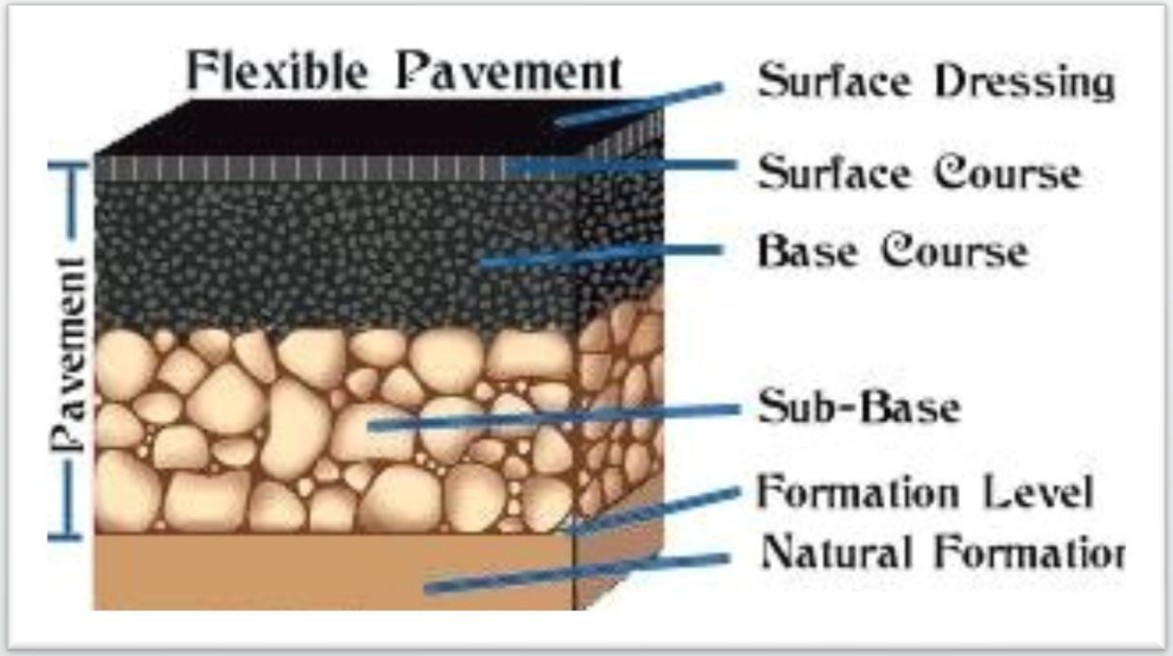
PROJEK MENAIKTARAF JALAN
DARI DONGGONGON KE SIMPANG PAPAR SPUR, SABAH.
-PAKEJ 2&3

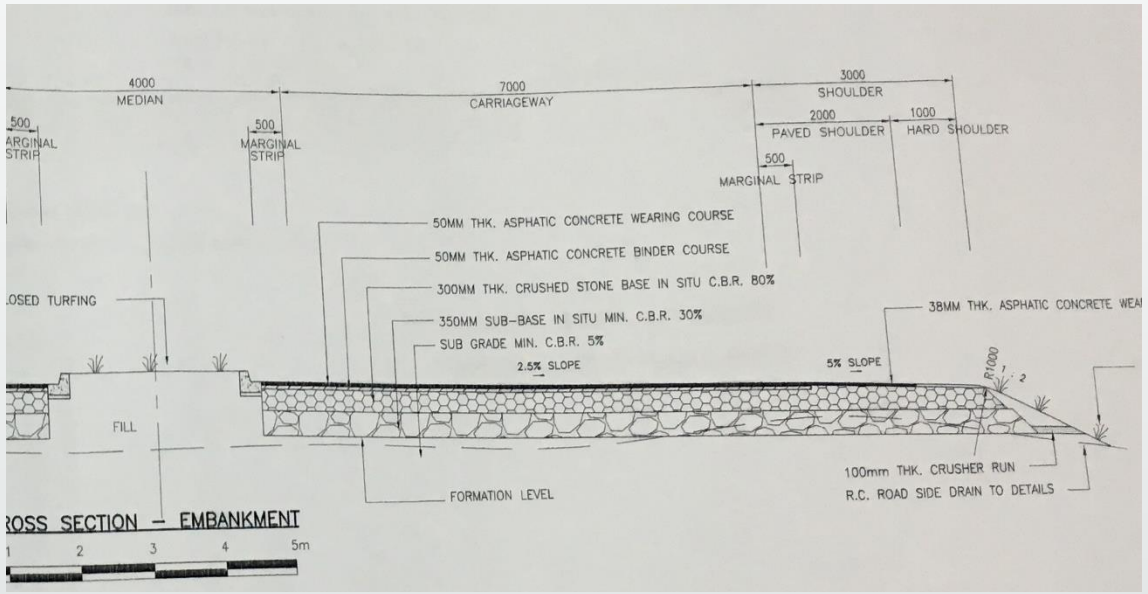
Hands On Training - DIPPING METHOD

JABATAN KERJA RAYA
SABAH

Introduction

- Road Pavement usually consist of four layers or “courses”. The Sub Base layer, Road Base layer , Binder Course and Wearing Course





JKR SABAH

Head Of Project Team 1

Introduction

- The horizontal alignment shall be determined from the centre-line of the pavement surface shown on the drawings. The design levels of the pavement courses shall be calculated from the vertical profile, crossfall, superelevation and pavement course thicknesses shown on the drawings.

- The level of any point on the constructed surface of a pavement course shall be the design level subject to the appropriate tolerances given below:

Pavement Course	Tolerance
Wearing Course	+/- 5mm
Binder Course	+/- 5mm
Road Base Course	+ 0mm, - 20mm
Sub Base Course	+ 10mm, - 20mm
Subgrade Formation	+ 10mm, - 30mm

Introduction

- Prior to the placing sub base material, the underlying layer Subgrade formation shall be compacted to 95% of the maximum dry density in accordance to the specifications.

- The top surface of Subgrade shall have the required shape, superelevation, levels and grades as required in the drawings and shall be within the tolerance of the required level.

- Any part deviating from the required level should be raked off or topped up with additional material and re-compacted to the correct level.

- The level shall be checked and control by using Dipping method.

Dipping Method

- Dipping method is the simplest way to check and control the compacted sub grade, sub base and road base to the required level as specified in the specifications.

- It is done by a string line is stretched tight from one known level point to another by set out at regular interval of 12.5m for straight line and 6.25m for curve area along both sides of the pavement, and then a tape measure or marked stick is used to check the distance between the line and the surface.

Dipping Method

Reference Marker

TBM (Temporary Bench Marker)

Head Of Project Team 1

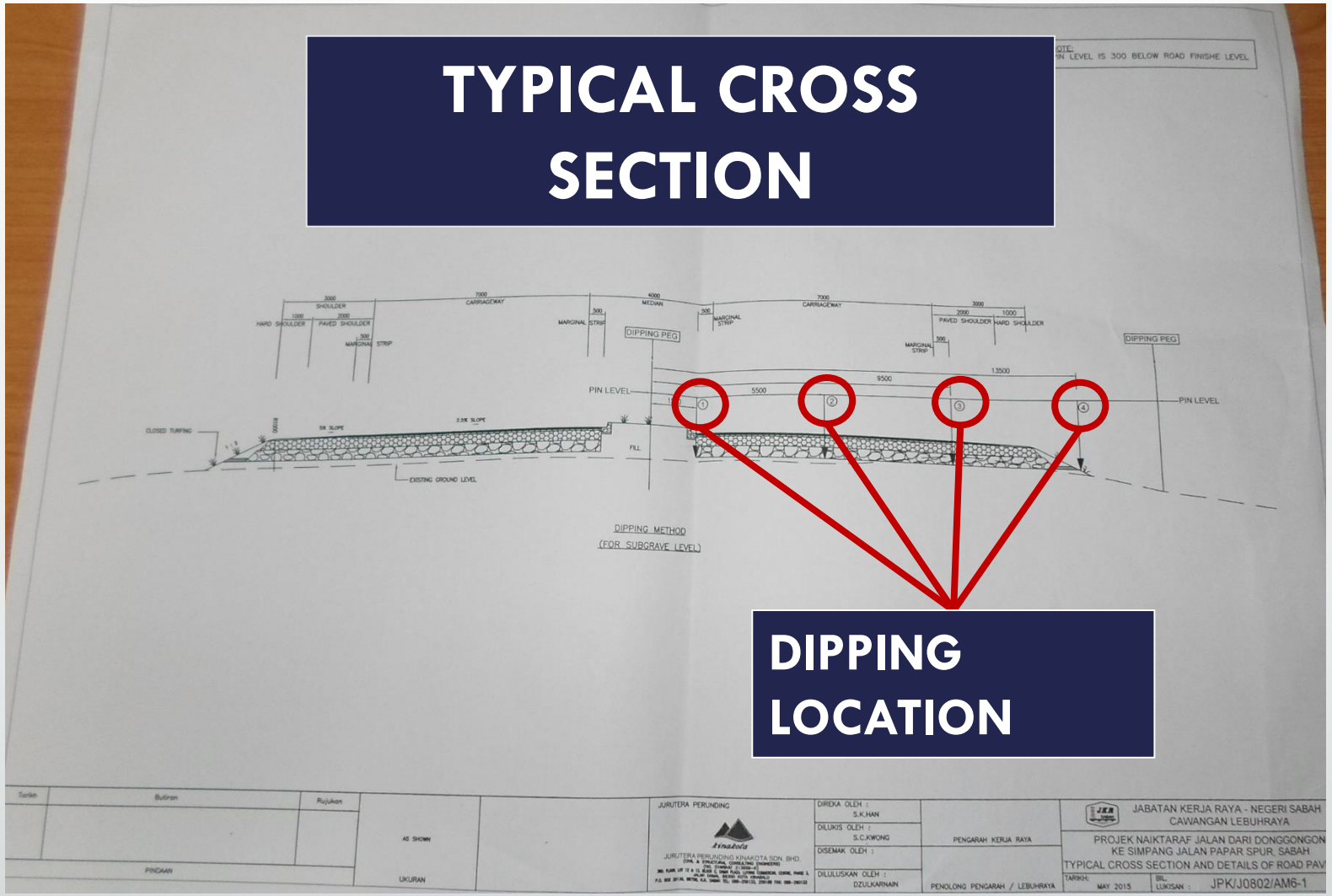
Dipping Method

DIPPING GUIDELINE

Offset Control Peg

Head Of Project Team 1

Dipping Method



Head Of Project Team 1

Dipping Procedure

1. All surface shall to be well compacted prior the Dipping.
2. Fixing cross section off set control peg measuring from centreline of the road.
3. Attached string to off set control pegs. The string line is stretched tight from known level off set point. A measuring tape or dipping stick is used to check the required off set height.

Head Of Project Team 1

Dipping Procedure

4. From road centreline offset 1.5m to road kerb for 1st reading. The height reading taken from surface of the finishing level to the attached string.

5. 2nd reading taken at the center of carriageway which is 5.50 m from road centreline. It will have to increase or decrease in off set height compared to centreline based on - 2.5% cross fall gradient or superelevation of the design level.

Head Of Project Team 1

Dipping Procedure

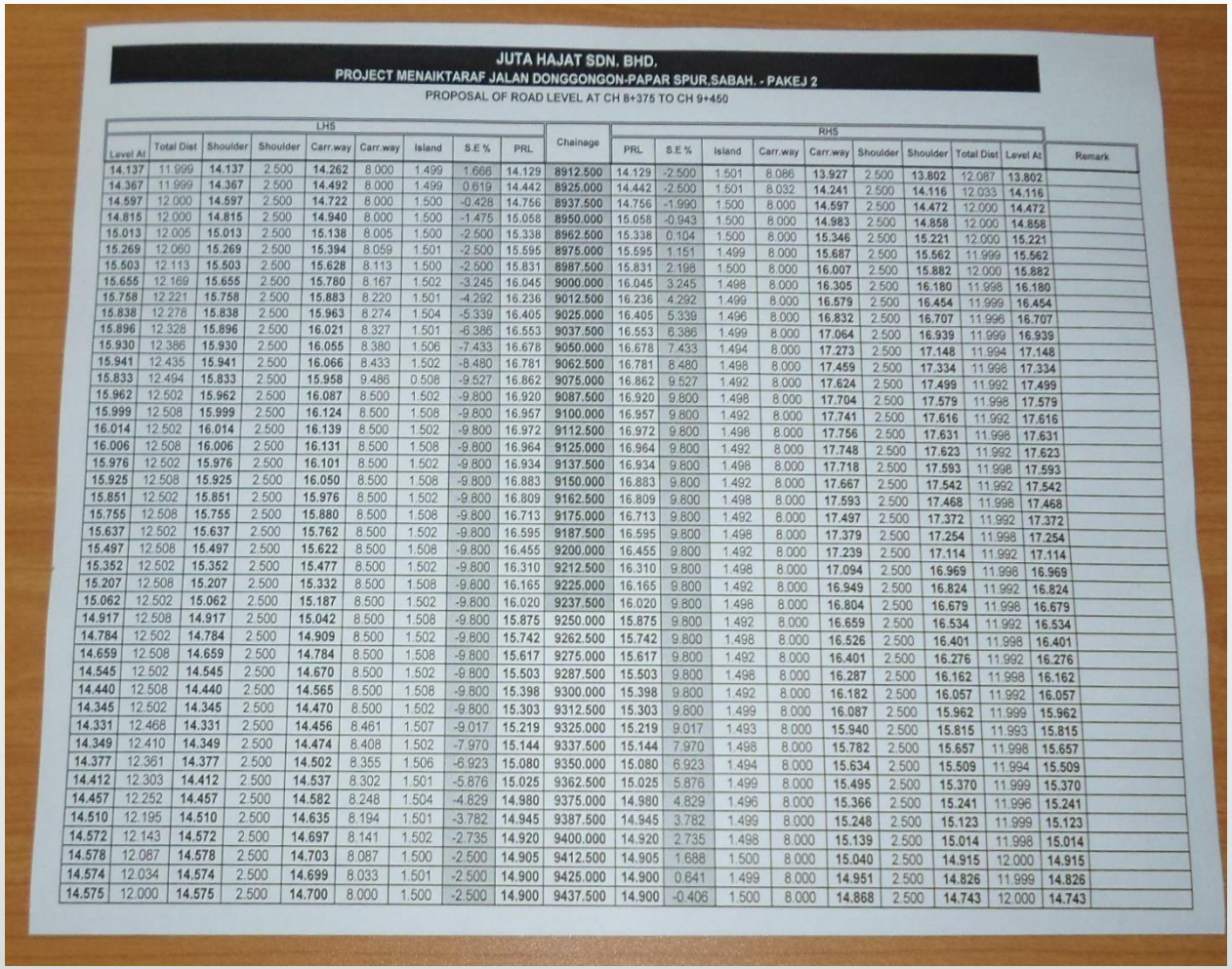
6. 3rd reading taken at the edge of pavement area which is 9.5 m from road centreline. It will have to increase or decrease in off set height compared to centreline based on -2.5% cross fall gradient or superelevation of the design level.

7. 4th reading taken at the shoulder area which is 13.5 m from road centreline. It will have to increase or decrease in off set height compared to centreline based on -5.0% cross fall gradient or superelevation of the design level.

JKR SABAH

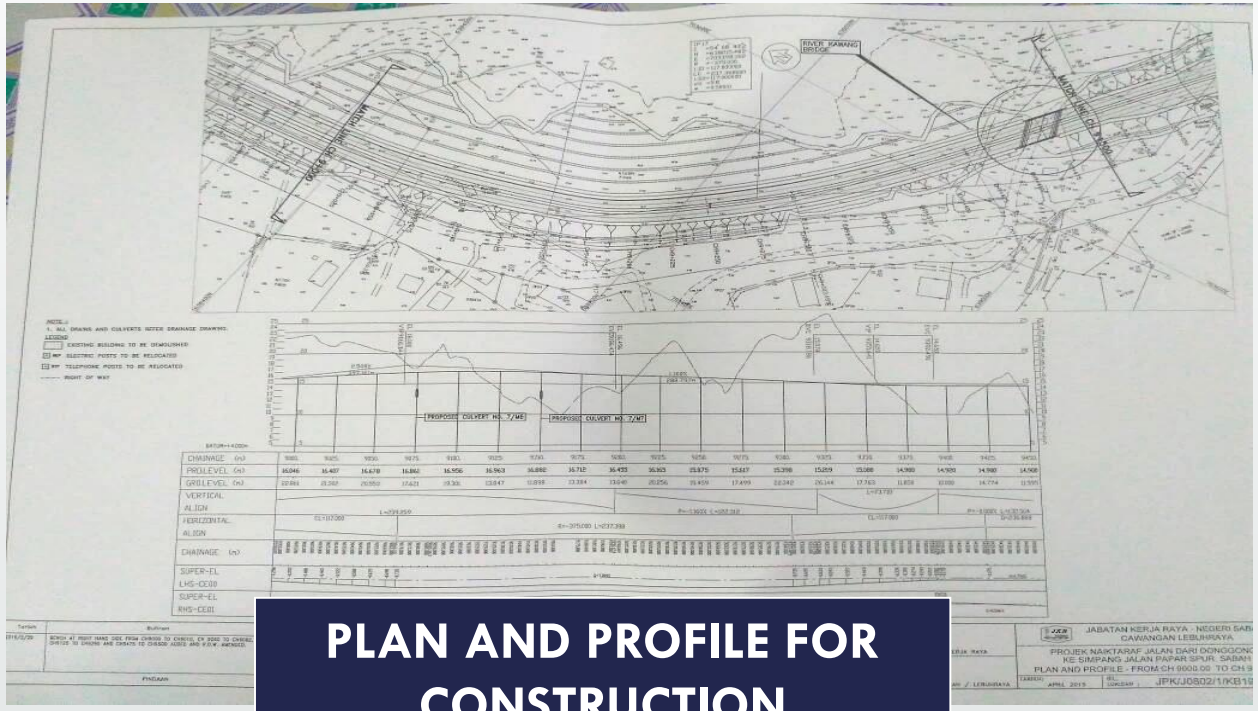
Head Of Project Team 1

Example Proposed Road Level



JUTA HAJAT SDN. BHD.
PROJECT MENAIKTARAF JALAN DONGGONGON-PAPAR SPUR,SABAH. - PAKEJ 2
PROPOSAL OF ROAD LEVEL AT CH 8+375 TO CH 9+450

LHS									Chainage	RHS									Remark
Level At	Total Dist	Shoulder	Shoulder	Carr.way	Carr.way	Island	S.E %	PRL		PRL	S.E %	Island	Carr.way	Carr.way	Shoulder	Shoulder	Total Dist	Level At	
14.137	11.999	14.137	2.500	14.262	8.000	1.499	1.666	14.129	8912.500	14.129	-2.500	1.501	8.066	13.927	2.500	13.802	12.087	13.802	
14.367	11.999	14.367	2.500	14.492	8.000	1.499	0.619	14.442	8925.000	14.442	-2.500	1.501	8.032	14.241	2.500	14.116	12.033	14.116	
14.597	12.000	14.597	2.500	14.722	8.000	1.500	-0.428	14.756	8937.500	14.756	-1.990	1.500	8.000	14.597	2.500	14.472	12.000	14.472	
14.815	12.000	14.815	2.500	14.940	8.000	1.500	-1.475	15.058	8950.000	15.058	-0.943	1.500	8.000	14.983	2.500	14.858	12.000	14.858	
15.013	12.005	15.013	2.500	15.138	8.005	1.500	-2.500	15.338	8962.500	15.338	0.104	1.500	8.000	15.346	2.500	15.221	12.000	15.221	
15.269	12.060	15.269	2.500	15.394	8.059	1.501	-2.500	15.595	8975.000	15.595	1.151	1.499	8.000	15.687	2.500	15.562	11.999	15.562	
15.503	12.113	15.503	2.500	15.628	8.113	1.500	-2.500	15.831	8987.500	15.831	2.198	1.500	8.000	16.007	2.500	15.882	12.000	15.882	
15.655	12.169	15.655	2.500	15.780	8.167	1.502	-3.245	16.045	9000.000	16.045	3.245	1.498	8.000	16.305	2.500	16.180	11.998	16.180	
15.758	12.221	15.758	2.500	15.883	8.220	1.501	-4.292	16.236	9012.500	16.236	4.292	1.499	8.000	16.579	2.500	16.454	11.999	16.454	
15.838	12.278	15.838	2.500	15.963	8.274	1.504	-5.339	16.405	9025.000	16.405	5.339	1.496	8.000	16.832	2.500	16.707	11.996	16.707	
15.896	12.328	15.896	2.500	16.021	8.327	1.501	-6.386	16.553	9037.500	16.553	6.386	1.499	8.000	17.064	2.500	16.939	11.999	16.939	
15.930	12.386	15.930	2.500	16.055	8.380	1.506	-7.433	16.678	9050.000	16.678	7.433	1.494	8.000	17.273	2.500	17.148	11.994	17.148	
15.941	12.435	15.941	2.500	16.066	8.433	1.502	-8.480	16.781	9062.500	16.781	8.480	1.498	8.000	17.459	2.500	17.334	11.998	17.334	
15.833	12.494	15.833	2.500	15.958	9.486	0.508	-9.527	16.862	9075.000	16.862	9.527	1.492	8.000	17.624	2.500	17.499	11.992	17.499	
15.962	12.502	15.962	2.500	16.087	8.500	1.502	-9.800	16.920	9087.500	16.920	9.800	1.498	8.000	17.704	2.500	17.579	11.998	17.579	
15.999	12.508	15.999	2.500	16.124	8.500	1.508	-9.800	16.957	9100.000	16.957	9.800	1.492	8.000	17.741	2.500	17.616	11.992	17.616	
16.014	12.502	16.014	2.500	16.139	8.500	1.502	-9.800	16.972	9112.500	16.972	9.800	1.498	8.000	17.756	2.500	17.631	11.998	17.631	
16.006	12.508	16.006	2.500	16.131	8.500	1.508	-9.800	16.964	9125.000	16.964	9.800	1.492	8.000	17.748	2.500	17.623	11.992	17.623	
15.976	12.502	15.976	2.500	16.101	8.500	1.502	-9.800	16.934	9137.500	16.934	9.800	1.498	8.000	17.718	2.500	17.593	11.998	17.593	
15.925	12.508	15.925	2.500	16.050	8.500	1.508	-9.800	16.883	9150.000	16.883	9.800	1.492	8.000	17.667	2.500	17.542	11.992	17.542	
15.851	12.502	15.851	2.500	15.976	8.500	1.502	-9.800	16.809	9162.500	16.809	9.800	1.498	8.000	17.593	2.500	17.468	11.998	17.468	
15.755	12.508	15.755	2.500	15.880	8.500	1.508	-9.800	16.713	9175.000	16.713	9.800	1.492	8.000	17.497	2.500	17.372	11.992	17.372	
15.637	12.502	15.637	2.500	15.762	8.500	1.502	-9.800	16.595	9187.500	16.595	9.800	1.498	8.000	17.379	2.500	17.254	11.998	17.254	
15.497	12.508	15.497	2.500	15.622	8.500	1.508	-9.800	16.455	9200.000	16.455	9.800	1.492	8.000	17.239	2.500	17.114	11.992	17.114	
15.352	12.502	15.352	2.500	15.477	8.500	1.502	-9.800	16.310	9212.500	16.310	9.800	1.498	8.000	17.094	2.500	16.969	11.998	16.969	
15.207	12.508	15.207	2.500	15.332	8.500	1.508	-9.800	16.165	9225.000	16.165	9.800	1.492	8.000	16.949	2.500	16.824	11.992	16.824	
15.062	12.502	15.062	2.500	15.187	8.500	1.502	-9.800	16.020	9237.500	16.020	9.800	1.498	8.000	16.804	2.500	16.679	11.998	16.679	
14.917	12.508	14.917	2.500	15.042	8.500	1.508	-9.800	15.875	9250.000	15.875	9.800	1.492	8.000	16.659	2.500	16.534	11.992	16.534	
14.784	12.502	14.784	2.500	14.909	8.500	1.502	-9.800	15.742	9262.500	15.742	9.800	1.498	8.000	16.526	2.500	16.401	11.998	16.401	
14.659	12.508	14.659	2.500	14.784	8.500	1.508	-9.800	15.617	9275.000	15.617	9.800	1.492	8.000	16.401	2.500	16.276	11.992	16.276	
14.545	12.502	14.545	2.500	14.670	8.500	1.502	-9.800	15.503	9287.500	15.503	9.800	1.498	8.000	16.287	2.500	16.162	11.998	16.162	
14.440	12.508	14.440	2.500	14.565	8.500	1.508	-9.800	15.398	9300.000	15.398	9.800	1.492	8.000	16.182	2.500	16.057	11.992	16.057	
14.345	12.502	14.345	2.500	14.470	8.500	1.502	-9.800	15.303	9312.500	15.303	9.800	1.499	8.000	16.087	2.500	15.962	11.999	15.962	
14.331	12.468	14.331	2.500	14.456	8.461	1.507	-9.017	15.219	9325.000	15.219	9.017	1.493	8.000	15.940	2.500	15.815	11.993	15.815	
14.349	12.410	14.349	2.500	14.474	8.408	1.502	-7.970	15.144	9337.500	15.144	7.970	1.498	8.000	15.782	2.500	15.657	11.998	15.657	
14.377	12.361	14.377	2.500	14.502	8.355	1.506	-6.923	15.080	9350.000	15.080	6.923	1.494	8.000	15.634	2.500	15.509	11.994	15.509	
14.412	12.303	14.412	2.500	14.537	8.302	1.501	-5.876	15.025	9362.500	15.025	5.876	1.499	8.000	15.495	2.500	15.370	11.999	15.370	
14.457	12.252	14.457	2.500	14.582	8.248	1.504	-4.829	14.980	9375.000	14.980	4.829	1.496	8.000	15.366	2.500	15.241	11.996	15.241	
14.510	12.195	14.510	2.500	14.635	8.194	1.501	-3.782	14.945	9387.500	14.945	3.782	1.499	8.000	15.248	2.500	15.123	11.999	15.123	
14.572	12.143	14.572	2.500	14.697	8.141	1.502	-2.735	14.920	9400.000	14.920	2.735	1.498	8.000	15.139	2.500	15.014	11.998	15.014	
14.578	12.087	14.578	2.500	14.703	8.087	1.500	-2.500	14.905	9412.500	14.905	1.688	1.500	8.000	15.040	2.500	14.915	12.000	14.915	
14.574	12.034	14.574	2.500	14.699	8.033	1.501	-2.500	14.900	9425.000	14.900	0.641	1.499	8.000	14.951	2.500	14.826	11.999	14.826	
14.575	12.000	14.575	2.500	14.700	8.000	1.500	-2.500	14.900	9437.500	14.900	-0.406	1.500	8.000	14.868	2.500	14.743	12.000	14.743	

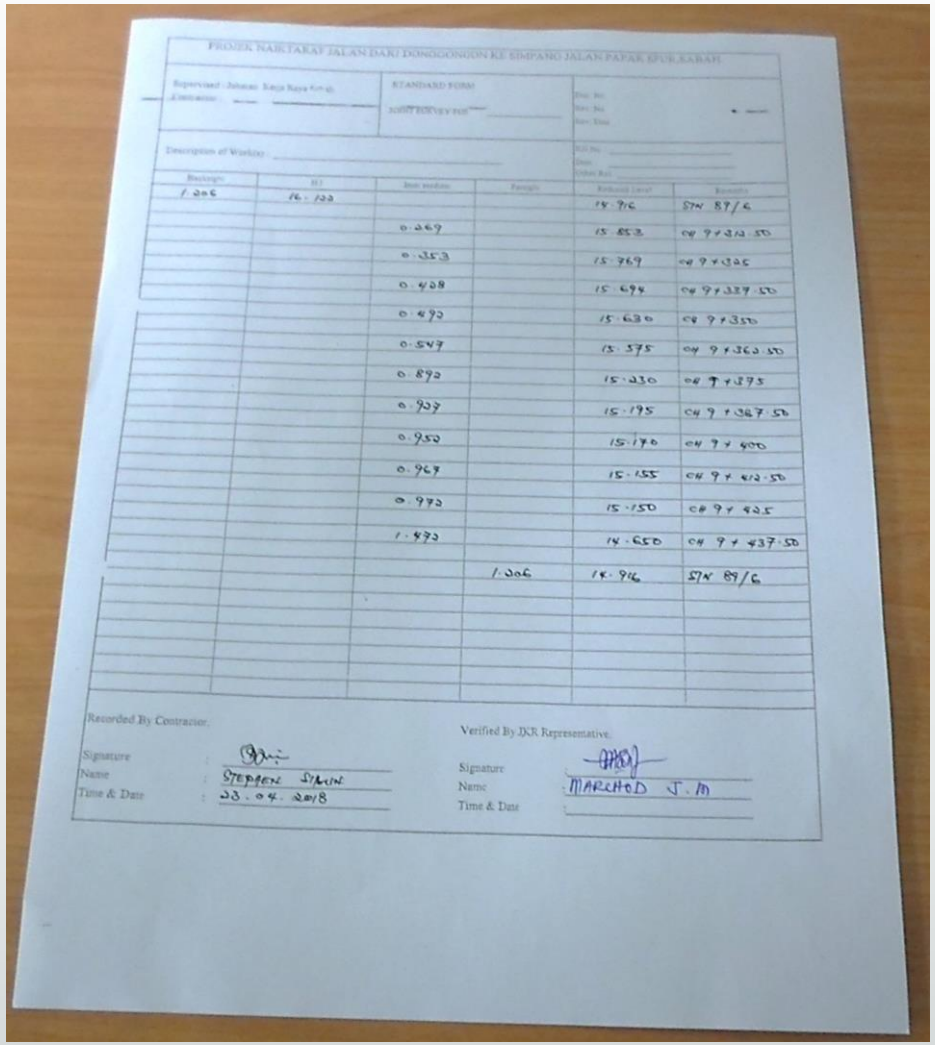


PLAN AND PROFILE FOR CONSTRUCTION

JKR SABAH

Head Of Project Team 1

Example of Dipping Data (Sub grade)



PROJEK NAIKTARAF JALAN DARI DONGGONGON KE SIMPANG JALAN PAPAR SPUR,SABAH

Supervised : Jabatan Kerja Raya Sabah
Contractor :

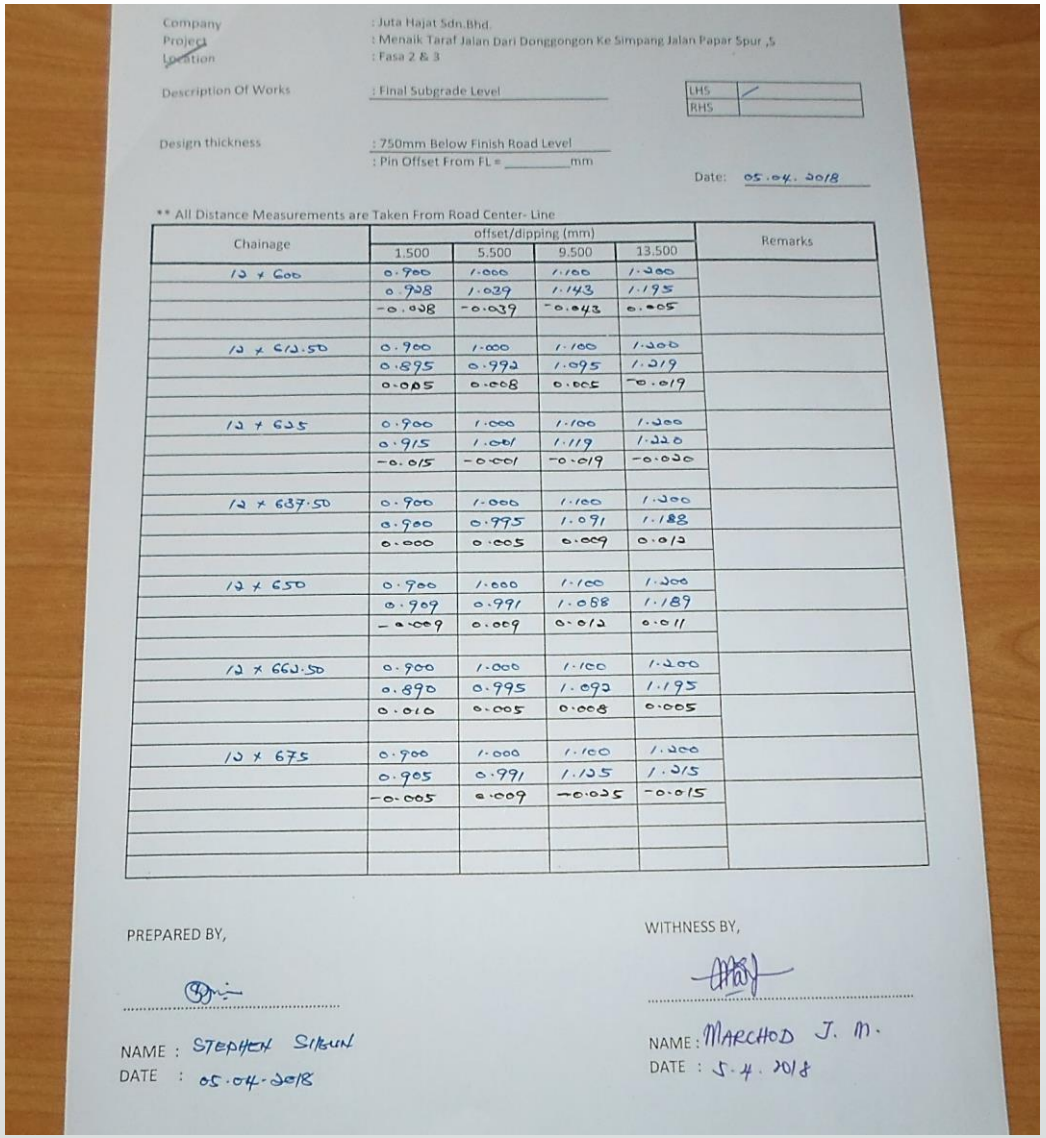
STANDARD FORM
JOINT SURVEY FOR

Description of Works :

Backings	H.I	Inter-medium	Foreign	Reduced Level	Remarks
1.206	16.122			14.916	STN 89/6
		0.269		15.853	CH 9+312.50
		0.353		15.769	CH 9+325
		0.428		15.694	CH 9+337.50
		0.492		15.630	CH 9+350
		0.547		15.575	CH 9+362.50
		0.892		15.230	CH 9+375
		0.927		15.195	CH 9+387.50
		0.952		15.170	CH 9+400
		0.967		15.155	CH 9+412.50
		0.972		15.150	CH 9+425
		1.472		14.650	CH 9+437.50
			1.206	14.916	STN 89/6

Recorded By Contractor.
Signature :
Name : STEPHEN SIGUN
Time & Date : 23.04.2018

Verified By JKR Representative.
Signature :
Name : MARCHOD J. M
Time & Date :



Company : Juta Hajat Sdn.Bhd.
Project : Menaik Taraf Jalan Dari Donggongon Ke Simpang Jalan Papar Spur ,S
Location : Fasa 2 & 3

Description Of Works : Final Subgrade Level

LHS	/
RHS	

Design thickness : 750mm Below Finish Road Level
: Pin Offset From FL = _____mm

Date: 05.04.2018

** All Distance Measurements are Taken From Road Center- Line

Chainage	offset/dipping (mm)				Remarks
	1.500	5.500	9.500	13.500	
12 x 600	0.900	1.000	1.100	1.200	
	0.928	1.039	1.143	1.195	
	-0.028	-0.039	-0.043	0.005	
12 x 612.50	0.900	1.000	1.100	1.200	
	0.895	0.992	1.095	1.219	
	0.005	0.008	0.005	-0.019	
12 x 625	0.900	1.000	1.100	1.200	
	0.915	1.001	1.119	1.220	
	-0.015	-0.001	-0.019	-0.020	
12 x 637.50	0.900	1.000	1.100	1.200	
	0.900	0.995	1.091	1.188	
	0.000	0.005	0.009	0.012	
12 x 650	0.900	1.000	1.100	1.200	
	0.909	0.991	1.088	1.189	
	-0.009	0.009	0.012	0.011	
12 x 662.50	0.900	1.000	1.100	1.200	
	0.890	0.995	1.092	1.195	
	0.010	0.005	0.008	0.005	
12 x 675	0.900	1.000	1.100	1.200	
	0.905	0.991	1.125	1.215	
	-0.005	0.009	-0.025	-0.015	

PREPARED BY,

NAME : STEPHEN SIGUN
DATE : 05.04.2018

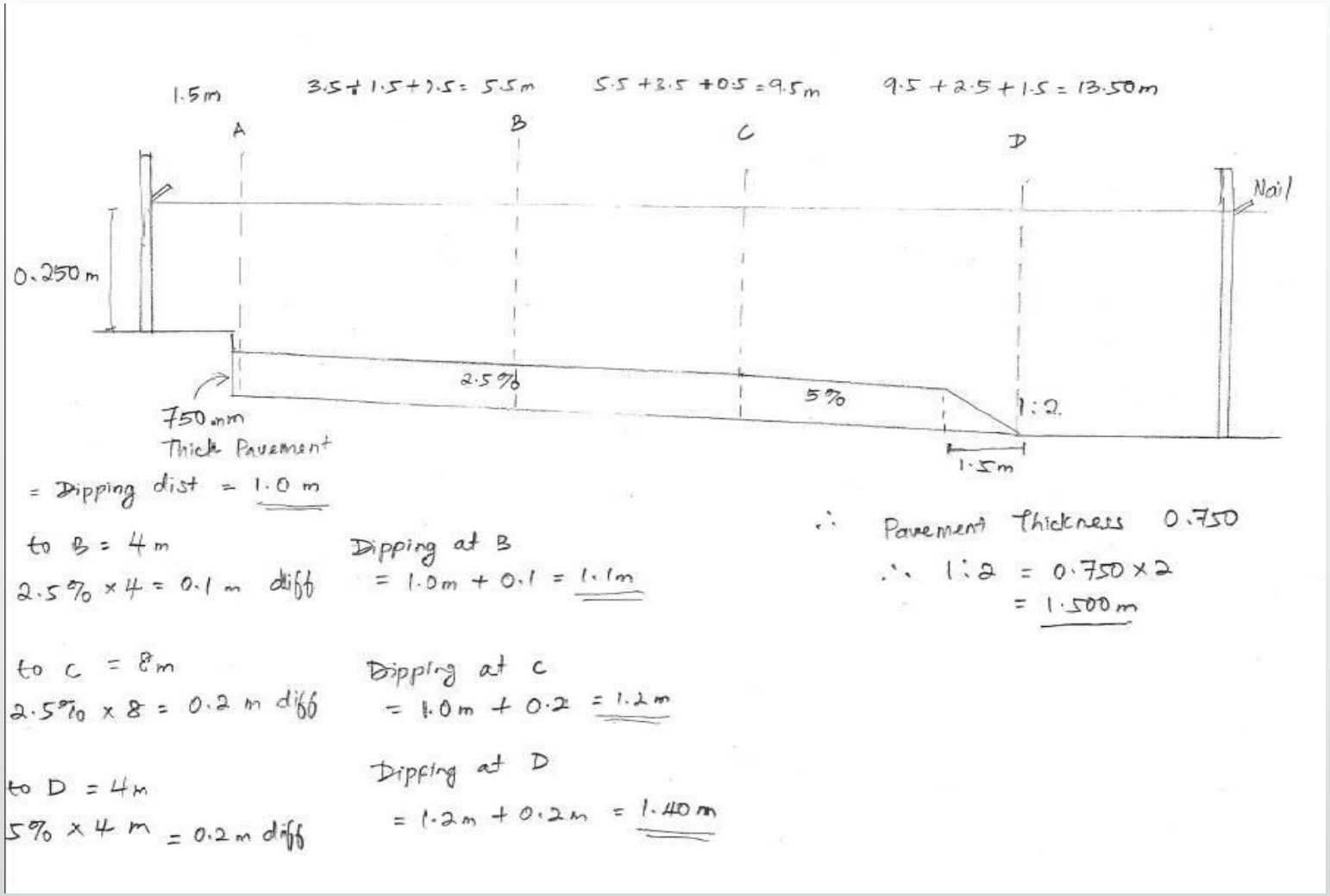
WITHNESS BY,

NAME : MARCHOD J. M.
DATE : 5.4.2018

JKR SABAH

Head Of Project Team 1

Example of Calculation



= Dipping dist = 1.0 m

to B = 4m

2.5% x 4 = 0.1 m diff

Dipping at B

= 1.0m + 0.1 = 1.1m

to C = 8m

2.5% x 8 = 0.2 m diff

Dipping at C

= 1.0m + 0.2 = 1.2m

to D = 4m

5% x 4 m = 0.2m diff

Dipping at D

= 1.2m + 0.2m = 1.40m

∴ Pavement thickness 0.750

∴ 1:2 = 0.750 x 2

= 1.500m

Head Of Project Team 1

Terima Kasih