.000	4.907	5.245	1.448	7.594		
	0+720.330	4.757	4.832	0.330	1.595		
	0+723.262	4.224	4.491	2.932	13.166		
	0+740.000	4.252	4.238	16.738	70.930		
	0+749.990	4.242	4.247	9.990	42.428		
	0+754.282	5.857	5.049	4.292	21.672		
	0+755.889	9.689	7.773	1.607	12.491		
	0+779.132	10.016	9.852	23.243	228.998		
	0+780.000	7.055	8.535	0.868	7.409		
	0+781.007	5.765	6.410	1.007	6.455		
	0+784.109	4.317	5.041	3.102	15.637		
	0+800.000	4.250	4.284	15.891	68.070		
	0+840.000	4.250	4.250	40.000	170.000		
	0+860.000	4.244	4.247	20.000	84.941		
	0+874.000	4.208	4.226	14.000	59.161		
	SUB TOTAL LEFT VOLUME				2,364.338		
	STA	RIGHT SIDE AREA	AVE RIGHT AREA	LENGTH	VOLUME		

CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared 10/4/2006 17:44	Sheet : of		
PROJECT : NAGREK PROJECT NORTH JAVA CORRIDOR FLYOVER PROJECT					
KATAHIRA AND ENGINEERS INTERNATIONAL					
DRAWING NO : NRS-019, NRD-020, NRD-021, NRD-022, NRD-023, NRD024		ESTIMATOR :	CHECKED BY :		
SKETCH DRAWING		CALCULATION Nagrek Fly Over - Contract Package 2			REMARKS
<b>Item No. 3.2 (1) - Common Excavation</b>					
STA	NORTH SIDE AREA	AVERAGE WIDTH	LENGTH	VOLUME	
0+140.000	4.238	2.119	0.000	0.000	
0+160.000	4.250	4.244	20.000	84.881	
0+180.000	4.150	4.200	20.000	83.997	
0+200.000	4.141	4.145	20.000	82.909	
0+220.000	4.332	4.237	20.000	84.737	
0+240.000	4.730	4.531	20.000	90.627	
0+249.532	5.401	5.066	9.532	48.285	
0+253.149	9.623	7.512	3.617	27.171	
0+255.305	12.305	10.964	2.156	23.639	
0+259.422	8.035	10.170	4.117	41.871	
0+260.000	7.395	7.715	0.578	4.459	
0+261.823	6.527	6.961	1.823	12.690	
0+264.989	5.993	6.260	3.166	19.819	
0+280.000	5.993	5.993	15.011	89.953	
0+340.000	5.993	5.993	60.000	359.550	
0+360.000	5.982	5.987	20.000	119.748	
0+380.000	6.004	5.993	20.000	119.859	
0+400.000	5.998	6.001	20.000	120.012	
0+420.000	5.987	5.993	20.000	119.850	
0+435.820	6.038	6.013	15.820	95.124	
0+438.440	6.988	6.513	2.620	17.064	
0+440.000	8.205	7.596	1.560	11.850	
0+440.754	11.757	9.981	0.754	7.526	
0+444.734	14.061	12.909	3.980	51.378	
0+445.502	7.908	10.984	0.768	8.436	
0+447.443	5.751	6.829	1.941	13.256	
0+450.342	4.725	5.236	2.859	15.185	
0+460.000	4.676	4.701	9.658	45.397	
0+480.000	4.680	4.678	20.000	93.560	
0+500.000	4.672	4.676	20.000	93.526	
0+510.309	4.623	4.648	10.309	47.914	
0+513.309	5.546	5.085	3.000	15.254	
0+516.795	9.397	7.472	3.466	26.046	
0+517.814	16.215	12.806	1.019	13.049	
0+520.000	17.702	16.958	2.186	37.071	
0+521.508	17.898	17.800	1.508	26.843	
0+523.719	12.762	15.330	2.211	33.895	
0+526.321	11.744	12.253	2.602	31.882	
0+532.009	11.352	11.548	5.688	65.684	
0+535.072	6.627	8.989	3.063	27.534	
0+539.467	5.504	6.065	4.395	26.656	
0+540.000	5.549	5.526	0.533	2.946	
0+560.000	5.555	5.552	20.000	111.036	
0+565.085	5.548	5.551	5.085	28.229	
0+580.000	3.589	4.568	14.915	68.137	
0+600.000	3.433	3.511	20.000	70.219	
0+619.763	3.461	3.447	19.763	68.127	
0+620.000	3.300	3.380	0.237	0.801	
0+625.379	0.000	1.650	5.379	8.875	
0+627.677	0.000	0.000	2.298	0.000	
0+632.579	2.706	1.353	4.902	6.631	
0+640.000	0.824	1.765	7.421	13.095	
0+643.343	0.000	0.412	3.343	1.377	
0+691.484	0.000	0.000	48.141	0.000	

CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared 10/4/2006 17:44		Sheet: of		
PROJECT : NAGREK PROJECT NORTH JAVA CORRIDOR FLYOVER PROJECT						
KATAHIRA AND ENGINEERS INTERNATIONAL						
DRAWING NO: NRS-019, NRD-020, NRD-021, NRD-022, NRD-023, NRD024		ESTIMATOR :		CHECKED BY :		
SKETCH DRAWING		CALCULATION Nagrek Fly Over - Contract Package 2				REMARKS
		<b>Item No. 3.2 (1) - Common Excavation</b>				
	0+700.000	0.006	0.003	8.516	0.025	
	0+720.000	0.820	0.413	20.000	8.262	
	0+740.000	1.108	0.964	20.000	19.287	
	0+760.000	1.337	1.223	20.000	24.455	
	0+780.000	1.623	1.480	20.000	29.597	
	0+800.000	1.988	1.805	20.000	36.108	
	0+820.000	1.726	1.857	20.000	37.137	
	0+840.000	0.428	1.077	20.000	21.531	
	0+852.539	0.000	0.214	12.539	2.681	
	SUB TOTAL RIGHT VOLUME				2,896.737	
	TOTAL	= 6,507.069 cum.				



CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared 10/4/2006 18:05	Sheet : of		
PROJECT : NAGREK PROJECT NORTH JAVA CORRIDOR FLYOVER PROJECT					
KATAHIRA AND ENGINEERS INTERNATIONAL					
DRAWING NO : NRS-019, NRD-020, NRD-021, NRD-022, NRD-023, NRD024		ESTIMATOR :	CHECKED BY :		
SKETCH DRAWING		CALCULATION Nagrek Fly Over - Contract Package 2			REMARKS
		<b>Item No. 3.1(3) - Excavation of Existing Pavement</b>			
	0.000	0.000	0+000.000	0+000.000	0.000
	0.000	0.000	0+000.000	0+000.000	0.000
	0.000	0.000	0+000.000	0+000.000	0.000
	0.000	0.000	0+000.000	0+000.000	0.000
SUB TOTAL RIGHT VOLUME					0.000
TOTAL	= 115.145 cum.				



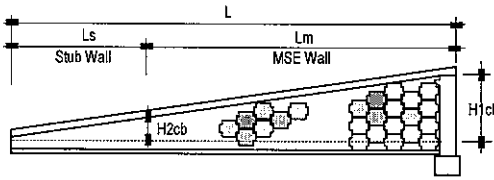
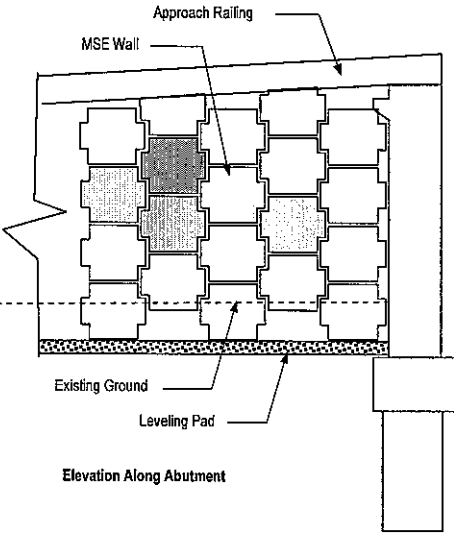
CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared : 21 - 09 - 2006	Sheet : 2 of 3	
PROJECT : NAGREG FLYOVER NORTH JAVA CORRIDOR FLYOVER PROJECT				
KATAHIRA AND ENGINEERS INTERNATIONAL				
DRAWING NO :		QUANTITY :	CHECKED BY :	
NO	DESCRIPTION	CALCULATION	QTY ( Cu M )	REMARKS
3.2 (3)	Structure Excavation to a depth not exceeding 2 m	A1		Stub Wall
		W = 1.50 m		
		L = 42.125 m		
		H = 2.00 m		
		W = 1.00 m		
		L = 42.125 m		
		H = 0.70 m		
		Quantity		
		= 1.50 x 2.00 x 42.125 x 2	252.75	
		= 1.00 x 0.70 x 42.125 x 2	58.98	
		sub total	311.73	
		A2		Stub Wall
		W = 1.50 m		
		L = 36.625 m		
		H = 1.80 m		
		W = 1.00 m		
		L = 36.625 m		
		H = 1.00 m		
		Quantity		
		= 1.50 x 1.80 x 36.625 x 2	197.78	
		= 1.00 x 1.00 x 36.625 x 2	73.25	
		sub total	271.03	
		Sub Total Stub Wall	582.75	



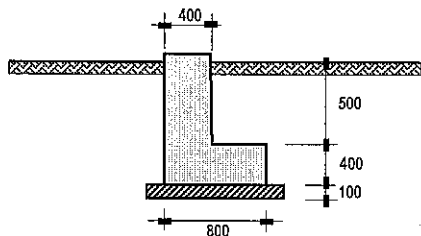




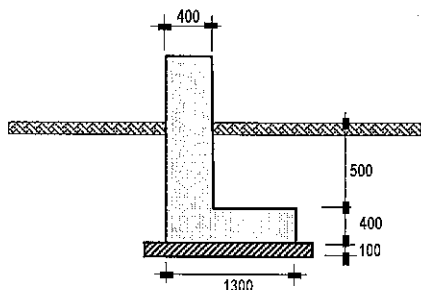
CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared 9/27/2006 14:31	Sheet : of
PROJECT : NAGREG FLYOVER NORTH JAVA CORRIDOR FLYOVER PROJECT			
KATAHIRA AND ENGINEERS INTERNATIONAL			
DRAWING NO :	ESTIMATOR :	CHECKED BY :	
SKETCH DRAWING	CALCULATION		REMARKS
Nagreg Flyover - Contract Package 2			
3.1(13) - Embankment with Materials from Borrow Excavation			
<b>I. At Abutment A1 (Sta. 0 + 140.00 - Sta. 0 + 495.25)</b>			
<b>A. Along MSE Wall (Sta 0 + 224.25 - Sta. 0 + 494.25)</b>			
<b>Input Data:</b>			
H1cb =	5.584 m.	Ht. Borrow Materials at the start of MSE Wall	
H2cb =	0.886 m.	Ht. Borrow Materials at the end of MSE Wall	
W =	12.420 m.	Width of Borrow Materials	
Lm =	270.000 m.	Total length of MSE Wall	
$\text{Volume(m)} = \left( \frac{H1cb + H2cb}{2} \right) \times W \times Lm = 10,848.25 \text{ cum.}$			
<b>B. Along Stub Wall (Sta. 0 + 140.00 - Sta. 224.25 )</b>			
<b>Input Data:</b>			
H2cb =	0.886 m.	Ht. Borrow Materials at the start of Stub Wall	
H3cb =	0.000 m.	Ht. Borrow Materials at the end of Stub Wall	
W =	12.009 m.	Width of Borrow Materials	
Ls =	84.250 m.	Total length of Stub Wall	
$\text{Volume(s)} = \left( \frac{H2cb + H3cb}{2} \right) \times W \times Lm = 448.21 \text{ cum.}$			
<b>Total Volume of Borrow Materials along Approach A</b>			
$Vta = 11,296.46 \text{ cum.}$			
Elevation Along Abutment			

CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared 9/27/2006 14:31	Sheet : of
PROJECT : NAGREG FLYOVER NORTH JAVA CORRIDOR FLYOVER PROJECT			
KATAHIRA AND ENGINEERS INTERNATIONAL			
DRAWING NO :	ESTIMATOR :	CHECKED BY :	
SKETCH DRAWING	CALCULATION		REMARKS
Nagreg Flyover - Contract Package 2			
	<b>3.1(13) - Embankment with Materials from Borrow Excavation</b>		
	<b>I. At Abutment A2 (Sta. 0 + 720.50 - Sta. 0 + 874.00)</b>		
	<b>A. Along MSE Wall (Sta 0 + 720.50 - Sta. 0 + 800.75)</b>		
	<b>Input Data:</b>		
	H1cb = 5.512 m.	Ht. Borrow Materials at the start of MSE Wall (ave.)	
	H2cb = 1.067 m.	Ht. Borrow Materials at the end of MSE Wall	
	W = 12.422 m.	Width of Borrow Materials	
	Lm = 80.250 m.	Total length of MSE Wall	
	$\text{Volume(m)} = \left( \frac{H1cb + H2cb}{2} \times W \times Lm \right) =$		<b>3,279.19 cum.</b>
	<b>B. Along Stub Wall (Sta. 0 + 800.75 - Sta. 0 + 874.00)</b>		
	<b>Input Data:</b>		
	H2cb = 1.067 m.	Ht. Borrow Materials at the start of Stub Wall	
H3cb = 0.000 m.	Ht. Borrow Materials at the end of Stub Wall		
W = 12.005 m.	Width of Borrow Materials		
Ls = 73.250 m.	Total length of MSE Wall		
$\text{Volume(s)} = \left( \frac{H2cb + H3cb}{2} \times W \times Lm \right) =$		<b>469.14 cum.</b>	
<b>Total Volume of Borrow Materials along Approach B</b>			
<b>Vtb =</b>		<b>3,748.33 cum.</b>	
<b>Total =</b>		<b>15,044.02 cum.</b>	

CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared	Sheet : of
PROJECT : NAGREG FLYOVER NORTH JAVA CORRIDOR FLYOVER PROJECT			
KATAHIRA AND ENGINEERS INTERNATIONAL			
DRAWING NO : <i>5013-016</i>	ESTIMATOR :	CHECKED BY :	
SKETCH DRAWING	CALCULATION		REMARKS
	Nagreg Flyover - Contract Package 2		
	Item No. 3.2(2) - Structural Backfill		
	Input Data: At Approach A Side of Flyover		
	for excavation (Section 1)		
	Lwf1 = 42.125 m		
	Wwf1 = 0.800 m		
	twf1 = 0.400 m		
	Tic1 = 0.100 m		
	h1 = 0.500 m		
	for excavation (Section 2)		
	Lwf2 = 42.125 m		
	Wwf2 = 1.300 m		
	twf2 = 0.400 m		
	Tic2 = 0.100 m		
	h2 = 0.500 m		
	Volume of Backfill = (Volume of Excavation - Volume of Concrete & Lean Conc.)		
	1.0 Excavation for section 1		
	Vol. of Exc. = $(42.125 + 0.450) \times (0.100 + 0.400 + 0.500)$		
	$\times (0.800 + 0.900) = 72.378$ cum.		
	2.0 Excavation for section 2		
	Vol. of Exc. = $(42.125 + 0.450) \times (0.100 + 0.400 + 0.500)$		
	$\times (1.300 + 0.900) = 93.665$ cum.		
	3.0 Volume of Concrete for section 1		
	Vol of Conc. = $\left[ (0.800 \times 0.400) + (0.400 \times 0.500) \right]$		
	$+ (0.100 \times 1.000) \times 42.125 = 26.118$ cum.		
	4.0 Volume of Concrete for section 2		
	Vol of Conc. = $\left[ (1.300 \times 0.400) + (0.400 \times 0.500) \right]$		
	$+ (0.100 \times 1.500) \times 42.125 = 36.649$ cum.		
	Volume of Backfill =	$103.276 \times 2$ side	
	Volume of Backfill =	206.552 cum.	

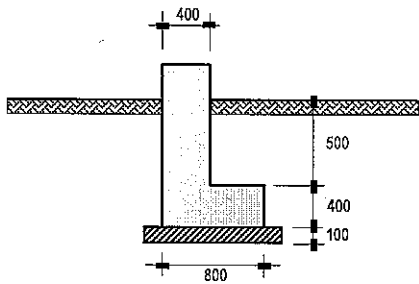


Section 1 at End of Ramp Sta. 0 + 240.00 (Abut. A Side)

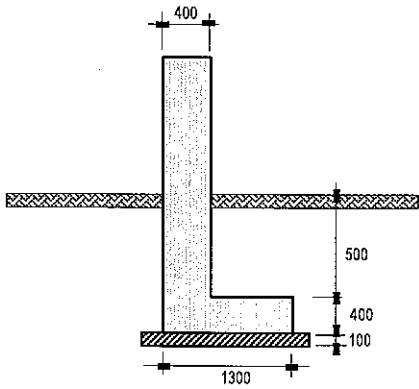


Section 2 at Beg. Of Stub Wall Sta. 0 + 301.75 (Abut. A Side)

CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared	Sheet : of
PROJECT : NAGREG FLYOVER NORTH JAVA CORRIDOR FLYOVER PROJECT			
KATAHIRA AND ENGINEERS INTERNATIONAL			
DRAWING NO :	ESTIMATOR :	CHECKED BY :	
SKETCH DRAWING	CALCULATION		REMARKS
	Nagreg Flyover - Contract Package 2		
	Item No. 3.2(2) - Structural Backfill		
	Input Data: At Approach B Side of Flyover		
	for excavation (Section 1)		
	Lwf1 =	36.625 m	
	Wwf1 =	0.800 m	
	twf1 =	0.400 m	
	Tlc1 =	0.100 m	
	h1 =	0.500 m	
	for excavation (Section 2)		
	Lwf2 =	36.625 m	
	Wwf2 =	1.300 m	
	twf 2=	0.400 m	
	Tlc2 =	0.100 m	
	h2 =	0.500 m	
	Volume of Backfill = (Volume of Excavation - Volume of Concrete & Lean Conc.)		
	1.0 Excavation for section 1		
	Vol. of Exc. = $(36.625 + 0.450) \times (0.100 + 0.400 + 0.500)$		
	$\times (0.800 + 0.900) = 63.028$ cum.		
	2.0 Excavation for section 2		
	Vol. of Exc. = $(36.625 + 0.450) \times (0.100 + 0.400 + 0.500)$		
	$\times (1.300 + 0.450) = 64.881$ cum.		
	3.0 Volume of Concrete for section 1		
	Vol of Conc. = $(0.800 \times 0.400) + (0.400 \times 0.500)$		
	$+ (0.100 \times 1.000) \times 36.625 = 22.708$ cum.		
	4.0 Volume of Concrete for section 2		
	Vol of Conc. = $(1.300 \times 0.400) + (0.400 \times 0.500)$		
	$+ (0.100 \times 1.500) \times 36.625 = 31.864$ cum.		
	Volume of Backfill =	73.337 x 2 side	
	Volume of Backfill =	146.674 cum.	
	Total =	353.226 cum.	



Section at End of Ramp Sta. 0 + 760.00 (Abut. B Side)

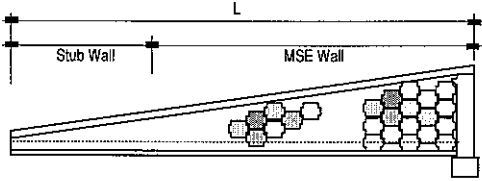


Section at Beg. Of Stub Wall Sta. 0 + 694.75 (Abut. B Side)

CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared 10/4/2006 18:12	Sheet : of			
PROJECT : NAGREK PROJECT NORTH JAVA CORRIDOR FLYOVER PROJECT						
KATAHIRA AND ENGINEERS INTERNATIONAL						
DRAWING NO : NRS-019, NRD-020, NRD-021, NRD-022, NRD-023, NRD024		ESTIMATOR :	CHECKED BY :			
SKETCH DRAWING		CALCULATION			REMARKS	
		Nagrek Fly Over - Contract Package 2				
		Item No. 3.2 (3) - Permeable backfill				
		MAIN ROAD / FLYOVER				
STA	LEFT SIDE AREA	AVE. LEFT AREA	DISTANCE			VOLUME
			START	END	LENGTH	
0+020.000	0.303	0.303	0+011.353	0+030.754	19.401	5.879
0+040.000	0.000	0.000	0+040.000	0+040.000	0.000	0.000
0+060.000	0.000	0.000	0+060.000	0+060.000	0.000	0.000
0+080.000	0.294	0.294	0+072.010	0+080.000	7.990	2.349
0+100.000	0.267	0.281	0+080.000	0+111.272	31.272	8.772
SUB TOTAL LEFT VOLUME						16.999
RIGHT SIDE AREA	AVE. RIGHT AREA	DISTANCE			VOLUME	
		START	END	LENGTH		
0.000	0.000	0+000.000	0+000.000	0.000	0.000	
0.243	0.243	0+032.960	0+054.459	21.499	5.224	
0.000	0.000	0+000.000	0+000.000	0.000	0.000	
0.000	0.000	0+000.000	0+000.000	0.000	0.000	
0.000	0.000	0+000.000	0+000.000	0.000	0.000	
SUB TOTAL RIGHT VOLUME						5.224
		SERVICE ROAD				
STA	LEFT SIDE AREA	AVE. LEFT AREA	DISTANCE			VOLUME
			START	END	LENGTH	
0+220.000	0.178	0.089	0+212.181	0+220.000	7.819	0.696
0+240.000	0.178	0.178	0+220.000	0+240.000	20.000	3.560
0+260.000	0.200	0.189	0+240.000	0+260.000	20.000	3.780
0+280.000	0.087	0.144	0+260.000	0+280.000	20.000	2.870
0+300.000	0.209	0.205	0+280.000	0+301.684	21.684	4.434
0+340.000	0.181	0.195	0+334.708	0+340.000	5.292	1.032
0+360.000	0.169	0.175	0+340.000	0+360.000	20.000	3.500
0+380.000	0.194	0.182	0+360.000	0+380.000	20.000	3.630
0+400.000	0.225	0.210	0+380.000	0+400.000	20.000	4.190
0+420.000	0.295	0.260	0+400.000	0+420.000	20.000	5.200
0+440.000	0.254	0.275	0+420.000	0+440.000	20.000	5.490
0+460.000	0.240	0.247	0+440.000	0+460.000	20.000	4.940
0+480.000	0.150	0.195	0+460.000	0+480.000	20.000	3.900
0+500.000	0.032	0.091	0+480.000	0+505.251	25.251	2.298
0+520.000	0.000	0.016	0+520.000	0+520.000	0.000	0.000
0+540.000	0.000	0.000	0+535.802	0+547.031	11.229	0.000
0+660.000	0.000	0.000	0+657.287	0+670.363	13.076	0.000
SUB TOTAL LEFT VOLUME						49.520
RIGHT SIDE AREA	AVE. RIGHT AREA	DISTANCE			VOLUME	
		START	END	LENGTH		
0.000	0.000	0+000.000	0+000.000	0.000	0.000	
0.000	0.000	0+000.000	0+000.000	0.000	0.000	
SUB TOTAL RIGHT VOLUME						0.000
TOTAL		= 71.744 cum.				





CONSTRUCTION COST ESTIMATE WORKSHEET		Date Prepared	Sheet : of	
PROJECT : NAGREG FLYOVER NORTH JAVA CORRIDOR FLYOVER PROJECT				
KATAHIRA AND ENGINEERS INTERNATIONAL				
DRAWING NO : <i>AD-19</i>	ESTIMATOR :	CHECKED BY :		
SKETCH DRAWING	CALCULATION		REMARKS	
	Nagreg Flyover - Contract Package 2			
	Item No. 3.1(23) - Subgrade Preparation on Embankment			
	<b>A. Along Approach A (Sta 0 + 140.00 - Sta 0 + 494.25)</b>			
	Input Data:			
	W = 12.215 m.	Ave. Width of Borrow Materials		
	Lm = 354.250 m.	Total length of Approach		
	Area 1 = 12.215	x	354.250	
	Area 1 = 4,327.16	sqm.		
	<b>B. Along Approach B (Sta 0 + 720.50 - Sta 0 + 874.00)</b>			
	Input Data:			
	W = 12.213 m.	Ave. Width of Borrow Materials		
	Lm = 153.500 m.	Total length of Approach		
	Area 2 = 12.213	x	153.500	
	Area 2 = 1,874.70	sqm.		
	Total Area = 6,201.86	sqm.		
Total = 16,358.37	sqm.			

<b>CONSTRUCTION COST ESTIMATE WORKSHEET</b>	Date Prepared	Sheet:    of	
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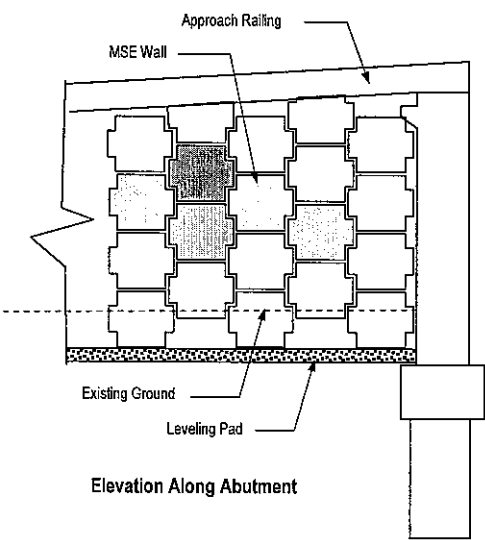
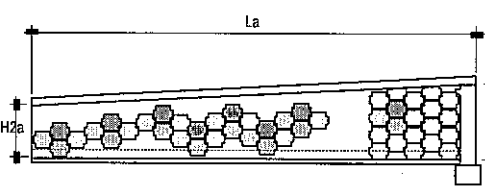
PROJECT : ..... FLYOVER NORTH JAVA CORRIDOR FLYOVER PROJECT	
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KATAHIRA AND ENGINEERS INTERNATIONAL	
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DRAWING NO: 012	ESTIMATOR :	CHECKED BY :	
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SKETCH DRAWING	CALCULATION	REMARKS
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Nagreg Flyover - Contract Package 2



**SS.3.4(1) - Mechanical Stabilized Earthwall and Accessories (MSE)**

**I. At Abutment A2 (Sta. 0 + 720.75 - 0 + 800.75)**

Input Data:

Station	Distance (m)	Ht. (m)	Ave Ht. (m)	Area (m <sup>2</sup> )
00 + 720.75		6.833		
00 + 740.75	20.00	6.187	6.510	130.200
00 + 740.75		5.513		
00 + 760.75	20.00	4.867	5.190	103.800
00 + 760.75		4.279		
00 + 780.75	20.00	3.633	3.956	79.120
00 + 780.75		3.002		
00 + 800.75	20.00	2.370	2.686	53.720
<b>Sub Total =</b>				<b>366.840</b>

Area = 366.84 x 2.00 sides  
 Area = 733.68 sqm.

**II. Along Abutment A2**

H1a = 6.833 m. Ht. of MSE Wall at the start of MSE Wall  
 W1 = 12.700 m. Width of MSE Wall at Abutment A1

Area = ( 6.833 x 12.700 ) = 86.78 sqm.

Total Area = 820.46 sqm.

Total 3,650.81 sqm.

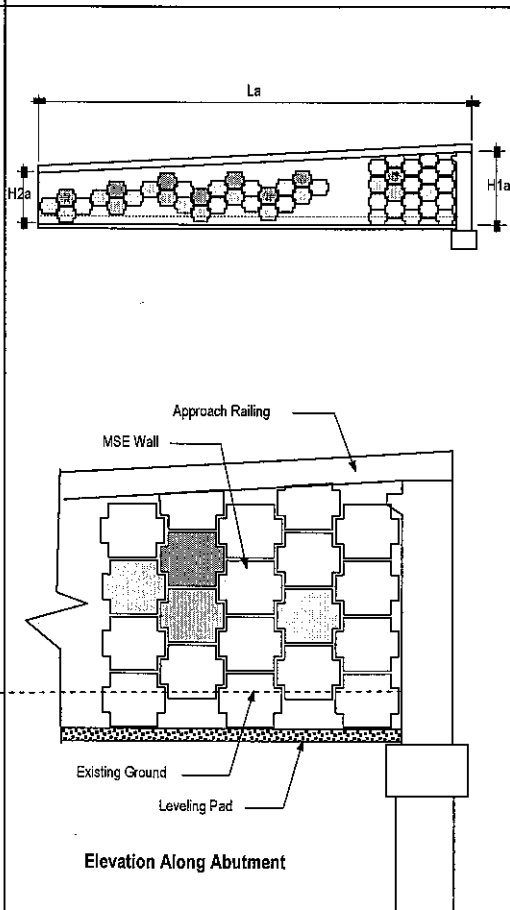
<b>CONSTRUCTION COST ESTIMATE WORKSHEET</b>	Date Prepared	Sheet : of	
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PROJECT : ..... FLYOVER NORTH JAVA CORRIDOR FLYOVER PROJECT	
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KATAHIRA AND ENGINEERS INTERNATIONAL	
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DRAWING NO :	ESTIMATOR :	CHECKED BY :
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SKETCH DRAWING	CALCULATION	REMARKS
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Nagreg Flyover - Contract Package 2

**SS.3.4(1) - Mechanical Stabilized Earthwall and Accessories (MSE)**

**I. At Abutment A1 (Sta. 0 + 224.25 - 0 + 494.25)**

Input Data:

Station	Distance (m)	Ht. (m)	Ave Ht. (m)	Area (m <sup>2</sup> )
00 + 224.25		2.186		
00 + 254.25	30.00	3.686	2.936	88.080
00 + 254.25		3.244		
00 + 274.25	20.00	4.244	3.744	74.880
00 + 274.25		3.837		
00 + 294.25	20.00	4.837	4.337	86.740
00 + 294.25		4.260		
00 + 314.25	20.00	5.260	4.760	95.200
00 + 314.25		4.445		
00 + 334.25	20.00	5.445	4.945	98.900
00 + 334.25		4.464		
00 + 354.25	20.00	5.464	4.964	99.280
00 + 354.25		4.650		
00 + 374.25	20.00	5.650	5.150	103.000
00 + 374.25		4.911		
00 + 394.25	20.00	5.911	5.411	108.220
00 + 394.25		5.050		
00 + 414.25	20.00	6.030	5.540	110.800
00 + 414.25		5.315		
00 + 434.25	20.00	6.315	5.815	116.300
00 + 434.25		5.590		
00 + 454.25	20.00	6.572	6.081	121.620
00 + 454.25		5.902		
00 + 474.25	20.00	6.912	6.407	128.140
00 + 474.25		6.372		
00 + 494.25	20.00	7.357	6.865	137.300
			<b>Sub Total =</b>	<b>1368.460</b>

Area = 1,368.46 x 2.00 sides

Area = 2,736.92 sqm.

Input Data:

**II. Along Abutment A1**

H1a = 7.357 m. Ht. of MSE Wall at the start of MSE Wall

W1 = 12.700 m. Width of MSE Wall at Abutment A1

Area = ( 7.357 x 12.700 ) = 93.43 sqm.

**Total Area = 2,830.35 sqm.**

**DIVISION 4.  
Pavement Widening  
and Shoulders**

**DIVISION 5.  
Granular Pavement**

**DIVISION 6.  
Asphalt Pavement**







**CONSTRUCTION COST ESTIMATE WORKSHEET**

**PROJECT : ..... FLYOVER**

**NORTH JAVA CORRIDOR FLYOVER PROJECT**

**KATAHIRA AND ENGINEERS INTERNATIONAL**

**NAGREG FLYOVER**

Item No.	Description	Unit	Main Road / Flyover	Right Service Road	Left Service Road	Total
<b>Division 4 - PAVEMENT WIDENING AND SHOULDERS</b>						
4.2.1	Aggregate SubBase Type B	cum.		70.64	55.74	126.38
<b>Division 5 - GRANULAR PAVEMENT</b>						
5.1.1	Aggregate SubBase Type A	cum.	2,419.98	1,137.66	1,117.31	4,674.95
5.1.2	Aggregate SubBase Type B	cum.	3,549.81	1,346.27	1,299.99	6,196.07
<b>Division 6 - ASPHALT PAVEMENT</b>						
6.1.1	Prime Coat	Lit.	9,080.12	3,262.10	3,193.37	15,535.59
6.1.2	Tact Coat	Lit.	12,922.82	3,603.22	3,890.31	20,416.35
6.3.5	Asphalt Concrete Wearing Course (AC-WC)	tonne	1,299.32	378.10	453.46	2,130.88
6.3.6	Asphalt Concrete Binder Course (AC-BC)	tonne	1,494.94	447.75	437.41	2,380.10
6.3.7	Asphalt Concrete Base (AC-Base)	tonne	2,069.24	738.60	723.04	3,530.88



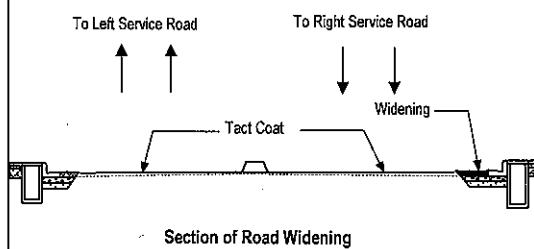
<b>CONSTRUCTION COST ESTIMATE WORKSHEET</b>	Date Prepared	Sheet : of	
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PROJECT : ..... FLYOVER  
 NORTH JAVA CORRIDOR FLYOVER PROJECT

**KATAHIRA AND ENGINEERS INTERNATIONAL**

DRAWING NO :	ESTIMATOR :	CHECKED BY :	
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**SKETCH DRAWING**



**CALCULATION**

Nagreg Flyover - Contract Package 2

**REMARKS**

**Item No. 6.1.2 - Tact Coat**

Pavement Overlay  
At Left Service Rd.

Note: See Detailed Construction Layout Plan  
 Dwg. # NRD-022 - BRD-028 for reference.

**At Left Service Road**

Station	Distance (m)	Width (m)	Ave Width (m)	Area (m <sup>2</sup> )
00 + 140.00		0.000		
00 + 160.00	20.00	0.600	0.300	6.000
00 + 180.00	20.00	2.644	1.622	32.440
00 + 200.00	20.00	3.286	2.965	59.300
00 + 220.00	20.00	4.173	3.730	74.600
00 + 240.00	40.00	4.169	3.728	149.120
00 + 260.00	20.00	3.911	4.040	80.800
00 + 280.00	20.00	2.938	3.425	68.500
00 + 300.00	20.00	2.568	2.753	55.060
00 + 320.00	20.00	2.568	2.568	51.360
00 + 340.00	20.00	2.139	2.354	47.080
00 + 360.00	20.00	1.653	1.896	37.920
00 + 380.00	20.00	1.653	1.653	33.060
00 + 400.00	20.00	1.025	1.339	26.780
00 + 420.00	20.00	0.376	0.701	14.020
00 + 440.00	20.00	0.000	0.188	3.760
00 + 516.00		5.272		
00 + 533.00	17.00	5.272	5.272	89.624
00 + 580.00		0.000		
00 + 600.00	20.00	2.769	1.385	27.700
00 + 620.00	20.00	2.769	2.769	55.380
00 + 640.00		9.816		
00 + 660.00	20.00	5.018	7.417	148.340
00 + 674.00	14.00	0.000	2.509	35.126

Along Intersection  
 from AutoCad Area = 297.905

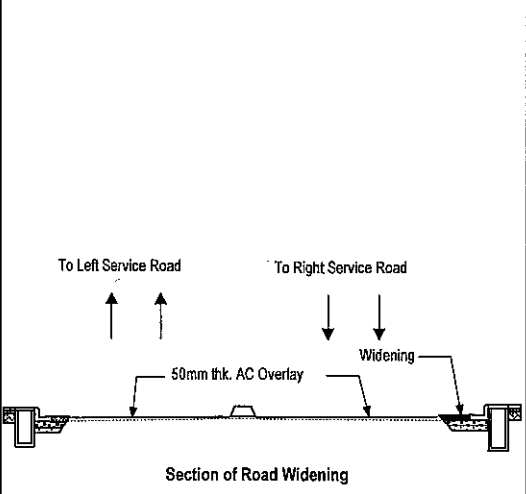
**Total Area = 1,393.88 sqm.**

Volume = ( 1,393.88 x 0.50 ) = 696.94 lit.

<b>PROJECT :</b> ..... FLYOVER NORTH JAVA CORRIDOR FLYOVER PROJECT	
<b>KATAHIRA AND ENGINEERS INTERNATIONAL</b>	

DRAWING NO :	ESTIMATOR :	CHECKED BY :
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SKETCH DRAWING	CALCULATION	REMARKS
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Nagreg Flyover - Contract Package 2

<b>Item No. 6.3.5 - Asphalt Concrete Wearing Course (AC - WC)</b>	Pavement Overlay
	At Left Service Rd.

**Note:** See Detailed Construction Layout Plan  
 Dwg. # NRD-022 - BRD-028 for reference.

**At Left Service Road**

Station	Distance (m)	Width (m)	Ave Width (m)	Area (m <sup>2</sup> )
00 + 140.00		0.000		
00 + 160.00	20.00	0.600	0.300	6.000
00 + 180.00	20.00	2.644	1.622	32.440
00 + 200.00	20.00	3.286	2.965	59.300
00 + 220.00	20.00	4.173	3.730	74.600
00 + 240.00	40.00	4.169	3.728	149.120
00 + 260.00	20.00	3.911	4.040	80.800
00 + 280.00	20.00	2.938	3.425	68.500
00 + 300.00	20.00	2.568	2.753	55.060
00 + 320.00	20.00	2.568	2.568	51.360
00 + 340.00	20.00	2.139	2.354	47.080
00 + 360.00	20.00	1.653	1.896	37.920
00 + 380.00	20.00	1.653	1.653	33.060
00 + 400.00	20.00	1.025	1.339	26.780
00 + 420.00	20.00	0.376	0.701	14.020
00 + 440.00	20.00	0.000	0.188	3.760
00 + 516.00		5.272		
00 + 533.00	17.00	5.272	5.272	89.624
00 + 580.00		0.000		
00 + 600.00	20.00	2.769	1.385	27.700
00 + 620.00	20.00	2.769	2.769	55.380
00 + 640.00		9.816		
00 + 660.00	20.00	5.018	7.417	148.340
00 + 674.00	14.00	0.000	2.509	35.126

**Along Intersection**  
 from AutoCad Area = 297.905  
**Total Area = 1,393.88 sqm.**

**Input Data :**  
 thickness = 0.05 m

$$Wt = (1,393.88 \times 0.050 \times 2.30) = 160.30 \text{ Ton}$$



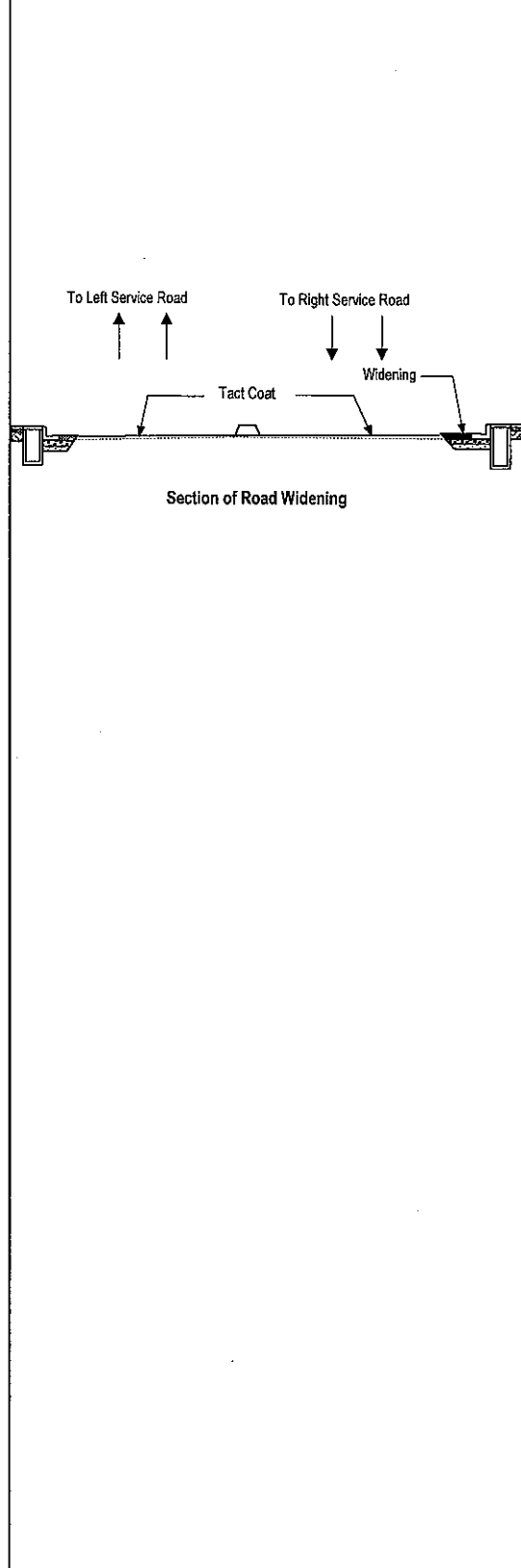


<b>CONSTRUCTION COST ESTIMATE WORKSHEET</b>	Date Prepared	Sheet : of	
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<b>PROJECT :</b> ..... FLYOVER NORTH JAVA CORRIDOR FLYOVER PROJECT	
<b>KATAHIRA AND ENGINEERS INTERNATIONAL</b>	

DRAWING NO :	ESTIMATOR :	CHECKED BY :
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SKETCH DRAWING	CALCULATION	REMARKS
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Nagreg Flyover - Contract Package 2

**Item No. 6.1.2 - Tact Coat** Pavement Overlay

At Right Service Rd.

**Note:** See Detailed Construction Layout Plan  
 Dwg. # NRD-022 - BRD-028 for reference.

**At Right Service Road**

Station	Distance (m)	Width (m)	Ave Width (m)	Area (m <sup>2</sup> )
00 + 660.00		0.000		
00 + 680.00	20.00	4.365	2.183	43.660
00 + 700.00	20.00	4.837	4.601	92.020
00 + 720.00	20.00	3.888	4.363	87.260
00 + 740.00	20.00	2.885	3.387	67.740
00 + 760.00	20.00	2.602	2.744	54.880
00 + 780.00	20.00	2.269	2.436	48.720
00 + 800.00	20.00	1.835	2.052	41.040
00 + 820.00	20.00	2.144	1.990	39.800
00 + 840.00	20.00	3.545	2.845	56.900
00 + 860.00	20.00	4.173	3.859	77.180
00 + 874.00	14.00	6.260	5.217	73.038

**Total Area = 682.24 sqm.**

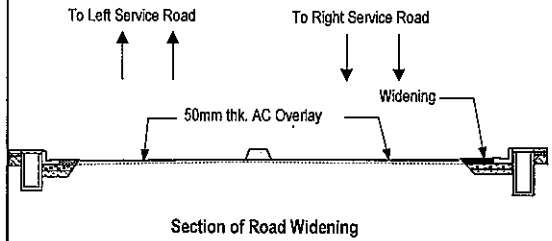
Volume = ( 682.24 x 0.50 ) = 341.12 lit.

PROJECT : ..... FLYOVER  
 NORTH JAVA CORRIDOR FLYOVER PROJECT  
 KATAHIRA AND ENGINEERS INTERNATIONAL

DRAWING NO : ESTIMATOR : CHECKED BY :

SKETCH DRAWING	CALCULATION	REMARKS
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Nagreg Flyover - Contract Package 2



Item No: 6.3.5 - Asphalt Concrete Wearing Course (AC - WC)  
 Pavement Overlay  
 At Right Service Rd.

Note: See Detailed Construction Layout Plan  
 Dwg. # NRD-022 - BRD-028 for reference.

**At Right Service Road**

Station	Distance (m)	Width (m)	Ave Width (m)	Area (m <sup>2</sup> )
00 + 660.00		0.000		
00 + 680.00	20.00	4.365	2.183	43.660
00 + 700.00	20.00	4.837	4.601	92.020
00 + 720.00	20.00	3.888	4.363	87.260
00 + 740.00	20.00	2.885	3.387	67.740
00 + 760.00	20.00	2.602	2.744	54.880
00 + 780.00	20.00	2.269	2.436	48.720
00 + 800.00	20.00	1.835	2.052	41.040
00 + 820.00	20.00	2.144	1.990	39.800
00 + 840.00	20.00	3.545	2.845	56.900
00 + 860.00	20.00	4.173	3.859	77.180
00 + 874.00	14.00	6.260	5.217	73.038
<b>Total Area =</b>				<b>682.24 sqm.</b>

**Input Data :**

thickness = 0.05 m

$$Wt = ( 682.24 \times 0.050 \times 2.30 ) = 78.46 \text{ Ton}$$



Nagreg Pavement at Right Service Road

STATION	DISTANCE	AC - WC			AC - BC			AC - Base			SBC (Type A)			SBC (Type B)			Tonnes	Volume		PAVEMENT		
		width			width			width			width			width				SBC (Type A)	SBC (Type B)	Tack Coat Liters	AC - BC Tonnes	AC - WC Tonnes
		W1	W2	W3	W2	W3	W4	W5	W6	W6	W7	W6	W7	AC - Base	SBC (Type A)	SBC (Type B)						
00 + 500.00	20.00	5.002	5.002	5.002	5.002	5.002	5.002	5.703	6.389	6.389	6.389	6.389	6.389	6.389	23.01	36.12	44.83	100.03	100.03	13.80	9.20	
00 + 520.00	20.00	16.297	16.298	16.298	16.298	16.298	14.819	16.300	16.307	16.307	16.307	16.314	16.314	16.314	47.29	67.05	79.88	212.99	212.99	29.39	19.60	
00 + 540.00	20.00	5.002	5.002	5.002	5.002	5.002	5.002	5.703	6.289	6.289	6.289	6.632	6.632	6.632	47.29	66.90	79.70	212.99	212.99	29.39	19.60	
00 + 560.00	20.00	5.020	5.020	5.020	5.020	5.020	4.998	6.066	6.305	6.305	6.305	6.649	6.649	6.649	23.05	36.54	45.28	100.22	100.22	13.83	9.22	
00 + 580.00	20.00	4.998	4.998	4.998	4.998	4.998	4.998	6.045	6.284	6.284	6.284	6.630	6.630	6.630	23.04	37.05	45.27	100.18	100.18	13.82	9.22	
00 + 600.00	20.00	3.675	3.634	3.571	3.571	3.571	3.471	4.471	3.865	3.865	3.865	3.511	3.511	3.511	19.59	31.00	35.51	86.73	86.73	11.87	7.96	
00 + 620.00	20.00	6.594	6.594	6.594	6.594	6.594	6.594	6.594	6.594	6.594	6.594	6.594	6.594	6.594	23.26	32.29	35.99	102.69	102.69	14.07	9.43	
00 + 640.00	20.00	3.930	3.883	3.883	3.883	3.883	3.883	3.883	3.883	3.883	3.883	3.883	3.883	3.883	24.10	31.43	36.67	105.24	105.24	14.46	9.66	
00 + 660.00	20.00	0.871	0.829	0.767	0.767	0.767	0.663	1.408	1.100	1.100	1.100	0.742	0.742	0.742	10.58	15.41	16.81	48.01	48.01	6.46	4.38	
00 + 680.00	20.00	0.868	0.826	0.764	0.764	0.764	0.664	1.383	1.077	1.077	1.077	0.721	0.721	0.721	3.29	7.45	6.37	17.39	17.39	2.20	1.56	
00 + 700.00	20.00	0.868	0.825	0.766	0.766	0.766	0.644	1.369	1.063	1.063	1.063	0.708	0.708	0.708	3.26	7.34	6.25	17.36	17.36	2.19	1.56	
00 + 720.00	20.00	1.846	1.804	1.742	1.742	1.742	1.642	2.342	2.036	2.036	2.036	1.674	1.674	1.674	5.51	10.22	9.59	27.14	27.14	3.54	2.46	
00 + 740.00	20.00	2.156	2.118	2.054	2.054	2.054	1.959	2.652	2.346	2.346	2.346	1.989	1.989	1.989	8.51	14.06	14.08	40.02	40.02	5.33	3.65	
00 + 760.00	20.00	2.441	2.399	2.325	2.325	2.325	2.237	2.937	2.631	2.631	2.631	2.276	2.276	2.276	9.86	15.85	16.17	45.97	45.97	6.14	4.19	
00 + 780.00	20.00	2.772	2.731	2.668	2.668	2.668	2.568	3.268	2.962	2.962	2.962	2.605	2.605	2.605	11.27	17.70	18.33	52.13	52.13	6.98	4.76	
00 + 800.00	20.00	3.207	3.165	3.103	3.103	3.103	3.003	3.703	3.387	3.387	3.387	3.041	3.041	3.041	13.04	19.98	20.99	59.79	59.79	8.05	5.46	
00 + 820.00	20.00	2.897	2.856	2.795	2.795	2.795	2.693	3.393	3.087	3.087	3.087	2.730	2.730	2.730	13.33	20.36	21.43	61.04	61.04	8.22	5.58	
00 + 840.00	20.00	1.496	1.455	1.394	1.394	1.394	1.292	1.992	1.686	1.686	1.686	1.329	1.329	1.329	9.40	15.24	15.46	43.93	43.93	5.87	4.00	
00 + 860.00	20.00	0.868	0.827	0.766	0.766	0.766	0.644	1.364	1.057	1.057	1.057	0.702	0.702	0.702	4.71	9.15	8.35	23.64	23.64	3.06	2.14	
00 + 874.00	14.00	0.873	0.831	0.770	0.770	0.770	0.662	1.368	1.057	1.057	1.057	0.700	0.700	0.700	2.29	5.09	4.31	12.19	12.19	1.54	1.09	
<b>TOTAL</b>															738.60	1,137.66	1,346.27	3,262.10	3,262.10	447.75	299.64	



<b>CONSTRUCTION COST ESTIMATE WORKSHEET</b>		Date Prepared	Sheet : of			
PROJECT : ..... FLYOVER NORTH JAVA CORRIDOR FLYOVER PROJECT						
KATAHIRA AND ENGINEERS INTERNATIONAL						
DRAWING NO :		ESTIMATOR :	CHECKED BY :			
SKETCH DRAWING		CALCULATION		REMARKS		
<p style="text-align: center;">Section of Road Widening</p>		Nagreg Flyover - Contract Package 2				
		Item No. 6.1.2 - Tact Coat		Pavement Overlay At Main Road		
		Note: See Detailed Construction Layout Plan Dwg. # NRD-022 - BRD-028 for reference.				
		<b>At Right Side</b>				
		Station	Distance (m)	Width (m)	Ave Width (m)	Area (m <sup>2</sup> )
		00 + 000.00		3.510		
		00 + 020.00	20.00	3.000	3.255	65.100
		00 + 040.00	20.00	2.520	2.760	55.200
		00 + 060.00	20.00	2.578	2.549	50.980
		00 + 080.00	20.00	2.260	2.419	48.380
		00 + 100.00	20.00	1.121	1.850	37.000
		00 + 123.00	23.00	0.000	0.561	12.903
		00 + 874.00		4.173		
		00 + 880.00	6.00	6.260	5.217	31.302
		00 + 900.00	20.00	6.664	6.462	129.240
00 + 920.00	20.00	7.113	6.889	137.780		
00 + 940.00	20.00	7.126	7.120	142.400		
00 + 960.00	20.00	7.060	7.093	141.860		
00 + 980.00	20.00	6.383	6.722	134.440		
01 + 000.00	20.00	5.695	6.039	120.780		
01 + 020.00	20.00	4.821	5.258	105.160		
01 + 042.37	22.37	4.821	4.821	107.846		
<b>At Left Side</b>						
00 + 000.00		4.487				
00 + 020.00	20.00	3.305	3.896	77.920		
00 + 040.00	20.00	2.683	2.994	59.880		
00 + 060.00	20.00	3.373	3.028	60.560		
00 + 080.00	20.00	3.017	3.195	63.900		
00 + 100.00	20.00	3.849	3.433	68.660		
00 + 120.00	20.00	5.139	4.494	89.880		
00 + 140.00	20.00	5.139	5.139	102.780		
00 + 960.00		0.000				
00 + 980.00	20.00	2.006	1.003	20.060		
01 + 000.00	20.00	2.818	2.412	48.240		
01 + 020.00	20.00	3.838	3.328	66.560		
01 + 042.37	22.37	3.838	3.838	85.856		
<b>Total Area = 2,064.67 sqm.</b>						
Volume = ( 2,064.67 x 0.50 ) = 1,032.34 lit.						





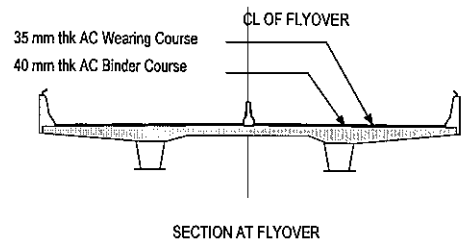


PROJECT : ..... FLYOVER		
NORTH JAVA CORRIDOR FLYOVER PROJECT		
KATAHIRA AND ENGINEERS INTERNATIONAL		

DRAWING NO :	ESTIMATOR :	CHECKED BY :
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SKETCH DRAWING	CALCULATION	REMARKS
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Nagreg Flyover - Contract Package 2



<b>Item No. 6.3.5 - Asphalt Concrete Wearing Course (AC - WC)</b>	Location : At Viaduct
	Pavement

**Note:** See Detailed Construction Layout Plan  
Dwg. # NRD-022 - BRD-028 for reference.

Station	Distance	Width	Ave. Width	Area	Slope is considered
	(m)	(m)	(m)	(m <sup>2</sup> )	
00 + 495.50		12.000			
00 + 500.00	4.50	12.000	12.000	54.00	
00 + 520.00	20.00	12.005	12.003	240.06	
00 + 540.00	20.00	12.016	12.011	240.22	
00 + 560.00	20.00	12.018	12.017	240.34	
00 + 580.00	20.00	12.004	12.011	240.22	
00 + 600.00	20.00	12.000	12.002	240.04	
00 + 620.00	20.00	12.007	12.004	240.08	
00 + 640.00	20.00	12.016	12.012	240.24	
00 + 660.00	20.00	12.016	12.016	240.32	
00 + 680.00	20.00	12.016	12.016	240.32	
00 + 700.00	20.00	12.016	12.016	240.32	
00 + 719.50	19.50	12.003	12.010	234.20	
		<b>Total Area =</b>		<b>2,690.36 sqm.</b>	

**Input Data :**  
thickness = 0.035 m

**Total Wt = (Total Area x Thickness) x 2.30 = 216.57 Ton**









