3.4 Approach Road

SCHEDULE OF PAVEMENT QUANTITIES FOR APPROACH ROAD

ITEMS	UNIT	Uhuru Monument J/C Approach Road	Ngong Road J/C Approach Road	Dagoretti Forest J/C Approach Road	Thogoto J/C Approach Road	TOTAL Approach Road
Asphalt Concrete wearing Course	m3	229.8				229.8
Asphalt Concrete Binder Course	m3	459.6				459.6
Lean Concrete Base	m3	1,020.1				1,020.1
Graded Crushed Stone Base	m3	146.7	833.6	557.8	473.0	2,011.1
Graded Crushed Stone Subbase	m3	979.1	911.5	590.8	505.5	2,986.9
Graded Crushed Stone Shoulder	m3	366.3	292.5	174.9	145.8	979.5
Tack Coat	m2	9,192.0				9,192.0
Prime Coat	m2	4,596.0				4,596.0
Double Surface Dressing	m2	978.0	6,412.0	4,291.0	3,639.0	15,320.0
Single Surface Dressing	m2	981.0	1,871.1	1,119.2	916.3	4,887.6
Gravel Wearing Course	m3					0.0
Filling (Central Reserve)	m3	845.0				845.0
Grassing (Central Reserve)	m2	1,690.0				1,690.0

COMPUTATION OF QUANTITIES FOR PAVEMENT

UHURU MONUMENT JUNCTION APPROACH ROAD

1. ASPHALT CONCRETE WEARING COURSE

4,596.0m2 x 0.050 = 229.80m3

2. ASPHALT CONCRETE BINDER COURE

4,596.0m2 x 0.100 = 459.60m3

3. LEAN CONCRETE BASE

4,596.0m2 x 0.200 + 540.0m x 0.078 + 680.0m x 0.078 + 74.1m x 0.078 = 1,020.14m3

4. GRADED CRUSHED STONE BASE (Footpath)

489.0m x 2.0m x 0.150 =146.70m3

5. GRADED CRUSHED STONE SUBBASE

4,596.0m2 x 0.150 + 540.0m x 0.085 + 680.0m x 0.327 +74.1m x 0.289 = 979.08m3

6. GRADED CRUSHED STONE SHOULDER

680.0m x 0.499 + 74.1m x 0.364 = 366.29m3

7. TACK COAT

4,596.0m2

8. PRIME COAT

4,596.0m2

9. FILLING (Central Reserve)

6.50m x 0.500 x 260m = 845.0m3

10. DOUBLE SURFACE DRESSING (Footpath)

489.0m x 2.0m = 978.0m2

11. SINGLE SURFACE DRESSING

680.0m x 1.350 + 74.10m x 0.850 = 980.99m2

12. GRASSING

6.50m x 260m = 1,690.0m2

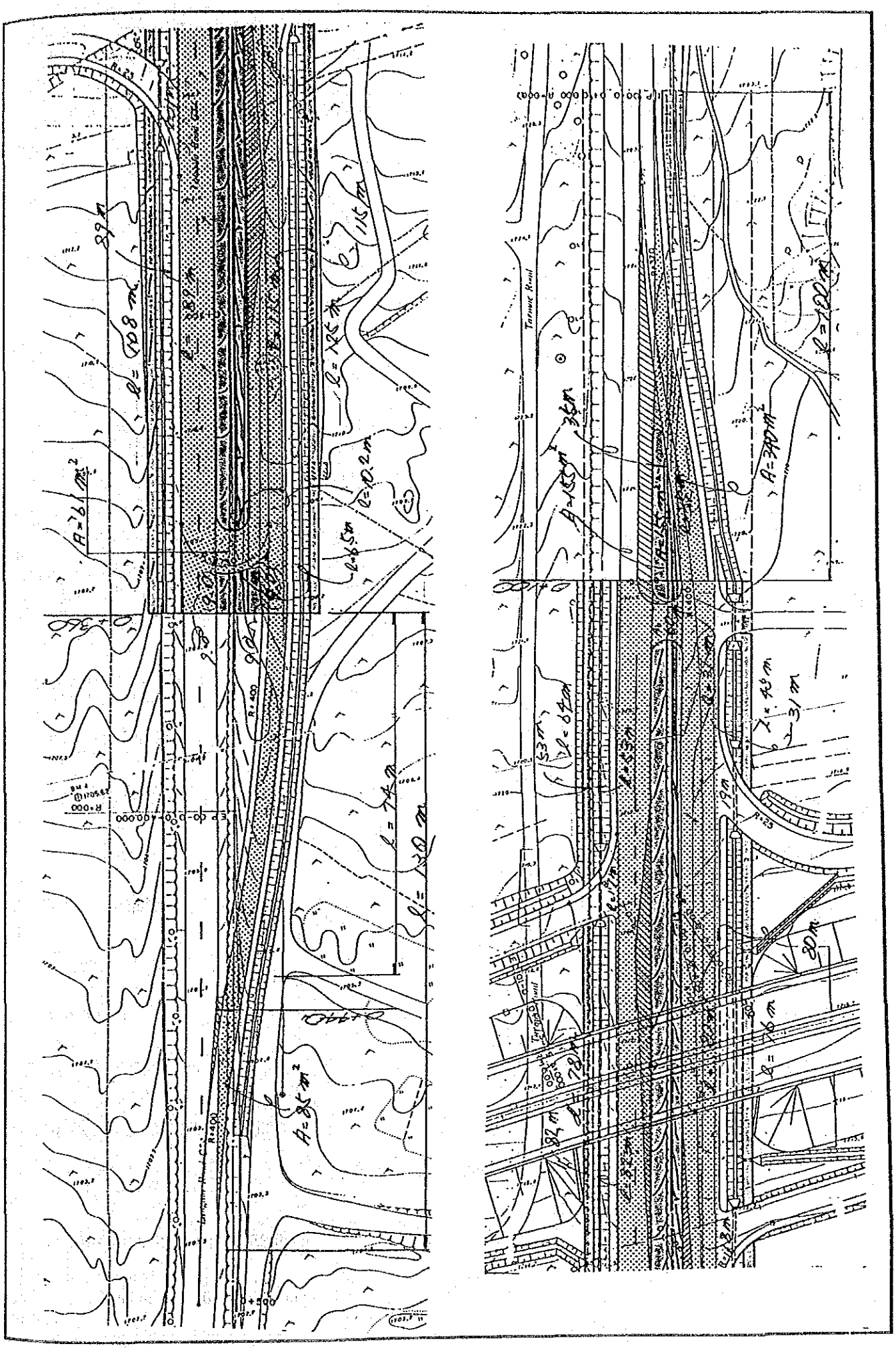
COMPUTATION OF PAVING AREA AND SHOULDER LENGTH
UHURU MONUMENT JUNCTION APPROACH ROAD

PAVING AREA

STATION	DISTANCE (m)	WIDTH (m)	AVERAGE (m)	AREA (m2)	REMARKS
0 + 0 ~ 0 + 100				340.00	
0 + 100		14.50			
0 + 360	260.00	14.50	14.50	3,770.00	
0 + 360		3.50			
0 + 440	80.00	3.50	3.50	280.00	
0 + 440 ~ 0 + 500				85.00	
				60.00	U-Turn Lane
				61.00	U-Turn Lane
TOTAL				4,596.00	

SHOULDER LENGTH

SECTION	SHOULDER				
	TYPE-17 (m)	TYPE-18 (m)	TYPE-19 (m)	Footpath	
0 + 0 ~ 0 + 100	35.00	100.00			
0 + 100 ~ 0 + 360	505.10	450.00			
0 + 360 ~ 0 + 500		130.00	74.10		
TOTAL	540.00	680.00	74.10		
Footpath length				489.0m	



COMPUTATION OF QUANTITIES FOR PAVEMENT

NGONG ROAD JUNCTION APPROACH ROAD

1. ASPHALT CONCRETE WEARING COURSE

-

2. ASPHALT CONCRETE BINDER COURE

-

3. LEAN CONCRETE BASE

-

4. GRADED CRUSHED STONE BASE

6,412.0m2 x 0.130 = 833.56m3

5. GRADED CRUSHED STONE SUBBASE

6,412.0m2 x 0.100 + 1,386.0m x 0.195 = 911.47m3

6. GRADED CRUSHED STONE SHOULDER

1,386.0m x 0.211 = 292.45m3

7. TACK COAT

-

8. PRIME COAT

-

9. FILLING

-

10. DOUBLE SURFACE DRESSING

6,412.0m2

11. SINGLE SURFACE DRESSING

1,386.0m x 1.350 = 1,871.1m2

COMPUTATION OF PAVING AREA AND SHOULDER LENGTH
NGONG ROAD JUNCTION APPROACH ROAD

PAVING AREA

STATION	DISTANCE (m)	WIDTH (m)	AVERAGE (m)	AREA (m2)	REMARKS
0 + 0		7.00			
0 + 35	35.00	7.00	7.00	245.00	
0 + 85	50.00	10.50	8.75	437.50	
0 + 200	115.00	10.50	10.50	1,207.50	
0 + 250	50.00	7.00	8.75	437.50	
0 + 540	290.00	7.00	7.00	2,030.00	
0 + 590	50.00	10.50	8.75	437.50	
0 + 705	115.00	10.50	10.50	1,207.50	
0 + 755	50.00	7.00	8.75	437.50	
0 + 800	45.00	7.00	7.00	315.00	
DIDUCTION				-343.00	C-BOX
					49m x 7m
TOTAL				6,412.00	

SHOULDER LENGTH

SECTION	SHOULDER				
	TYPE-21 (m)				
0 + 0 ~ 0 + 800	751.00				RIGHT SIDE
0 + 0 ~ 0 + 800	635.00				LEFT SIDE
TOTAL	1,386.00				

COMPUTATION OF QUANTITIES FOR PAVEMENT

DAGORETTI FORESTJUNCTION APPROACH ROAD

1. ASPHALT CONCRETE WEARING COURSE

-

2. ASPHALT CONCRETE BINDER COURE

-

3. LEAN CONCRETE BASE

-

4. GRADED CRUSHED STONE BASE

4,291.0m2 x 0.130 = 557.83m3

5. GRADED CRUSHED STONE SUBBASE

4,291.0m2 x 0.100 + 829.0m x 0.195 = 590.76m3

6. GRADED CRUSHED STONE SHOULDER

829.0m x 0.211 = 174.92m3

7. TACK COAT

-

8. PRIME COAT

-

9. FILLING

-

10. DOUBLE SURFACE DRESSING

4,291.0m2

11. SINGLE SURFACE DRESSING

829.0m x 1.350 =1,119.15m2

COMPUTATION OF PAVING AREA AND SHOULDER LENGTH
DAGORETTI FOREST JUNCTION APPROACH ROAD

PAVING AREA

STATION	DISTANCE (m)	WIDTH (m)	AVERAGE (m)	AREA (m2)	REMARKS
0 + 0		7.00			
0 + 5	5.00	7.00	7.00	35.00	
0 + 55	50.00	10.50	8.75	437.50	
0 + 140	85.00	10.50	10.50	892.50	
0 + 170	30.00	7.00	8.75	262.50	
0 + 250	80.00	7.00	7.00	560.00	
0 + 300	50.00	10.50	8.75	437.50	
0 + 415	115.00	10.50	10.50	1,207.50	
0 + 465	50.00	7.00	8.75	437.50	
0 + 500	35.00	7.00	7.00	245.00	
DEDUCTION				-224.00	C-BOX
					32m x 7m
TOTAL				4,291.00	

SHOULDER LENGTH

SECTION	SHOULDER				
	TYPE-21 (m)				
0 + 0 ~ 0 + 500	468.00				RIGHT SIDE
0 + 0 ~ 0 + 500	361.00				LEFT SIDE
TOTAL	829.00				

COMPUTATION OF QUANTITIES FOR PAVEMENT

THOGOTO JUNCTION APPROACH ROAD

1. ASPHALT CONCRETE WEARING COURSE

-

2. ASPHALT CONCRETE BINDER COURE

-

3. LEAN CONCRETE BASE

-

4. GRADED CRUSHED STONE BASE

3,639.0m2 x 0.130 = 473.00m3

5. GRADED CRUSHED STONE SUBBASE

3,639.0m2 x 0.100 + 833.0m x 0.170 = 505.51m3

6. GRADED CRUSHED STONE SHOULDER

833.0m x 0.175 = 145.78m3

7. TACK COAT

-

8. PRIME COAT

-

9. FILLING

-

10. DOUBLE SURFACE DRESSING

3,639.0m2

11. SINGLE SURFACE DRESSING

833.0m x 1.100 = 916.30m2

COMPUTATION OF PAVING AREA AND SHOULDER LENGTH
THOGOTO JUNCTION APPROACH ROAD

PAVING AREA

STATION	DISTANCE (m)	WIDTH (m)	AVERAGE (m)	AREA (m2)	REMARKS
0 + 0		6.00			
0 + 25	25.00	6.00	6.00	150.00	
0 + 65	40.00	9.00	7.50	300.00	
0 + 180	115.00	9.00	9.00	1,035.00	
0 + 230	50.00	6.00	7.50	375.00	
0 + 325	95.00	6.00	6.00	570.00	
0 + 375	50.00	9.00	7.50	375.00	
0 + 440	65.00	9.00	9.00	585.00	
0 + 490	50.00	6.00	7.50	375.00	
0 + 500	10.00	6.00	6.00	60.00	
DEDUCTION				-186.00	C-BOX
					31m x 6m
TOTAL				3,639.00	

SHOULDER LENGTH

SECTION	SHOULDER				
	TYPE-20 (m)				
0 + 0 ~ 0 + 500	364.00				RIGHT SIDE
0 + 0 ~ 0 + 500	469.00				LEFT SIDE
TOTAL	833.00				

3.5 Service Road

SCHEDULE OF QUANTITIES FOR SERVICE ROAD

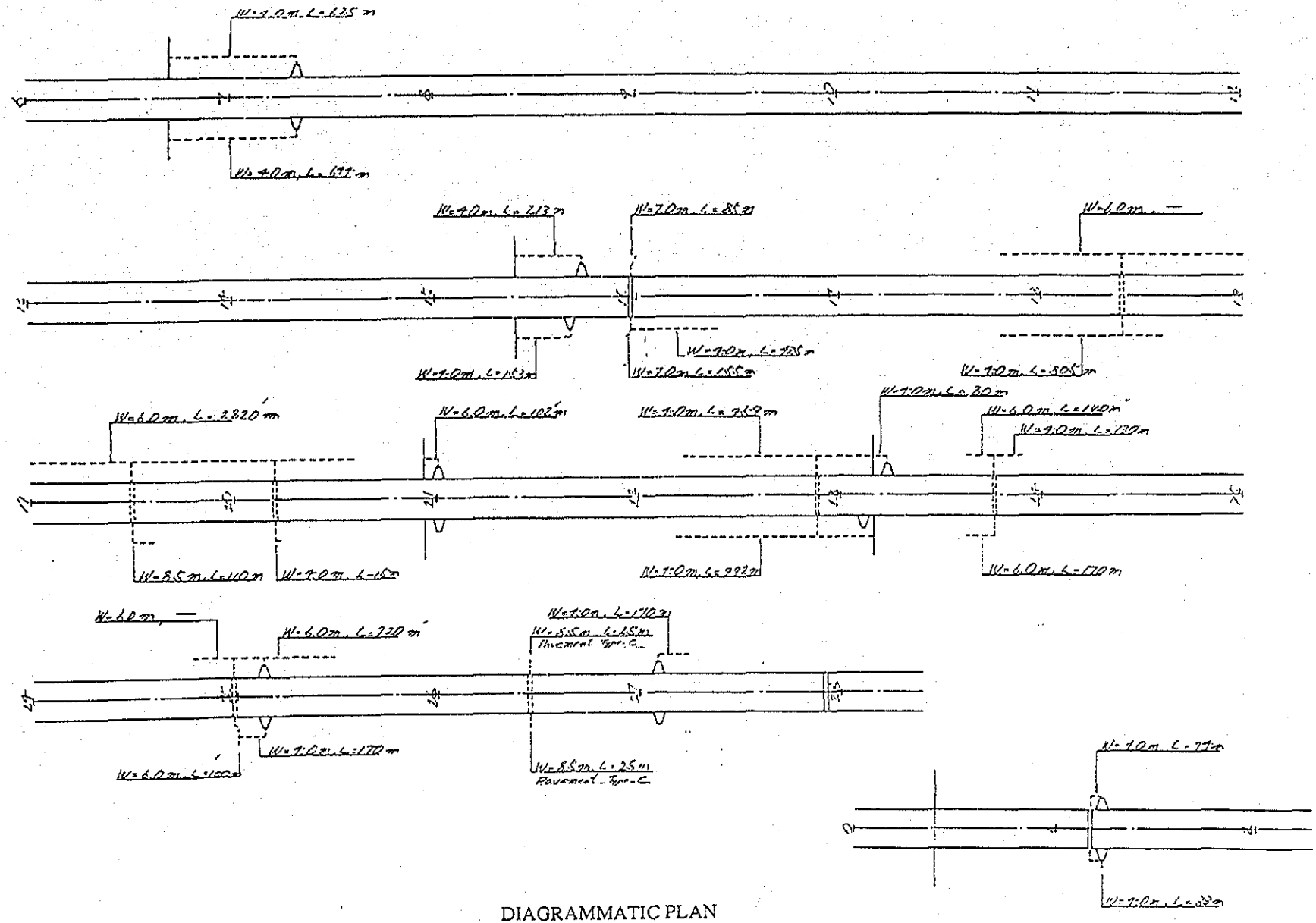
ITEM	UNIT	QUANTITIES
Asphalt Concrete wearing Course	m3	-
Asphalt Concrete Binder Course	m3	-
Lean Concrete Base	m3	-
Graded Crushed Stone Base	m3	39.0
Graded Crushed Stone Subbase	m3	47.0
Graded Crushed Stone Shoulder	m3	17.5
Tack Coat	m2	-
Prime Coat	m2	-
Double Surface Dressing	m2	300.0
Single Surface Dressing	m2	112.2
Gravel Wearing Course	m3	4,320.6
Filling	m3	-
Grassing	m2	-

COMPUTATION OF GRAVEL WEARING COURSE
SERVICE ROAD

LOCATION	ROAD WIDTH (m)	CARRIAGEWAY WIDTH (m)	LENGTH (m)	THICKNESS (m)	VOLUME (m3)
RIGHT SIDE					
1 + 197 ~ 1 + 230	4.00	2.00	33.00	0.15	9.90
6 + 695 ~ 7 + 327	4.00	2.00	644.00	0.15	193.20
15 + 517 ~ 15 + 670	4.00	2.00	153.00	0.15	45.90
15 + 980	7.00	6.00	155.00	0.15	139.50
15 + 985 ~ 16 + 410	4.00	2.00	425.00	0.15	127.50
17 + 785 ~ 18 + 590	4.00	2.00	805.00	0.15	241.50
19 + 500	8.50	6.00	110.00	0.15	99.00
20 + 200 ~	4.00	2.00	15.00	0.15	4.50
22 + 186 ~ 23 + 163	4.00	2.00	992.00	0.15	297.60
23 + 620 ~ 23 + 770	6.00	4.00	150.00	0.15	90.00
25 + 0	6.00	4.00	100.00	0.15	60.00
26 + 460 (*)	8.50	6.00	25.00	0.255	
LEFT SIDE					
1 + 197 ~ 1 + 241	4.00	2.00	44.00	0.15	13.20
6 + 728 ~ 7 + 340	4.00	2.00	625.00	0.15	187.50
15 + 527 ~ 15 + 740	4.00	2.00	213.00	0.15	63.90
15 + 980	7.00	6.00	85.00	0.15	76.50
17 + 780 ~ 20 + 600	6.00	4.00	2,820.00	0.15	1,692.00
20 + 908 ~ 21 + 10	6.00	4.00	102.00	0.15	61.20
22 + 226 ~ 23 + 170	4.00	2.00	959.00	0.15	287.70
23 + 200	4.00	2.00	80.00	0.15	24.00
23 + 630 ~ 23 + 770	6.00	4.00	140.00	0.15	84.00
23 + 770 ~ 23 + 900	4.00	2.00	130.00	0.15	39.00
24 + 760 ~ 25 + 480	6.00	4.00	720.00	0.15	432.00
26 + 460 (*)	8.50	6.00	25.00	0.255	
27 + 90 ~ 27 + 260	4.00	2.00	170.00	0.15	51.00
Total			9,720.00		4,320.60

(*) CH. 26+460 Approach to C-Box

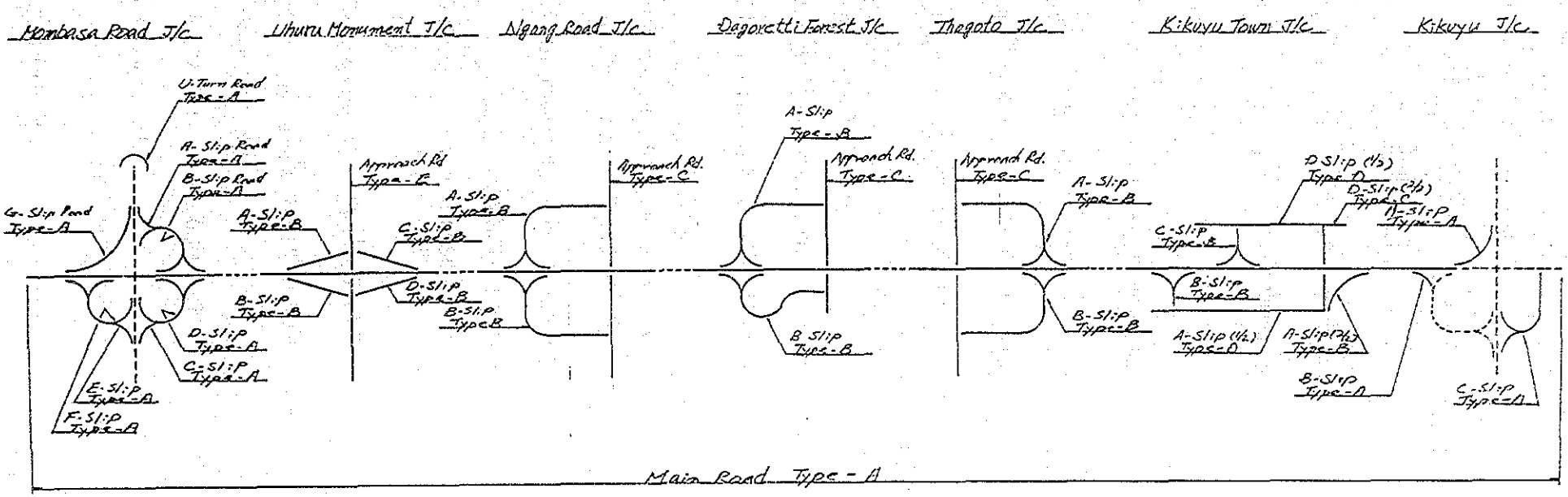
1. Double Surface Dressing
   6.00m x 50m = 300m2
2. Graded Stone Base
   6.00m x 0.130 x 50m = 39.00m3
3. Graded Stone Subbase
   (6.0 + 1.587 x 2 + 6.0 +1.804 x 2) x 1/2 x0.100 x 50m = 46.96m3
4. Graded Stone Shoulder
   0.175 x 2 x 50m = 17.5m3
5. Sinble Surface Dressing
   1.122 x 2 x 50m = 112.2m2
6. Subgrade (in Cut)
   6.00m x 0.30 + 0.639 x 2 x 50m = 65.70m3

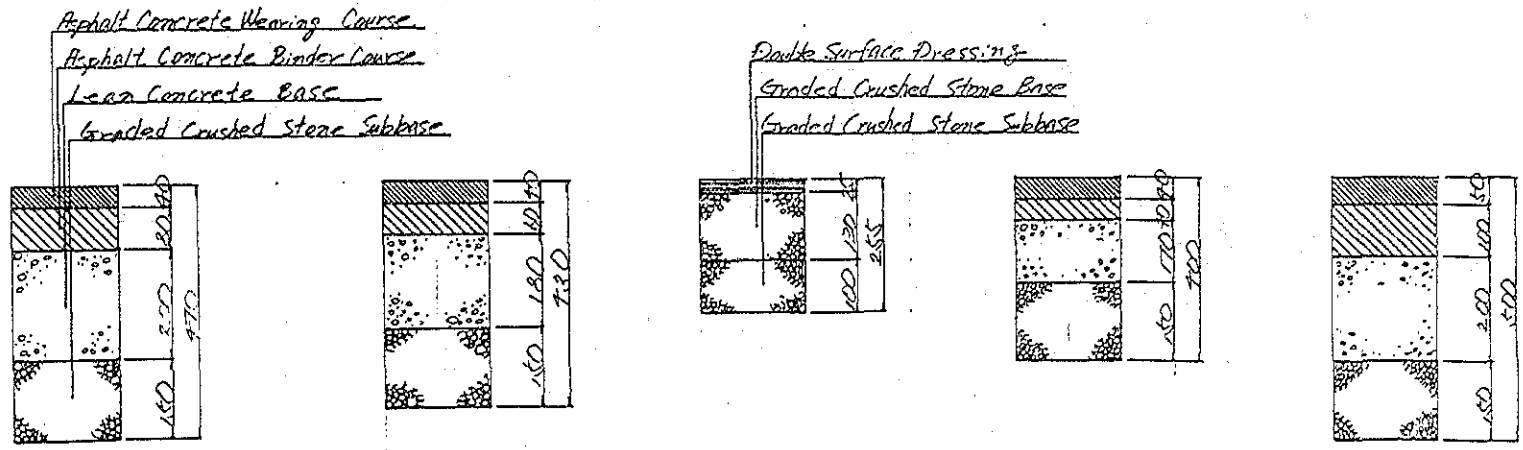


DIAGRAMMATIC PLAN

3.6 Pavement Quantities of Shoulders per Unit Length

DIAGRAMMATIC PLAN
showing Road Name and Pavement Type to be adopted.

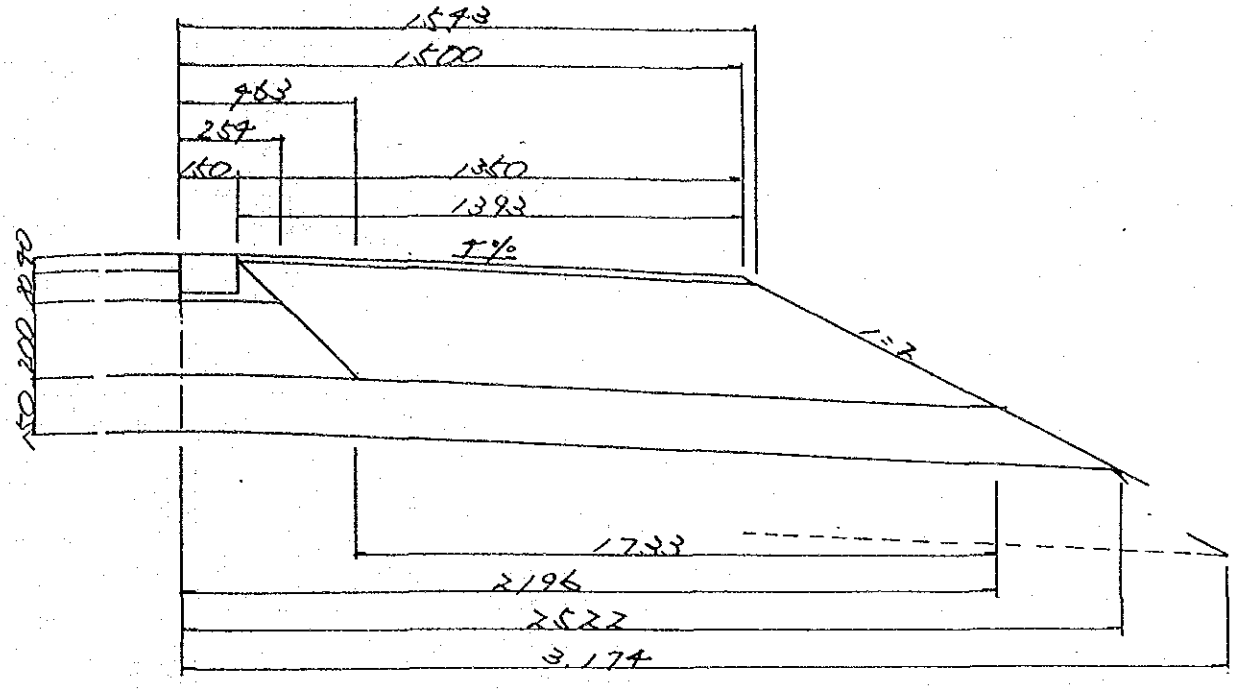




PAVEMENT STRUCTURE

COMPUTATION OF QUANTITIES FOR UNIT LENGTH OF SHOULDERS

SHOULDER TYPE- 1



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

(0.254 + 0.463) x 1/2 x 0.200 = 0.072 m3

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(2.196 + 2.522) x 1/2 x 0.150 = 0.354 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(1.393 + 1.733) x 1/2 x 0.300 = 0.469 m3

5. DOUBLE SURFACE DRESSING (m2)

1.350 m2

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

(2.522 + 3.174) x 1/2 x 0.300 = 0.854 m3

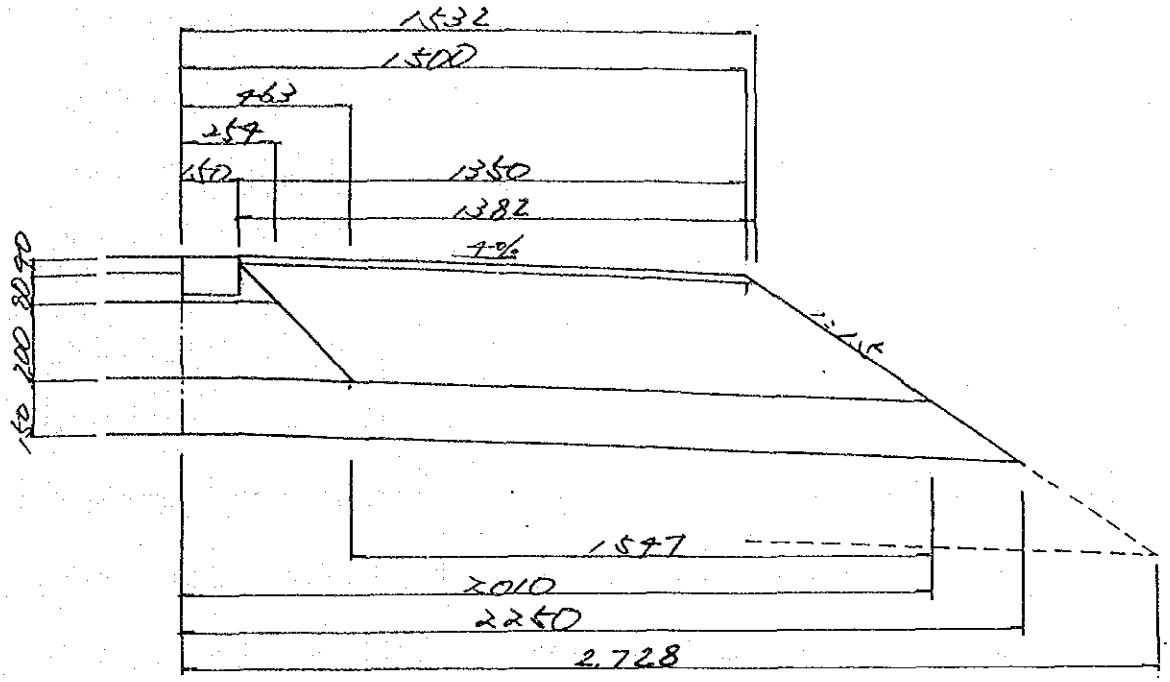
8. GRASSING (m2)

-

9. FILLING (m3)

-

SHOULDER TYPE- 2



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

(0.254 + 0.463) x 1/2 x 0.200 = 0.072 m3

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(2.010 + 2.250) x 1/2 x 0.150 = 0.320 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(1.382 + 1.547) x 1/2 x 0.300 = 0.439 m3

5. DOUBLE SURFACE DRESSING (m2)

1.350 m2

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

(2.250 + 2.728) x 1/2 x 0.300 = 0.747 m3

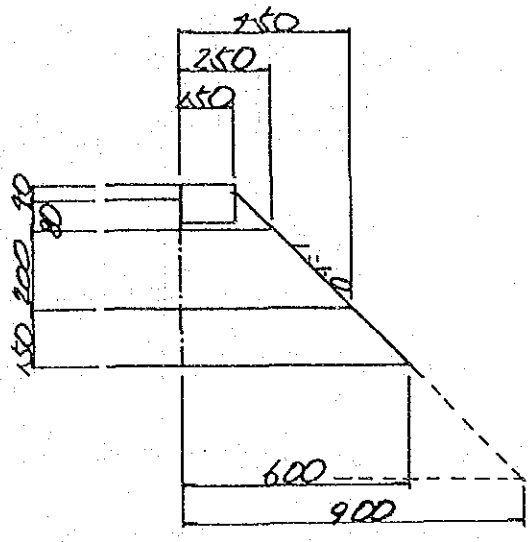
8. GRASSING (m2)

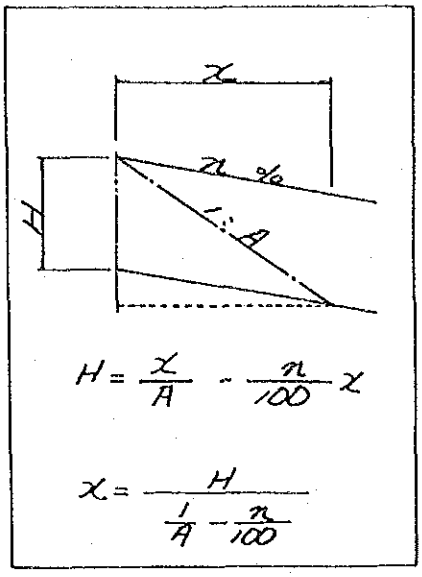
-

9. FILLING (m3)

-

SHOULDER TYPE- 3





TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

(0.250 + 0.450) x 1/2 x 0.200 = 0.070 m3

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(0.450 + 0.600) x 1/2 x 0.150 = 0.079 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

-

5. DOUBLE SURFACE DRESSING (m2)

-

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

(0.600 + 0.900) x 1/2 x 0.300 = 0.225 m3

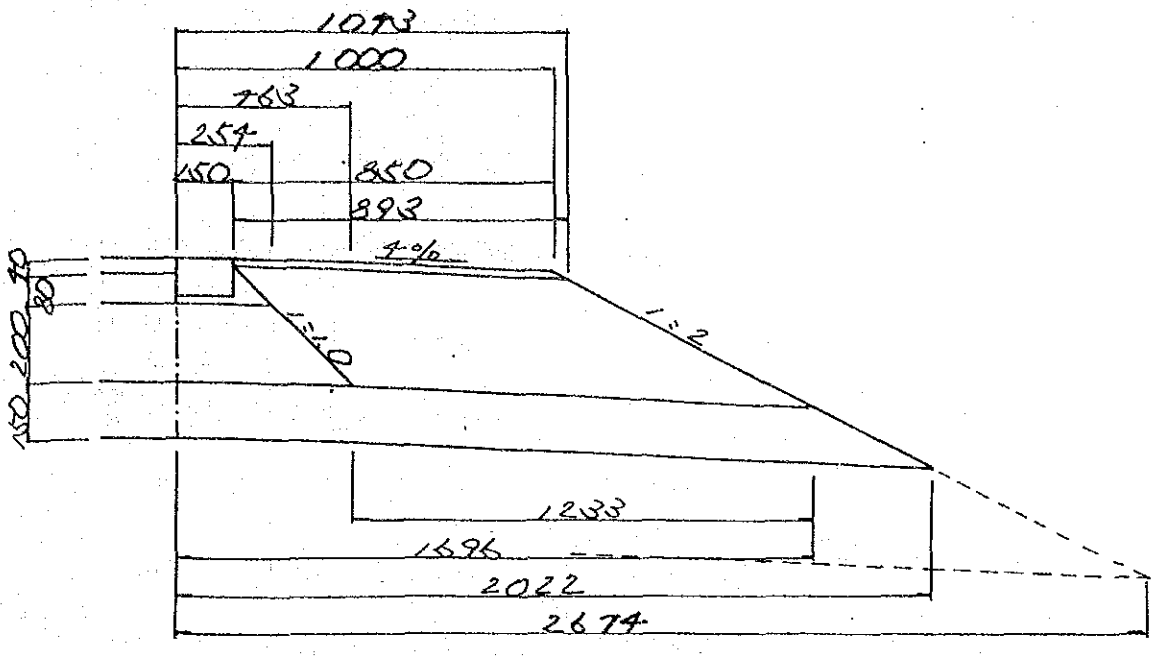
8. GRASSING (m2)

-

9. FILLING (m3)

-

SHOULDER TYPE- 4



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

(0.254 + 0.463) x 1/2 x 0.200 = 0.072 m3

2. GRADED CRUSHED STONE BASE (m3)

3. GRADED CRUSHED STONE SUBBASE (m3)

(1.696 + 2.022) x 1/2 x 0.150 = 0.279 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(0.893 + 1.233) x 1/2 x 0.300 = 0.319 m3

5. DOUBLE SURFACE DRESSING (m2)

0.850 m2

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

(2.022 + 2.674) x 1/2 x 0.300 = 0.704 m3

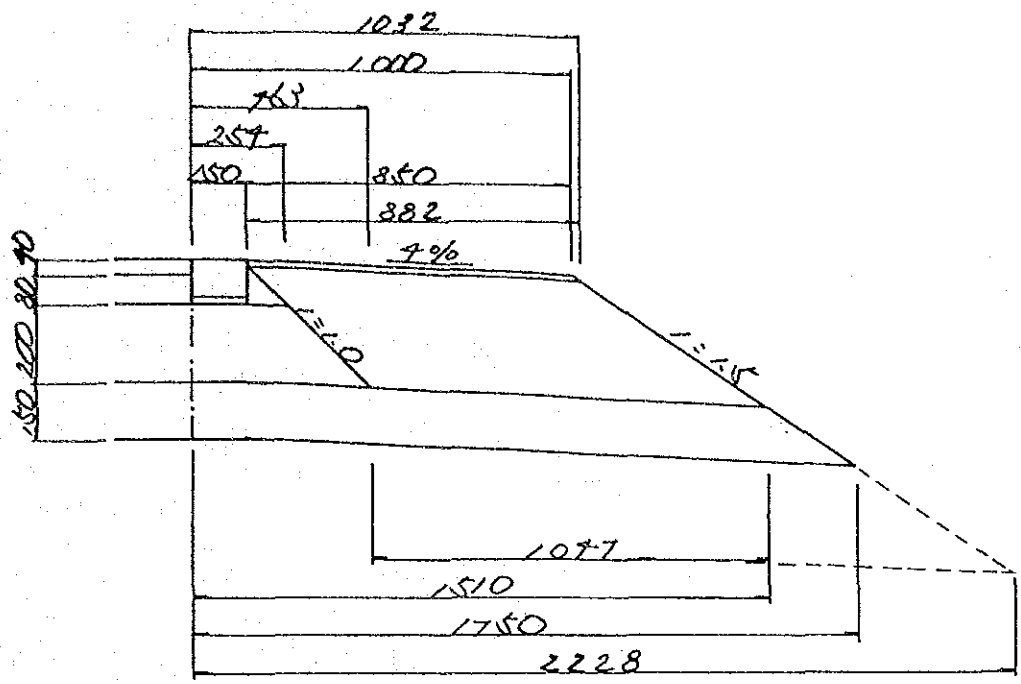
8. GRASSING (m2)

-

9. FILLING (m3)

-

SHOULDER TYPE- 5



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

(0.254 + 0.463) x 1/2 x 0.200 = 0.072 m3

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(1.510 + 1.750) x 1/2 x 0.150 = 0.245 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(0.882 + 1.047) x 1/2 x 0.300 = 0.289 m3

5. DOUBLE SURFACE DRESSING (m2)

0.850 m2

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

(1.750 + 2.228) x 1/2 x 0.300 = 0.597 m3

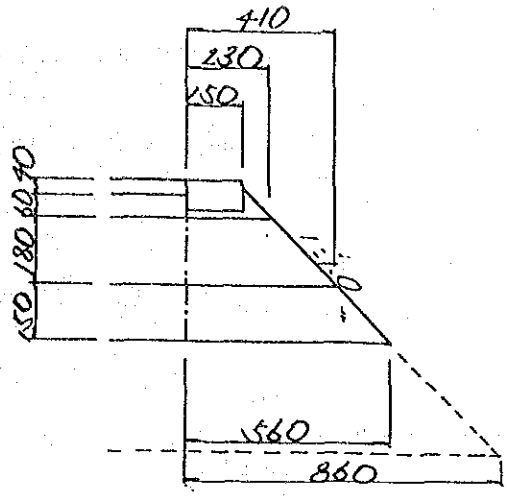
8. GRASSING (m2)

-

9. FILLING (m3)

-

SHOULDER TYPE- 6



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

(0.230 + 0.410) x 1/2 x 0.200 = 0.058 m3

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(0.410 + 0.560) x 1/2 x 0.150 = 0.073 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

-

5. DOUBLE SURFACE DRESSING (m2)

-

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

(0.560 + 0.860) x 1/2 x 0.300 = 0.213 m3

8. GRASSING (m2)

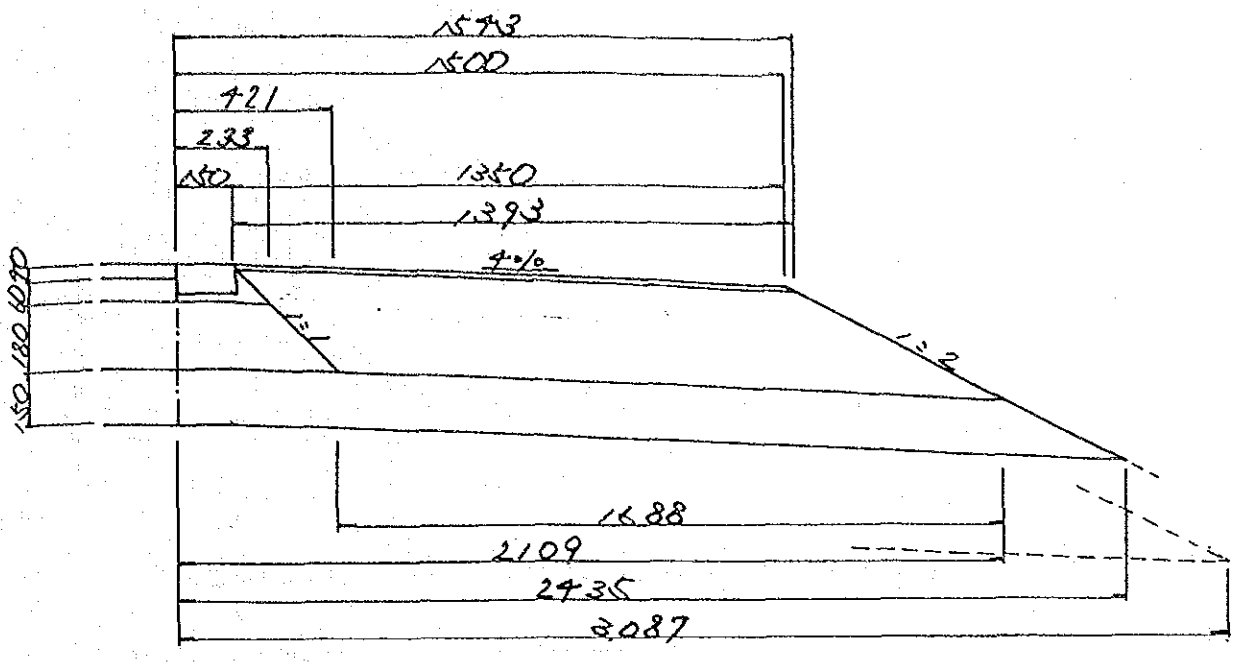
-

9. FILLING (m3)

-

COMPUTATION OF QUANTITIES FOR UNIT LENGTH OF SHOULDERS

SHOULDER TYPE- 7



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

(0.233 + 0.421) x 1/2 x 0.180 = 0.059 m3

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(2.109 + 2.435) x 1/2 x 0.150 = 0.341 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(1.393 + 1.688) x 1/2 x 0.260 = 0.401 m3

5. DOUBLE SURFACE DRESSING (m2)

1.350 m2

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

(2.435 + 3.087) x 1/2 x 0.300 = 0.828 m3

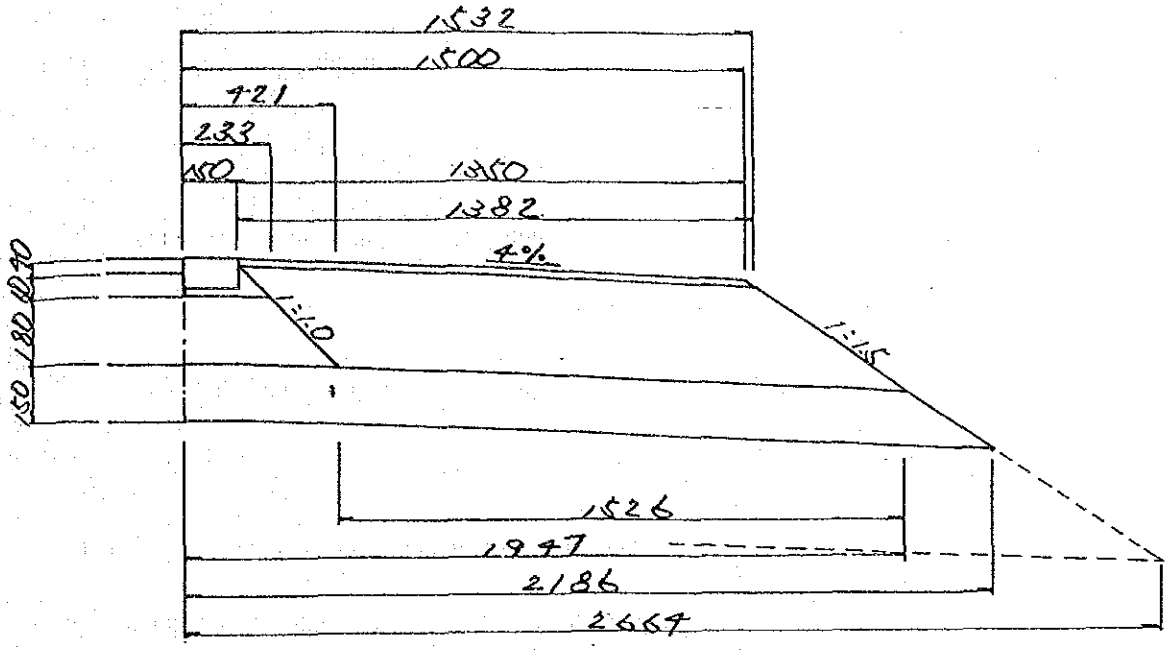
8. GRASSING (m2)

-

9. FILLING (m3)

-

SHOULDER TYPE- 8



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

(0.233 + 0.421) x 1/2 x 0.180 = 0.059 m3

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(1.947 + 2.186) x 1/2 x 0.150 = 0.310 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(1.382 + 1.526) x 1/2 x 0.260 = 0.378 m3

5. DOUBLE SURFACE DRESSING (m2)

1.350 m2

6. SINGLE SURFACEDRESSING (m2)

-

7. SUBGRADE (m3)

(2.186 + 2.664) x 1/2 x 0.300 = 0.728 m3

8. GRASSING (m2)

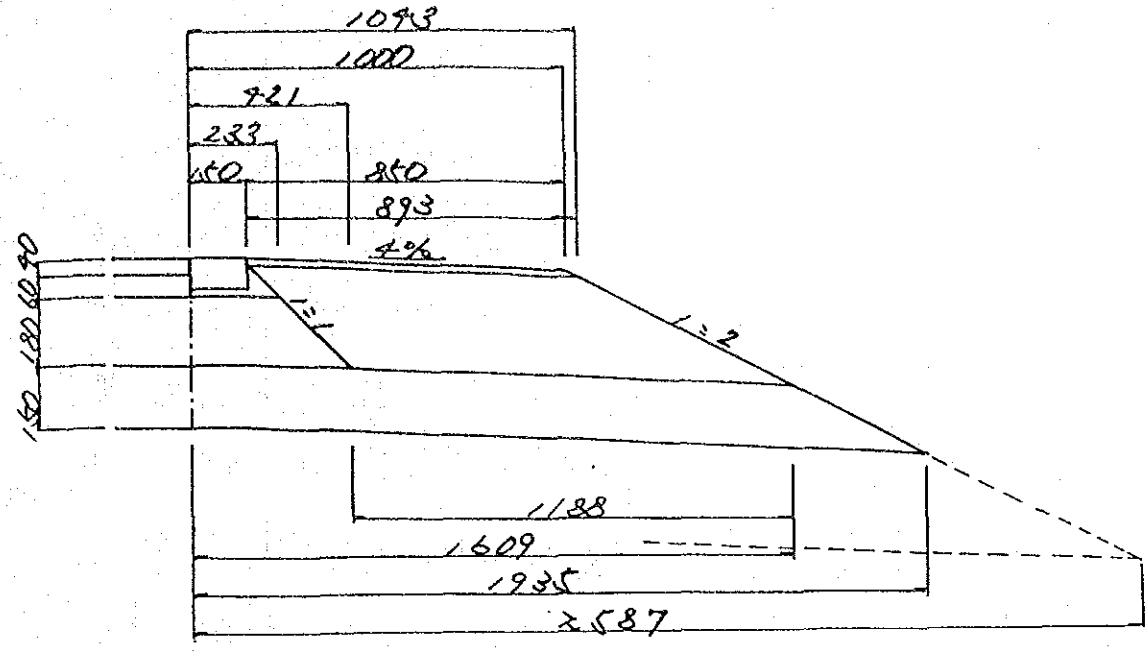
-

9. FILLING (m3)

-

COMPUTATION OF QUANTITIES FOR UNIT LENGTH OF SHOULDERS

SHOULDER TYPE- 9



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

(0.233 + 0.421) x 1/2 x 0.180 = 0.059 m3

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(1.609 + 1.935) x 1/2 x 0.150 = 0.266 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(0.893 + 1.188) x 1/2 x 0.260 = 0.271 m3

5. DOUBLE SURFACE DRESSING (m2)

0.850 m2

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

(1.935 + 2.587) x 1/2 x 0.300 = 0.678 m3

8. GRASSING (m2)

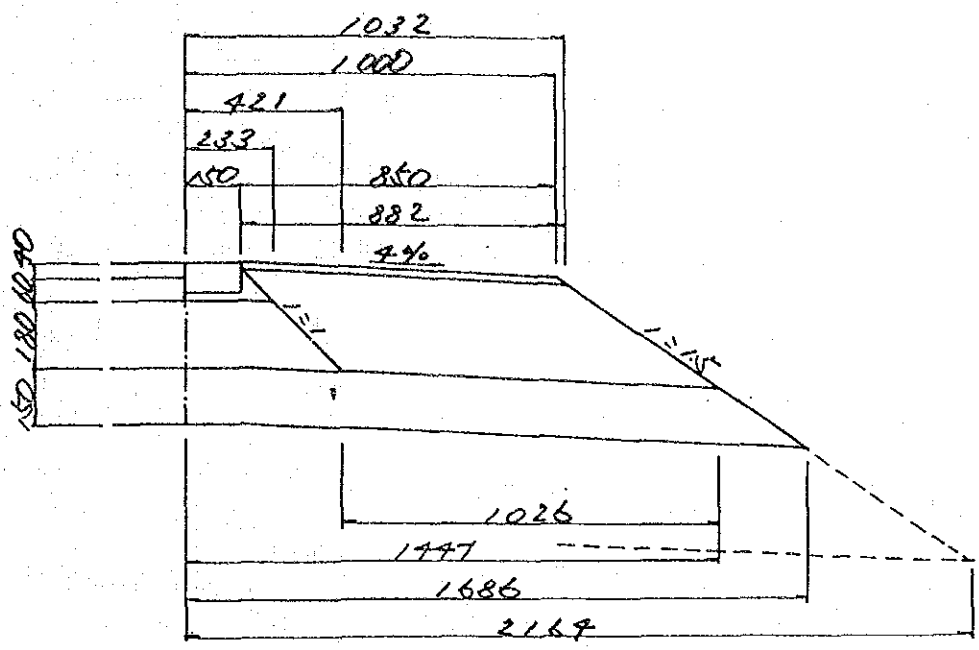
-

9. FILLING (m3)

-

COMPUTATION OF QUANTITIES FOR UNIT LENGTH OF SHOULDERS

SHOULDER TYPE- 10



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

(0.233 + 0.421) x 1/2 x 0.180 = 0.059 m3

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(1.447 + 1.686) x 1/2 x 0.150 = 0.235 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(0.882 + 1.026) x 1/2 x 0.260 = 0.248 m3

5. DOUBLE SURFACE DRESSING (m2)

0.850 m2

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

(1.686 + 2.164) x 1/2 x 0.300 = 0.578 m3

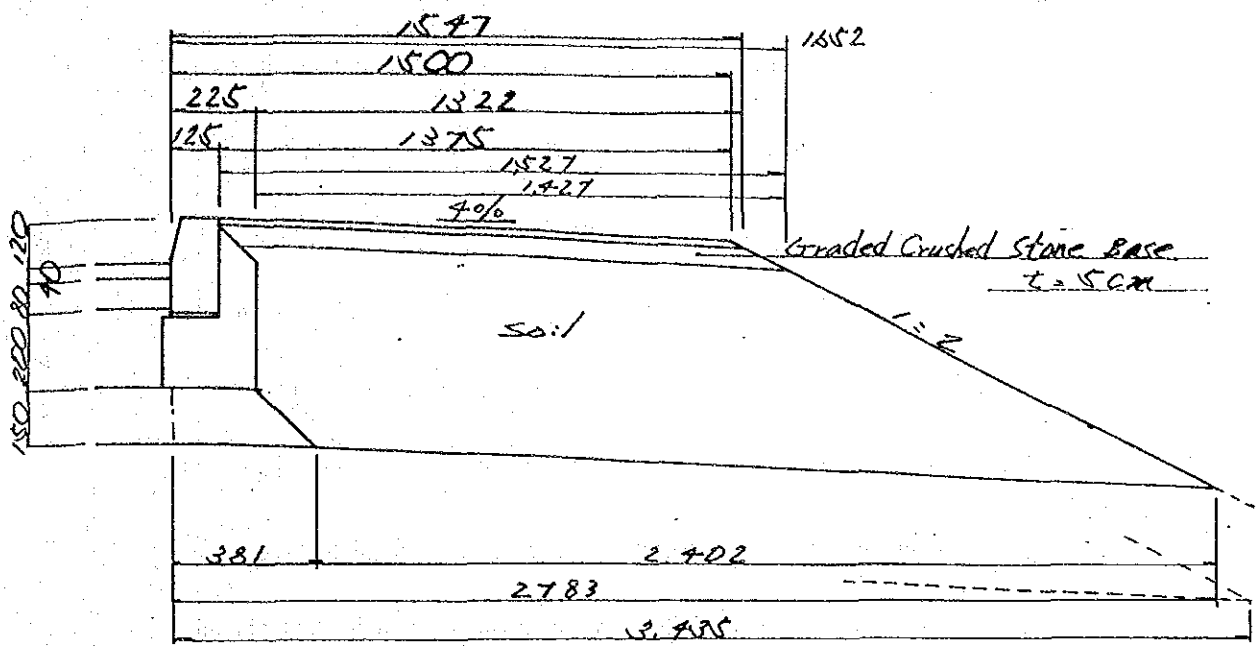
8. GRASSING (m2)

-

9. FILLING (m3)

-

SHOULDER TYPE- 11



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

-

2. GRADED CRUSHED STONE BASE (m3)

(1.422 + 1.527) x 1/2 x 0.050 = 0.074 m3

3. GRADED CRUSHED STONE SUBBASE (m3)

(0.225 + 0.381) x 1/2 x 0.150 = 0.045 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

-

5. DOUBLE SURFACE DRESSING (m2)

1.375 m2

6. SINGLE SURFACEDRESSING (m2)

-

7. SUBGRADE (m3)

(2.783 + 3.435) x 1/2 x 0.300 = 0.933 m3

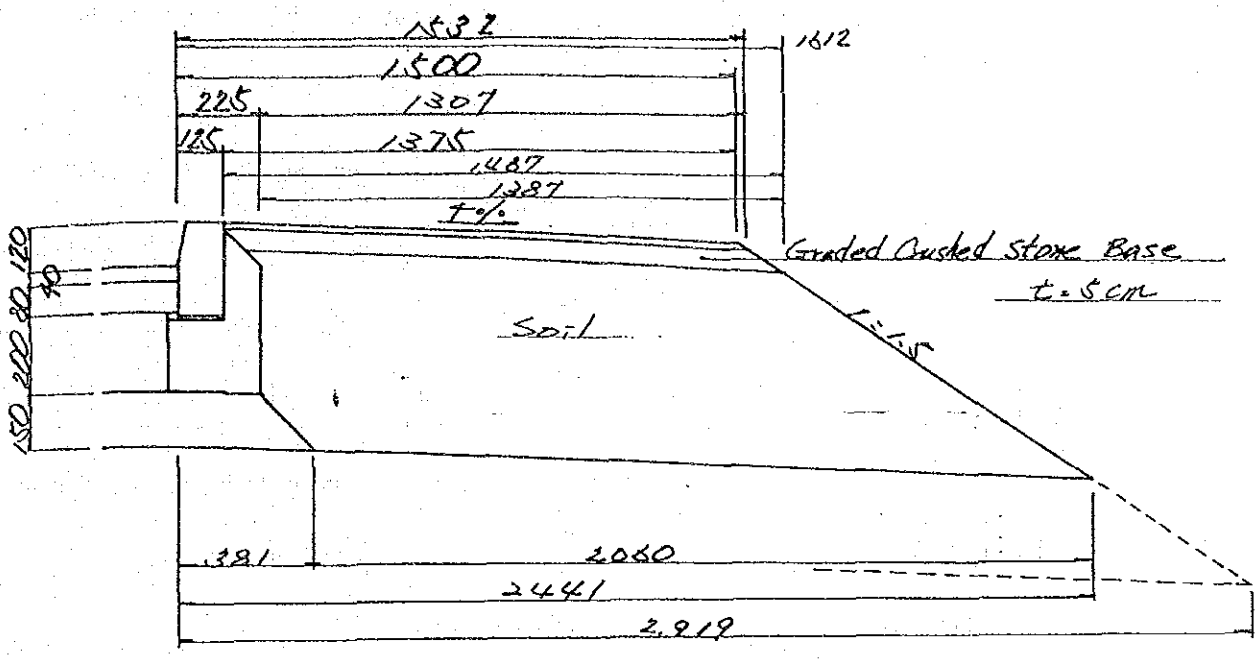
8. GRASSING (m2)

-

9. FILLING (m3)

(1.427 + 2.402) x 1/2 x 0.520 = 0.996 m3

SHOULDER TYPE- 12



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

-

2. GRADED CRUSHED STONE BASE (m3)

(1.407 + 1.487) x 1/2 x 0.050 = 0.072 m3

3. GRADED CRUSHED STONE SUBBASE (m3)

0.045 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

-

5. DOUBLE SURFACE DRESSING (m2)

1.375 m2

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

(2.441 + 2.919) x 1/2 x 0.300 = 0.804 m3

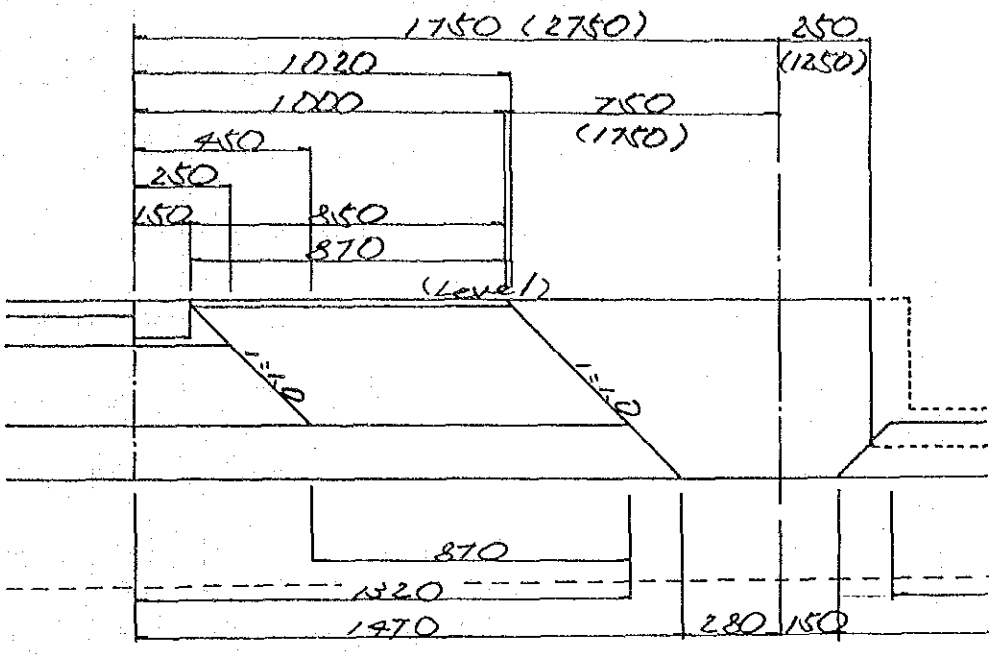
8. GRASSING (m2)

-

9. FILLING (m3)

(1.387 + 2.060) x 1/2 x 0.520 = 0.896m3

SHOULDER TYPE- 13



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

(0.250 + 0.450) x 1/2 x 0.200 = 0.070 m3

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(1.320 + 1.470) x 1/2 x 0.150 = 0.209 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

0.870 x 0.300 = 0.261 m3

5. DOUBLE SURFACE DRESSING (m2)

0.850 m2

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

1.750 x 0.300 = 0.525 m3

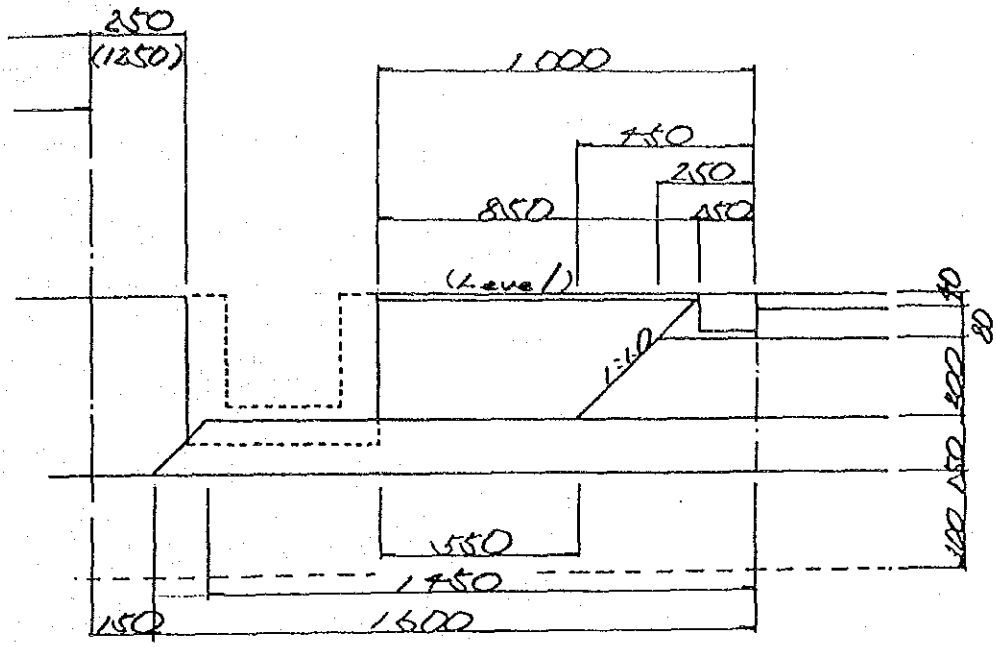
8. GRASSING (m2)

0.750 m2

9. FILLING (m3)

(0.280 + 0.750) x 1/2 x 0.470 = 0.242 m3

SHOULDER TYPE- 14



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

0.070 m3

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(1.450 + 1.600) x 1/2 x 0.150 = 0.229 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(0.850 + 0.550) x 1/2 x 0.300 = 0.210 m3

5. DOUBLE SURFACE DRESSING (m2)

0.850 m2

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

0.525 m3

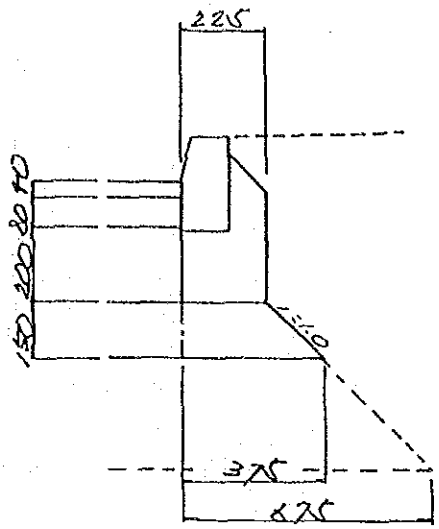
8. GRASSING (m2)

0.250 m2

9. FILLING (m3)

0.250 x 0.470 - 0.100 x 0.100 x 1/2 = 0.113 m3

SHOULDER TYPE- 15



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

-

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(0.225 + 0.375) x 1/2 x 0.150 = 0.045 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

-

5. DOUBLE SURFACE DRESSING (m2)

-

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

(0.375 + 0.675) x 1/2 x 0.300 = 0.158 m3

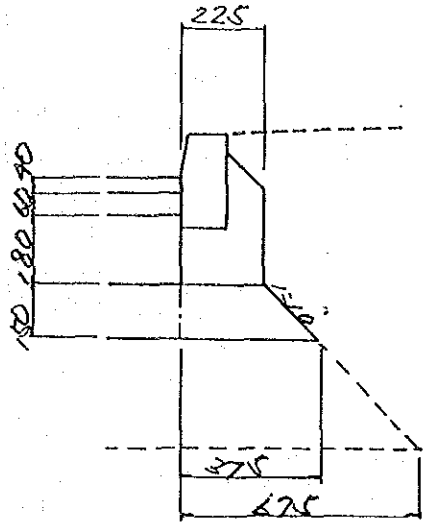
8. GRASSING (m2)

-

9. FILLING (m3)

-

SHOULDER TYPE- 16



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

-

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

0.045 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

-

5. DOUBLE SURFACE DRESSING (m2)

-

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

0.158 m3

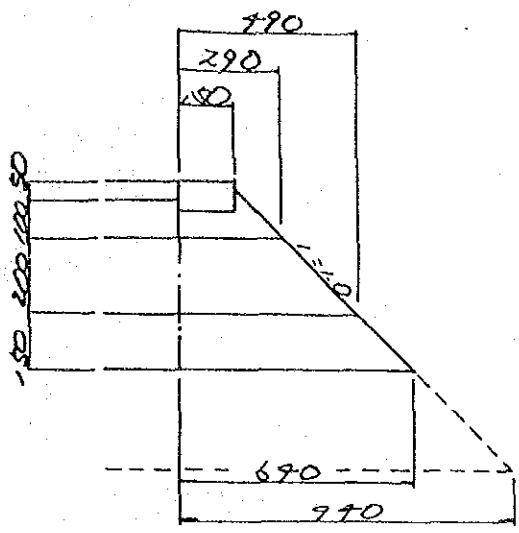
8. GRASSING (m2)

-

9. FILLING (m3)

-

SHOULDER TYPE- 17



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

(0.290 + 0.490) x 1/2 x 0.200 = 0.078 m3

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(0.490 + 0.640) x 1/2 x 0.150 = 0.085 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

-

5. DOUBLE SURFACE DRESSING (m2)

-

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

(0.640 + 0.940) x 1/2 x 0.300 = 0.237 m3

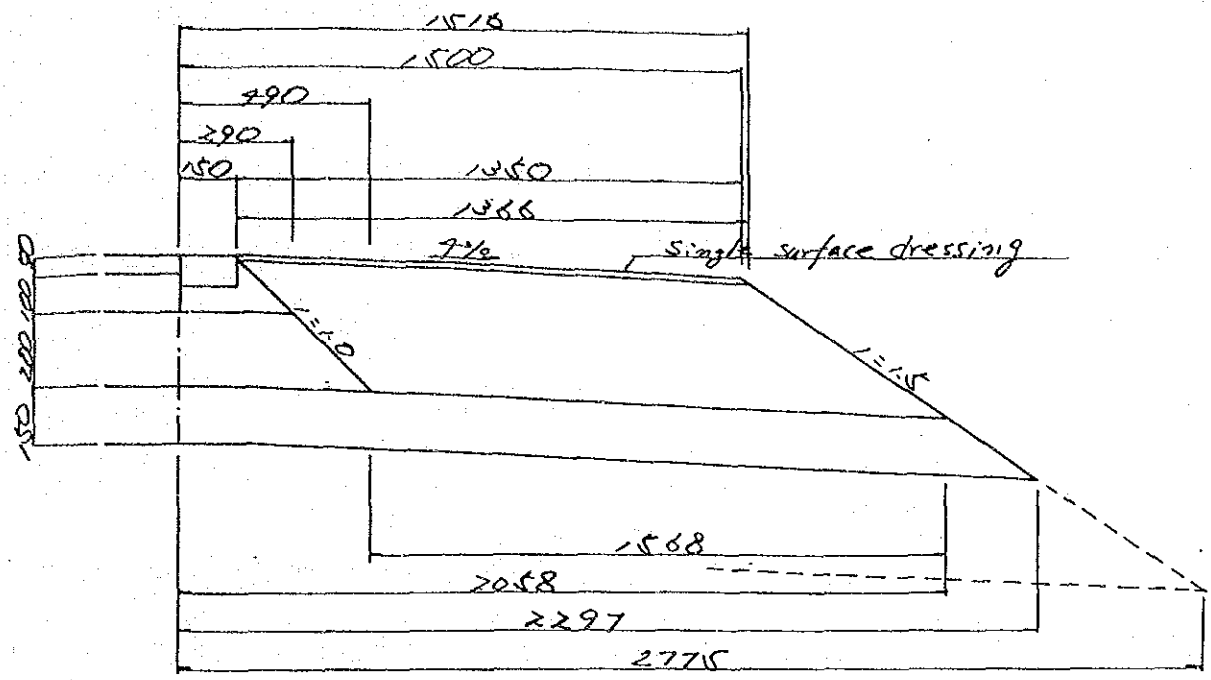
8. GRASSING (m2)

-

9. FILLING (m3)

-

SHOULDER TYPE- 18



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

(0.290 + 0.490) x 1/2 x 0.200 = 0.078 m3

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(2.058 + 2.297) x 1/2 x 0.150 = 0.327 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(1.366 + 1.568) x 1/2 x 0.340 = 0.499 m3

5. DOUBLE SURFACE DRESSING (m2)

-

6. SINGLE SURFACE DRESSING (m2)

1.350 m2

7. SUBGRADE (m3)

(2.297 + 2.775) x 1/2 x 0.300 = 0.761 m3

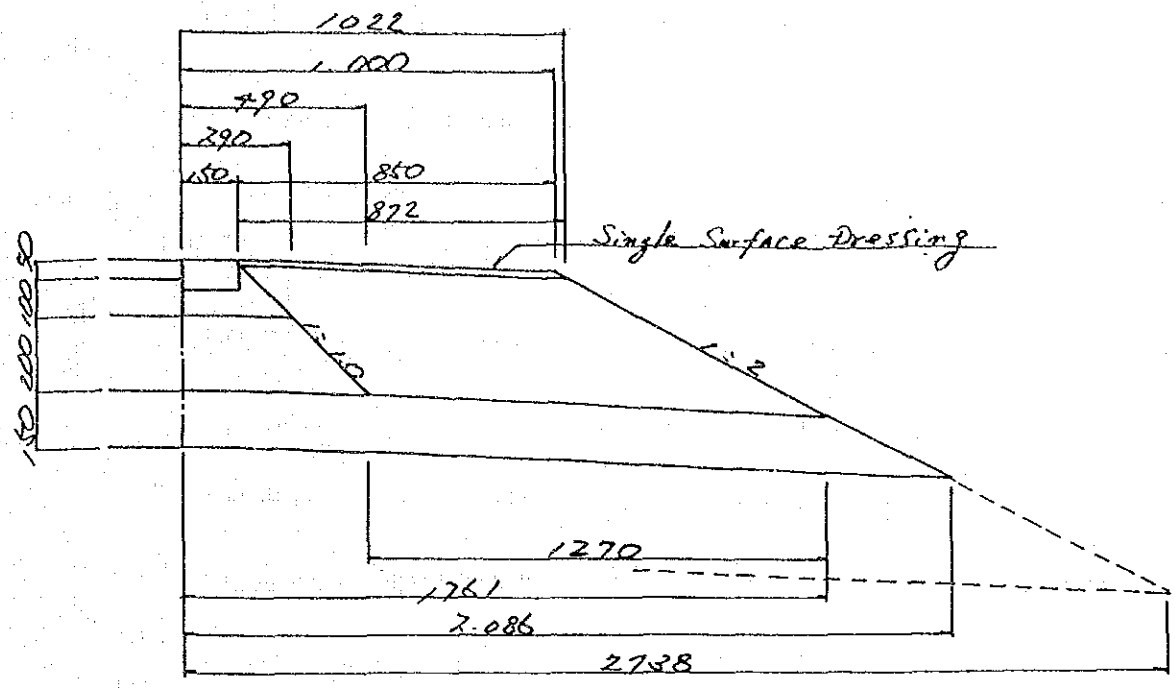
8. GRASSING (m2)

-

9. FILLING (m3)

-

SHOULDER TYPE- 19



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

(0.290 + 0.490) x 1/2 x 0.200 = 0.078 m3

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(1.761 + 2.086) x 1/2 x 0.150 = 0.289 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(0.872 + 1.270) x 1/2 x 0.340 = 0.364 m3

5. DOUBLE SURFACE DRESSING (m2)

-

6. SINGLE SURFACE DRESSING (m2)

0.850 m2

7. SUBGRADE (m3)

(2.086 + 2.738) x 1/2 x 0.300 = 0.724 m3

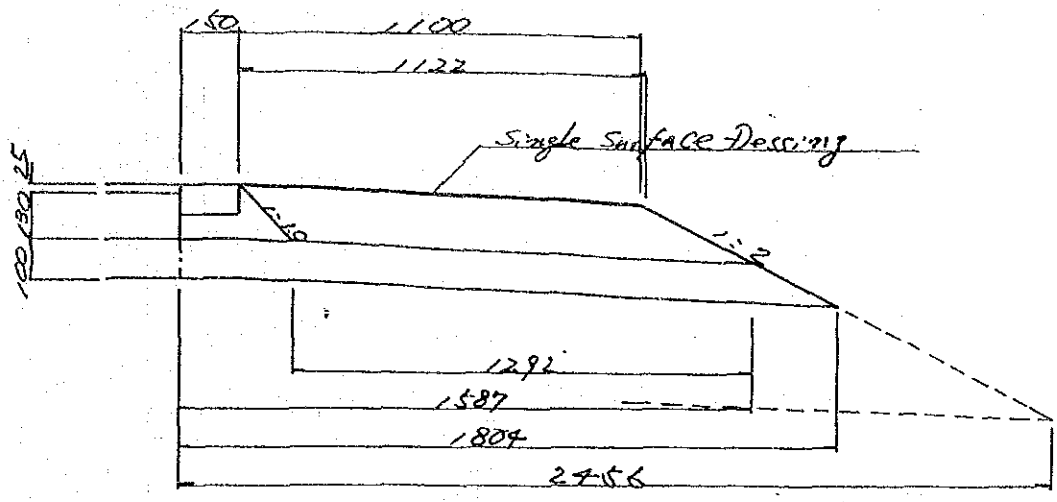
8. GRASSING (m2)

-

9. FILLING (m3)

-

SHOULDER TYPE- 20



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

-

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(1.587 + 1.804) x 1/2 x 0.100 = 0.170 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(1.122 + 1.292) x 1/2 x 0.145 = 0.175 m3

5. DOUBLE SURFACE DRESSING (m2)

-

6. SINGLE SURFACE DRESSING (m2)

1.100 m2

7. SUBGRADE (m3)

(1.804 + 2.456) x 1/2 x 0.300 = 0.639 m3

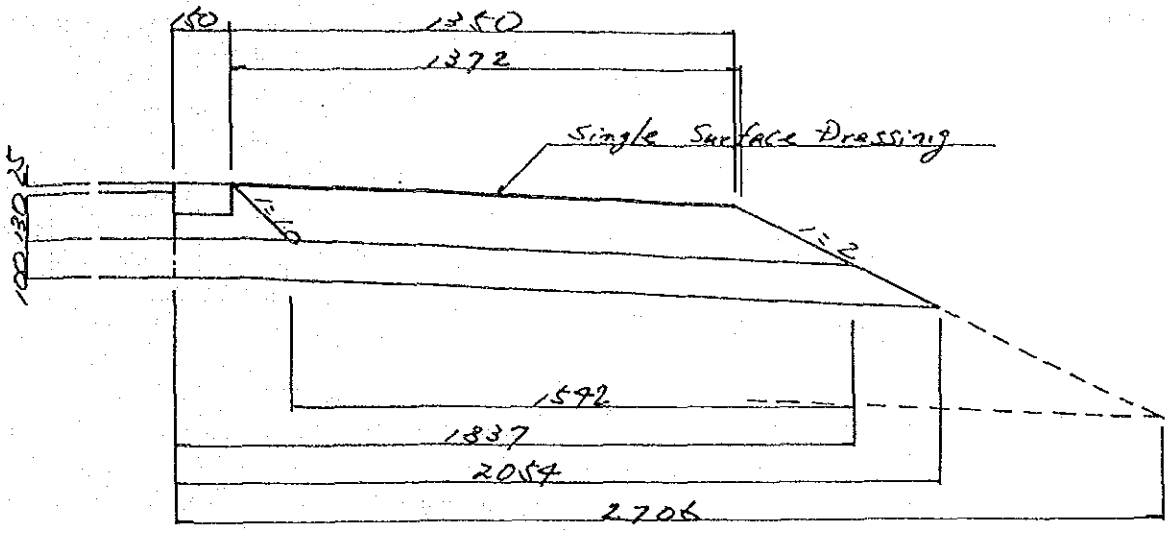
8. GRASSING (m2)

-

9. FILLING (m3)

-

SHOULDER TYPE- 21



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

-

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(1.839 + 2.054) x 1/2 x 0.100 = 0.195 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(1.372 + 1.542) x 1/2 x 0.145 = 0.211 m3

5. DOUBLE SURFACE DRESSING (m2)

-

6. SINGLE SURFACE DRESSING (m2)

1.350 m2

7. SUBGRADE (m3)

(2.054 + 2.706) x 1/2 x 0.300 = 0.714 m3

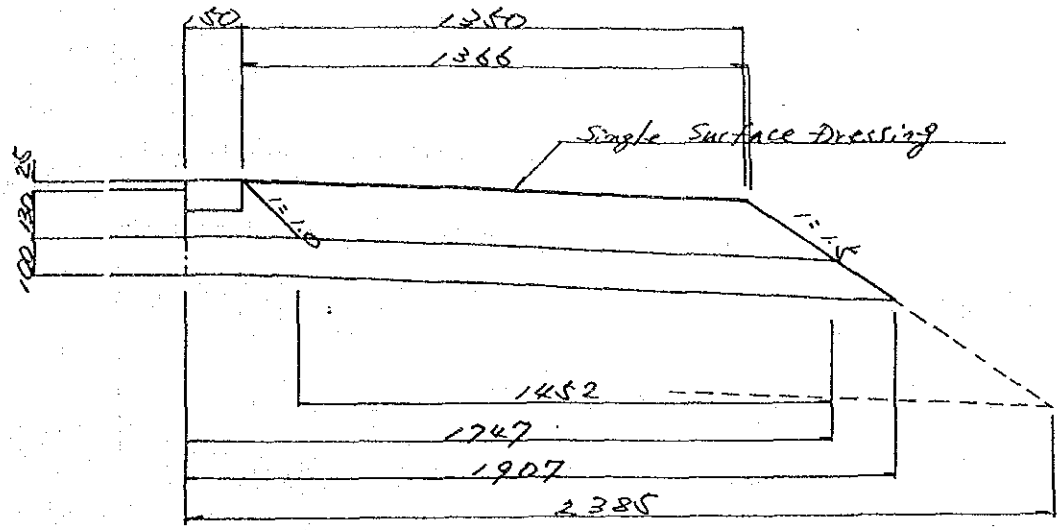
8. GRASSING (m2)

-

9. FILLING (m3)

-

SHOULDER TYPE- 22



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

-

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(1.747 + 1.907) x 1/2 x 0.100 = 0.183 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(1.366 + 1.452) x 1/2 x 0.145 = 0.204 m3

5. DOUBLE SURFACE DRESSING (m2)

-

6. SINGLE SURFACE DRESSING (m2)

1.350 m2

7. SUBGRADE (m3)

(1.907 + 2.185) x 1/2 x 0.300 = 0.614 m3

8. GRASSING (m2)

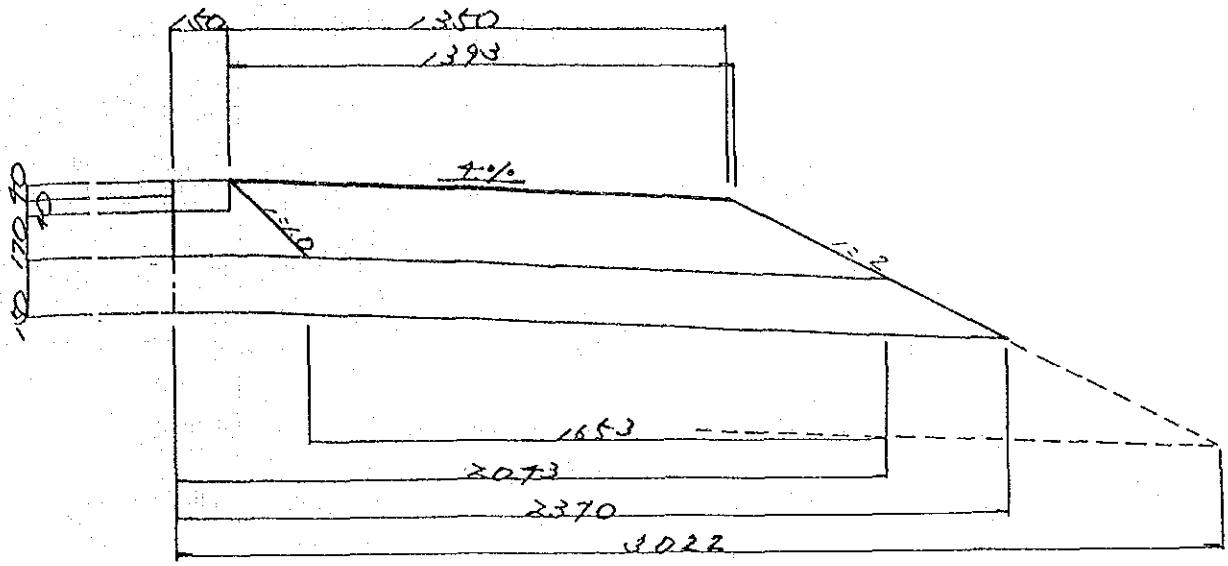
-

9. FILLING (m3)

-

COMPUTATION OF QUANTITIES FOR UNIT LENGTH OF SHOULDERS

SHOULDER TYPE- 23



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

-

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(2.043 + 2.370) x 1/2 x 0.150 = 0.331 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(1.393 + 1.653) x 1/2 x 0.230 = 0.350 m3

5. DOUBLE SURFACE DRESSING (m2)

1.350 m2

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

(2.370 + 3.022) x 1/2 x 0.300 = 0.809 m3

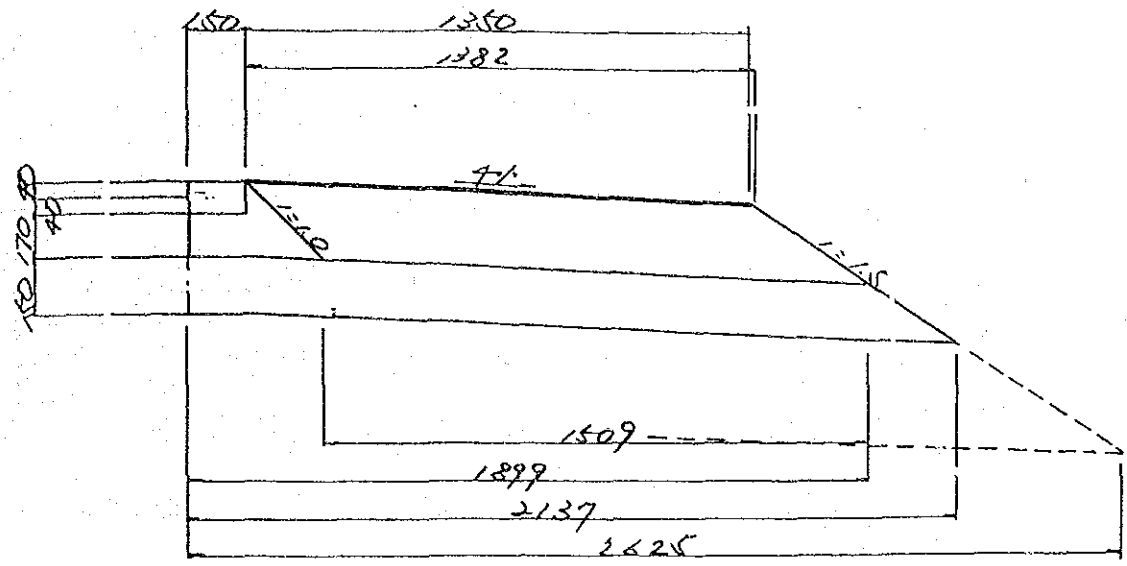
8. GRASSING (m2)

-

9. FILLING (m3)

-

SHOULDER TYPE- 24



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

-

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(1.899 + 2.137) x 1/2 x 0.150 = 0.303 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(1.382 + 1.509) x 1/2 x 0.230 = 0.332 m3

5. DOUBLE SURFACE DRESSING (m2)

1.350 m2

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

(2.137 + 2.615) x 1/2 x 0.300 = 0.713 m3

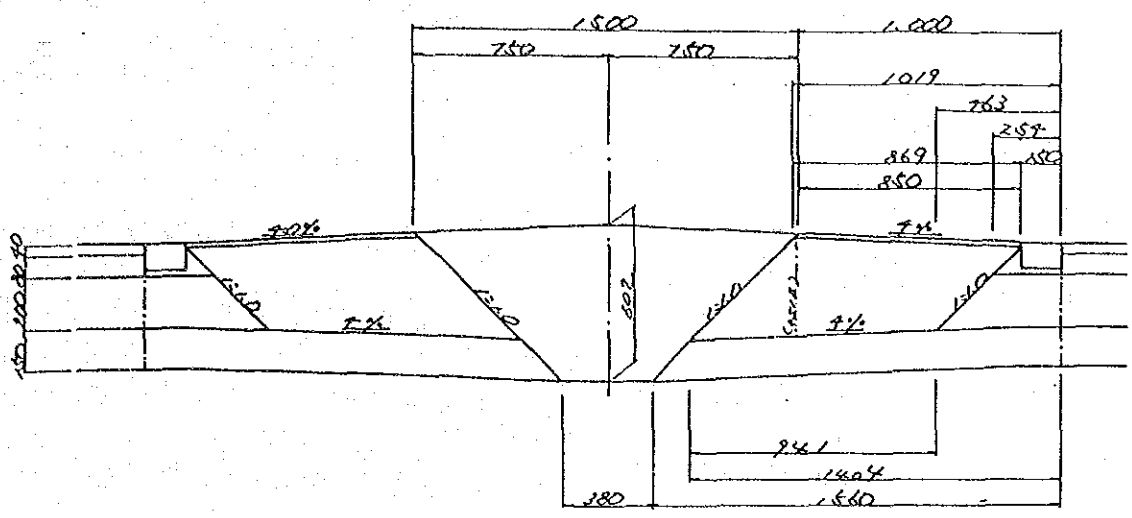
8. GRASSING (m2)

-

9. FILLING (m3)

-

SHOULDER TYPE- 25



TYPICAL CROSS SECTION

1. LEAN CONCRETE BASE (m3)

(0.254 + 0.463) x 1/2 x 0.200 x 2 = 0.143 m3

2. GRADED CRUSHED STONE BASE (m3)

-

3. GRADED CRUSHED STONE SUBBASE (m3)

(1.404 + 1.560) x 1/2 x 0.150 x 2 = 0.445 m3

4. GRADED CRUSHED STONE SHOULDER (m3)

(0.869 + 0.941) x 1/2 x 0.518 x 2 = 0.938 m3

5. DOUBLE SURFACE DRESSING (m2)

0.850 x 2 = 1.700 m2

6. SINGLE SURFACE DRESSING (m2)

-

7. SUBGRADE (m3)

3.500 x 0.300 = 1.050 m3

8. GRASSING (m2)

1.500 m2

9. FILLING (m3)

(0.380 + 1.500) x 1/2 x 0.602 = 0.566 m3

4. Passage of Traffic

SCHEDULE OF QUANTITIES FOR PASSAGE OF TRAFFIC

Location	Signs & Barriers	Deviations				Reinstatement of Existing Rd.		Maintenance of								Improve of existing Rd.	
								Project road				Deviations					
		Type-1 50As 300GCS W=7m	Type-2 DSD Gravel W=7m	Type-3 Gravel W=6m	Type-4 Gravel W=3m	A104 Mombasa J/C W=7m Cross Drainage	C63 Kikuyu J/C W=7m Cross Drainage	Main Road	Slip Road	Approach Road	ServiceRoad	Type-1	Type-2	Type-3	Type-4	Gravel Road	Serface Dressing Road
	(m)	(m)	(m)	(m)	(m)	(m2)	(m2)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(m)
Mombasa Road Junction																	
A-104 Road	3,670	980				70						980					
Likoni Road	900			450										450			
Uhuru Monument Junction																	
Langata Road	920	265								500		265					
CH.12+400–12+600																	
& CH.13+500–13+800				300										300			
Ngong Road Junction																	
Approach Road	1,600		800							800			800				
CH.15+980–16+400											665						
Service Road																	
CH.17+800–20+600	2,945										2,945						
Service Road																	
Dagoretti Forest Junction																	
Approach Road	500		500							500			500				
CH.22+200–23+20	1,951										1,951						
Service Road																	
Thogoto Junction																	
Approach Road	1,000				1,000					500					1,000		
CH.23+600–23+900	440										440						
Service Road																	
CH.24+800–25+500											820						
Service Road	820																
CH.26+440											50						
Service Road	240			120										120			
Kikuyu Town & Kikuyu																	
Junction	3,940				1,500		35	1,850	3,100						1,500		
TOTAL	18,926	1,245	1,300	870	2,500	70	35	1,850	3,100	2,300	6,871	1,245	1,300	870	2,500	360	20

5. Drainage

5.1 Summary

Summary of Drainage(1/2)

Item	Quantity	Unit
1.Excavation		
1.1.Soft Material		
(1) for Pipe Culvert	3,966	m3
(2) for Inlet/Outlet	2,962	m3
(3) for Drain Type I	5,644	m3
(4) for Drain Type II	3,897	m3
(5) for Drain Type III	3,684	m3
(6) for Drain Type VII	5,599	m3
(7) for Gulley Pot	180	m3
(8) for Drain Type VI	536	m3
(9) for Gabion	578	m3
(10) for Subsoil Drain	455	m3
(11) for Pond	9,077	m3
	(include in earthwork)	
(12) Top Soil	3,721	m2
	(include in earthwork)	
1.2.Hard Material		
(1) for Drain	0	m3
(2) for Pipe Culvert	65	m3
(3) for Inlet/Outlet	60	m3
(4) for Gulley Pot	5	m3
(5) for Others	370	m3
2.Subsoil Drain		
2.1.Filter Fabric	3,036	m2
2.2.Crushed Rock Backfill	416	m3
2.3.PVC Pipe(200mm dia.)	1,265	m
3.Concrete Pipe		
3.1.300mm dia.	155	m
3.2.600mm dia.	1,031	m
3.3.750mm dia.	90	m
3.4.900mm dia.	1,067	m
3.5.1200mm dia.	294	m

Item	Quantity	Unit
4.Concrete		
4.1.Class 15/20 Concrete		
(1) for Concrete Pipe	1,574	m3
(2) for Drain Type VII	944	m3
(3) for Drain Type VIII(t=50mm)	1,277	m2
4.2.Class 25/20 Concrete		
(1) for Inlet/Outlet	924	m3
4.3 Class 15/20 Concrete (Fabric Mesh)		
(1) for Drain Type III	672	m3
(2) for Drain Type VII	657	m3
4.4.Class 20/20 Concrete		
(1) for Drain Type VI	94	m3
(2) for Gulley Pot	63	m3
5.Concrete Cover		
5.1.for Gulley Pot	168	nos.
6.Weep Hole		
6.1.PVC Pipe(50mm dia./l=200mm)	45	nos.
7.Stone Pitching(t=150mm)		
7.1.for Drain	25,981	m2
7.2.for Pond	104	m2
8.Building Stone		
8.1.for Drain Type VII	1,728	m2
8.2.Cement Screen	1,728	m2
9.Gabion and Mattress		
9.1.Gabion Mesh(t=1.0m)	430	m2
9.2.Mattress(t=0.3m)		
(1) for Outfall	225	m2
(2) for Pond	42	m2
(3) under Gabion	200	m2
9.3.Rockfill		
(1) for Gabion	490	m3
(2) for Mattress	68	m3
(3) for Mattress(Pond)	13	m3
9.4.Filter Fabric	335	m2

Summary of Drainage(2/2)

Item	Quantity	Unit
10.Invert Block		
10.1.450 x 225mm Invert Block	507	m
10.2.Side Slab(t=75mm)	477	m2
10.3.375 x 250mm Invert Block		
(1) for Drain Type IV	15,432	m
(2) for Drain Type VIII	740	m
11.Kerb Inlet, Intake Block Channel and Concrete Gutter		
11.1.Kerb Inlet	32	nos.
11.2.Intake Block Channel	32	nos.
11.3.250 x 150mm Concrete Gutter	48	m
12.Gravell Bedding	79	
12.1.for Drain Type VI	60	m3
12.2.for Gulley Pot	19	m3
13.Grassing		
13.1.for Drain Type I	11,327	m2
13.2.for Pond	1,527	m2
	(include in earthwork)	
14.Earth Dike		
14.1.Earth Dike	708	m3
15.Clearing		
15.1.Clearing	4,225	m2