ATT-3/95 BULK ASPHALT CONTENT
Part I, Truck Scale Weight Method

1.0 SCOPE

This method describes the procedure for determining the percentage bulk asphalt content based on:

a) depth measurements of the asphalt storage tanks to determine the amount of asphalt used, and

b) the weight of dry aggregate as determined by truck scale weight of mix corrected for moisture and asphalt.

2.0 EQUIPMENT

asphalt storage calibration charts
calculator
tank "dipstick"

Data Sheet: Bulk Asphalt Content, MAT 6-43

3.0 PROCEDURE

1. After the asphalt storage tanks have been set up at the plant site, and while they are still empty, obtain the distance to the nearest 0.05 metres from the inside top surface of the tank shell to the bottom of the tank. Record as Total Depth of Tank (line "A"), as shown in Figure 1.

2. Obtain the inner length of each tank to the nearest 0.05 m. Obtain or make up calibration charts for the inner length and height of each tank.

3. When a bulk asphalt content is required, have the contractor measure the distance to the nearest 0.05 metres from the inside top surface of the tank shell to the top of the surface of asphalt in the tank at the beginning of the day. Record as Beginning Depth of Asphalt from top of tank (line "B").

4. Obtain the temperature of asphalt in storage at the time of measurement and record as Beginning Temperature of Asphalt in Tank (line "H").

5. Calculate the Depth of Asphalt (in metres) in the storage tank (line "C") as follows:

   ' *Total Depth of Tank* & *Beginning Depth of Asphalt* (*from top of tank*)

6. If asphalt calibration charts are available, use the charts and the Depth of Asphalt in Tank (line "C") to determine the Beginning Volume of Asphalt in Tank and record it on line "G". Then leave lines "D", "E", and "F" blank and proceed to step 11.

Alberta TRANSPORTATION AND UTILITIES
MAT 6-43/95

BULK ASPHALT CONTENT

PROJECT NO. ***2:28***	CONTRACT NO. ***6666/95***	LOT NO. ***8***
FROM ***N. OF DIDSBURY INT.***	DATE ***95.08.12***	
TO ***S. OF OLDS INT.***	CONTRACTOR ***ABC CONSTRUCTION***	
PROJECT MANAGER ***M. SMITH***	TECHNOLOGIST ***B. JONES***	

		TANK 1	TANK 2	
A TOTAL DEPTH OF TANK		***4.10***	***4.50***	m
B BEGINNING DEPTH OF ASPHALT (from top of tank)		***2.35***	***1.85***	m
C DEPTH OF ASPHALT IN TANK	A - B	***1.75***	***2.65***	m
D PERCENT DEPTH FILLED	100 C / A	***42.68***	***58.89***	%
E PERCENT OF CAPACITY FILLED	TABLE 1	***40.74***	***61.22***	%
F CAPACITY OF TANK		***100 000***	***110 000***	R
G BEGINNING VOLUME OF ASPHALT IN TANK	E . F / 100 or Calib. Chart	***40 740***	***67 342***	R
H BEGINNING TEMPERATURE OF ASPHALT IN TANK		***146***	***149***	EC
I RELATIVE DENSITY OF ASPHALT AT 15 EC		***1.024***	***1.024***	kg/R
J WT. PER LITRE OF ASPHALT AT TANK TEMPERATURE	TABLE 2	***0.942***	***0.9405***	kg/R
K BEGINNING WEIGHT OF ASPHALT IN TANK	G . J	K_1 ***38 377***	K_2 ***63 335***	kg
L BEGINNING WEIGHT OF ASPHALT IN TANKS	$K_1 + K_2$	***101 712***		kg
M WEIGHT OF ASPHALT DELIVERED DURING INTERVAL		***212 000***		kg
N TOTAL WEIGHT OF ASPHALT AVAILABLE	L + M	***313 712***		kg
O DEPTH OF ASPHALT AT END OF DAY		***1.20***	***3.10***	m
P DEPTH OF ASPHALT REMAINING IN TANK	A - O	***2.90***	***1.40***	m
Q PERCENT DEPTH FILLED	100 P / A	***70.73***	***31.11***	%
R PERCENT OF CAPACITY FILLED	TABLE 1	***75.60***	***26.61***	%
S ENDING VOLUME OF ASPHALT IN TANK	R . F / 100 or Calib. Chart	***75 600***	***29 271***	R
T ENDING TEMPERATURE OF ASPHALT IN TANK		***150***	***153***	EC
U WT. PER LITRE OF ASPHALT AT TANK TEMPERATURE	TABLE 2	***0.940***	***0.9375***	kg/R
V ENDING WEIGHT OF ASPHALT IN TANK	S . U	V_1 ***71 064***	V_2 ***27 442***	kg
W WEIGHT OF ASPHALT REMAINING IN TANKS	$V_1 + V_2$	***98 506***		kg
X WEIGHT OF ASPHALT USED	N - W	***215 206***		kg
Y WEIGHT OF PAID MOIST MIX		***3 769 500***		kg
Z WEIGHT OF REJECTED MIX		***24 850***		kg
AA TOTAL WEIGHT OF MOIST MIX	Y + Z	***3 794 350***		kg
BB AVERAGE MOISTURE CONTENT OF MIX		***0.27***		%
CC WEIGHT OF DRY MIX	100 AA / (100 + BB)	***3 784 133***		kg
DD WEIGHT OF DRY AGGREGATE	CC - X	***3 568 927***		kg
EE BULK ASPHALT CONTENT	100 X / DD	***6.03***		%

REMARKS

FIGURE 1

NOTE: For contractor supplied charts, check if the tank is calibrated in U.S. gallons. To convert U.S. gallons to Imperial gallons, divide the U.S. gallons by 1.20094. To convert Imperial gallons to litres, multiply the Imperial gallons by 4.546.

7. If asphalt calibration charts are not available, calculate the Percent Depth Filled (line "D") using the formula:

$$Percent\ Depth\ Filled\ (\%) = \frac{Depth\ of\ Asphalt\ in\ Tank}{Total\ Depth\ of\ Tank} \times 100\%$$

8. Use Table 1 and the Percent Depth filled (line "D") to determine the Percent of Capacity Filled, and record it on line "E".

QUANTITIES FOR VARIOUS DEPTHS OF CYLINDRICAL TANKS IN A HORIZONTAL POSITION

% Depth Filled	% of Capacity Filled	% Depth Filled	% of Capacity Filled	% Depth Filled	% of Capacity Filled	% Depth Filled	% of Capacity Filled
1	0.20	26	20.73	51	51.27	76	81.50
2	0.50	27	21.86	52	52.55	77	82.60
3	0.90	28	23.00	53	53.81	78	83.68
4	1.34	29	24.07	54	55.08	79	84.74
5	1.87	30	25.31	55	56.34	80	85.77
6	2.45	31	26.48	56	57.60	81	86.77
7	3.07	32	27.66	57	58.86	82	87.76
8	3.74	33	28.84	58	60.11	83	88.73
9	4.45	34	30.03	59	61.36	84	89.68
10	5.20	35	31.19	60	62.61	85	90.60
11	5.98	36	32.44	61	63.86	86	91.50
12	6.80	37	33.66	62	65.10	87	92.36
13	7.64	38	34.90	63	66.34	88	93.20
14	8.50	39	36.14	64	67.56	89	94.02
15	9.40	40	37.39	65	68.81	90	94.80
16	10.32	41	38.64	66	69.97	91	95.55
17	11.27	42	39.89	67	71.16	92	96.26
18	12.24	43	41.14	68	72.34	93	96.93
19	13.23	44	42.40	69	73.52	94	97.55
20	14.23	45	43.66	70	74.69	95	98.13
21	15.26	46	44.92	71	75.93	96	98.66
22	16.32	47	46.19	72	77.00	97	99.10
23	17.40	48	47.45	73	78.14	98	99.50
24	18.50	49	48.73	74	79.27	99	99.80
25	19.61	50	50.00	75	80.39		

TABLE 1

9. Obtain the volume in litres of each asphalt storage tank and record as a Capacity of Tank (line "F").

The weight of asphalt delivered by trucks can be used to determine the capacity of the tanks. The capacity in litres of horizontal tanks can also be calculated using the formula:

$$Capacity\ (R) = \frac{B\ D^2\ L}{4} \times 1000\ R/m^3 \quad or \quad 0.7854\ D^2\ L$$

Where D = inside diameter of tank (depth of tank), and
L = inside length of tank

10. Determine the Volume of Asphalt in litres in the storage tank (line "G") using the formula:

$$Vol.\ (R) = \frac{Capacity\ of\ Tank \times Percent\ of\ Capacity\ Filled\ with\ Asphalt}{100\%}$$

11. Obtain from the Mix Design the Relative Density of Asphalt at 15°C for the grade of asphalt used for the project and record it on line "T".

12. Correct the weight per litre of asphalt at 15°C to the equivalent weight per litre at the elevated storage temperature using Table 2 for asphalt cements, Table 3 for cutback asphalts or Table 4 for emulsified asphalts.

13. Find in the temperature column the Beginning Temperature of Asphalt in Tank (line "H"), then proceed across the table to where it intercepts the proper Relative Density of Asphalt at 15°C (line "I"). Interpolating intermediate values, pick off the Weight per Litre of Asphalt at Tank Temperature and record it in line "J".

For example:
Beginning Asphalt Tank Temperature = 138°C
Relative Density of Asphalt Cement at 15°C = 1.015
Wt. per Litre of Asphalt at Tank Temperature = 0.940 kg from Table 2

14. Calculate the Weight of Asphalt in kg in the Storage Tank (line "K") as follows:

$$= Wt./L\ of\ Asphalt\ at\ Tank\ Temperature \times Volume\ of\ Asphalt\ in\ Tank$$

15. When two tanks are used, add the Beginning Weight of Asphalt for Tank 1 (line "K_1") to the Beginning Weight of Asphalt for Tank 2 (line "K_2") and record as the Beginning Weight of Asphalt in Tanks (line "L")

16. Determine the weight of asphalt delivered during the bulk asphalt content interval (line "M") by totalling the weights of the asphalt delivery slip invoices.

The Senior Technologist is normally responsible for picking up the asphalt delivery slip invoices, calculating the weight of asphalt added, and forwarding the invoices to the Project Manager.

WEIGHT PER LITRE OF ASPHALT CEMENT CORRECTED TO STORAGE TEMPERATURE (kg/L)

TEMP EC	RELATIVE DENSITY OF ASPHALT CEMENT AT 15EC									
	0.995	1.000	1.005	1.010	1.015	1.020	1.025	1.030	1.035	1.040
90	0.949	0.954	0.958	0.963	0.968	0.973	0.977	0.982	0.987	0.992
92	0.948	0.952	0.957	0.962	0.967	0.971	0.976	0.981	0.986	0.990
94	0.946	0.951	0.956	0.961	0.965	0.970	0.975	0.980	0.984	0.989
96	0.945	0.950	0.955	0.959	0.964	0.969	0.974	0.978	0.983	0.988
98	0.944	0.949	0.954	0.958	0.963	0.968	0.973	0.977	0.982	0.987
100	0.943	0.948	0.952	0.957	0.962	0.967	0.971	0.976	0.981	0.985
102	0.942	0.946	0.951	0.956	0.961	0.965	0.970	0.975	0.980	0.984
104	0.940	0.945	0.950	0.955	0.959	0.964	0.969	0.974	0.978	0.983
106	0.939	0.944	0.949	0.953	0.958	0.963	0.968	0.972	0.977	0.982
108	0.938	0.943	0.948	0.952	0.957	0.962	0.966	0.971	0.976	0.981
110	0.937	0.942	0.946	0.951	0.956	0.960	0.965	0.970	0.975	0.979
112	0.936	0.940	0.945	0.950	0.955	0.959	0.964	0.969	0.973	0.978
114	0.935	0.939	0.944	0.949	0.953	0.958	0.963	0.967	0.972	0.977
116	0.933	0.938	0.943	0.947	0.952	0.957	0.961	0.966	0.971	0.976
118	0.932	0.937	0.941	0.946	0.951	0.956	0.960	0.965	0.970	0.974
120	0.931	0.936	0.940	0.945	0.950	0.954	0.959	0.964	0.968	0.973
122	0.930	0.934	0.939	0.944	0.948	0.953	0.958	0.962	0.967	0.972
124	0.929	0.933	0.938	0.943	0.947	0.952	0.957	0.961	0.966	0.971
126	0.927	0.932	0.937	0.941	0.946	0.951	0.955	0.960	0.965	0.969
128	0.926	0.931	0.935	0.940	0.945	0.949	0.954	0.959	0.963	0.968
130	0.925	0.930	0.934	0.939	0.944	0.948	0.953	0.957	0.962	0.967
132	0.924	0.928	0.933	0.938	0.942	0.947	0.952	0.956	0.961	0.966
134	0.923	0.927	0.932	0.936	0.941	0.946	0.950	0.955	0.960	0.964
136	0.921	0.926	0.931	0.935	0.940	0.945	0.949	0.954	0.958	0.963
138	0.920	0.925	0.929	0.934	0.939	0.943	0.948	0.953	0.957	0.962
140	0.919	0.924	0.928	0.933	0.937	0.942	0.947	0.951	0.956	0.961
142	0.918	0.922	0.927	0.932	0.936	0.941	0.945	0.950	0.955	0.959
144	0.917	0.921	0.926	0.930	0.935	0.940	0.944	0.949	0.953	0.958
146	0.915	0.920	0.925	0.929	0.934	0.938	0.943	0.948	0.952	0.957
148	0.914	0.919	0.923	0.928	0.933	0.937	0.942	0.946	0.951	0.956
150	0.913	0.918	0.922	0.927	0.931	0.936	0.941	0.945	0.950	0.954
152	0.912	0.916	0.921	0.926	0.930	0.935	0.939	0.944	0.948	0.953
154	0.911	0.915	0.920	0.924	0.929	0.934	0.938	0.943	0.947	0.952
156	0.909	0.914	0.919	0.923	0.928	0.932	0.937	0.941	0.946	0.951
158	0.908	0.913	0.917	0.922	0.926	0.931	0.936	0.940	0.945	0.949
160	0.907	0.912	0.916	0.921	0.925	0.930	0.934	0.939	0.943	0.948
162	0.906	0.910	0.915	0.920	0.924	0.929	0.933	0.938	0.942	0.947
164	0.905	0.909	0.914	0.918	0.923	0.927	0.932	0.936	0.941	0.946
166	0.903	0.908	0.913	0.917	0.922	0.926	0.931	0.935	0.940	0.944
168	0.902	0.907	0.911	0.916	0.920	0.925	0.929	0.934	0.939	0.943
170	0.901	0.906	0.910	0.915	0.919	0.924	0.928	0.933	0.937	0.942
172	0.900	0.904	0.909	0.913	0.918	0.922	0.927	0.932	0.936	0.941
174	0.899	0.903	0.908	0.912	0.917	0.921	0.926	0.930	0.935	0.939
176	0.897	0.902	0.907	0.911	0.916	0.920	0.925	0.929	0.934	0.938

TABLE 2

WEIGHT PER LITRE OF CUTBACK ASPHALTS CORRECTED TO STORAGE TEMPERATURE (kg/L)

TEMP EC	RELATIVE DENSITY OF CUTBACK ASPHALTS AT 15EC									
	0.945	0.950	0.955	0.960	0.965	0.970	0.975	0.980	0.985	0.990
10	0.949	0.954	0.959	0.964	0.969	0.973	0.978	0.983	0.988	0.993
12	0.947	0.952	0.957	0.962	0.967	0.972	0.977	0.982	0.987	0.992
14	0.946	0.951	0.956	0.961	0.966	0.971	0.976	0.981	0.986	0.991
16	0.945	0.950	0.955	0.960	0.965	0.970	0.975	0.980	0.985	0.990
18	0.943	0.948	0.953	0.958	0.963	0.969	0.974	0.979	0.984	0.989
20	0.942	0.947	0.952	0.957	0.962	0.967	0.972	0.977	0.982	0.987
22	0.940	0.945	0.950	0.955	0.960	0.966	0.971	0.976	0.981	0.986
24	0.939	0.944	0.949	0.954	0.959	0.965	0.970	0.975	0.980	0.985
26	0.938	0.943	0.948	0.953	0.958	0.964	0.969	0.974	0.978	0.983
28	0.937	0.942	0.947	0.952	0.957	0.962	0.967	0.972	0.977	0.982
30	0.935	0.940	0.945	0.950	0.955	0.961	0.966	0.971	0.976	0.981
32	0.934	0.939	0.944	0.949	0.954	0.960	0.965	0.970	0.975	0.980
34	0.933	0.938	0.942	0.947	0.952	0.959	0.964	0.969	0.974	0.979
36	0.931	0.936	0.941	0.946	0.951	0.958	0.962	0.967	0.972	0.977
38	0.930	0.935	0.940	0.945	0.950	0.957	0.961	0.966	0.971	0.976
40	0.929	0.933	0.938	0.943	0.948	0.955	0.960	0.965	0.970	0.975
42	0.927	0.932	0.937	0.942	0.947	0.954	0.959	0.964	0.969	0.973
44	0.926	0.931	0.936	0.940	0.946	0.953	0.958	0.963	0.968	0.972
46	0.924	0.929	0.934	0.939	0.944	0.951	0.956	0.961	0.966	0.971
48	0.923	0.928	0.933	0.938	0.943	0.950	0.955	0.960	0.965	0.970
50	0.922	0.927	0.932	0.937	0.941	0.949	0.954	0.959	0.964	0.969
52	0.920	0.925	0.930	0.935	0.940	0.948	0.953	0.958	0.962	0.967
54	0.919	0.924	0.929	0.934	0.939	0.947	0.952	0.957	0.961	0.966
56	0.918	0.923	0.928	0.932	0.937	0.945	0.950	0.955	0.960	0.965
58	0.917	0.922	0.926	0.931	0.936	0.944	0.949	0.954	0.959	0.964
60	0.915	0.920	0.925	0.930	0.935	0.943	0.948	0.953	0.958	0.963
62	0.914	0.919	0.923	0.928	0.933	0.942	0.947	0.952	0.956	0.961
64	0.913	0.918	0.922	0.927	0.932	0.941	0.946	0.951	0.955	0.960
66	0.911	0.916	0.921	0.926	0.931	0.940	0.944	0.949	0.954	0.959
68	0.910	0.915	0.920	0.925	0.929	0.938	0.943	0.948	0.953	0.958
70	0.909	0.914	0.918	0.923	0.928	0.937	0.942	0.947	0.952	0.957
72	0.907	0.912	0.917	0.922	0.926	0.936	0.941	0.946	0.950	0.955
74	0.906	0.911	0.916	0.921	0.925	0.935	0.940	0.945	0.949	0.954
76	0.905	0.910	0.914	0.919	0.924	0.934	0.938	0.943	0.948	0.953
78	0.904	0.908	0.913	0.918	0.923	0.933	0.937	0.942	0.947	0.952
80	0.902	0.907	0.912	0.917	0.921	0.931	0.936	0.941	0.946	0.950
82	0.901	0.905	0.910	0.915	0.920	0.930	0.935	0.940	0.944	0.949
84	0.900	0.904	0.909	0.914	0.919	0.929	0.934	0.939	0.943	0.948
86	0.898	0.903	0.908	0.912	0.917	0.928	0.932	0.937	0.942	0.947
88	0.897	0.901	0.907	0.911	0.916	0.927	0.931	0.936	0.941	0.946
90	0.896	0.900	0.905	0.910	0.915	0.925	0.930	0.935	0.940	0.944
92	0.894	0.899	0.904	0.908	0.913	0.924	0.929	0.934	0.938	0.943
94	0.893	0.898	0.903	0.907	0.912	0.923	0.928	0.933	0.937	0.942
96	0.892	0.897	0.901	0.906	0.911	0.922	0.927	0.931	0.936	0.941
98	0.891	0.895	0.900	0.905	0.910	0.921	0.926	0.930	0.935	0.940
100	0.889	0.894	0.898	0.903	0.908	0.919	0.924	0.929	0.934	0.938

TABLE 3

WEIGHT PER LITRE OF EMULSIFIED ASPHALT CORRECTED TO STORAGE TEMPERATURE

RELATIVE DENSITY OF EMULSION: 1.000

Temp. EC	kg/R	Temp. EC	kg/R	Temp. EC	kg/R	Temp. EC	kg/R
10	1.003	30	0.994	50	0.985	70	0.976
12	1.002	32	0.993	52	0.984	72	0.975
14	1.001	34	0.992	54	0.983	74	0.974
16	1.000	36	0.991	56	0.982	76	0.973
18	0.999	38	0.990	58	0.981	78	0.972
20	0.998	40	0.089	60	0.980	80	0.971
22	0.997	42	0.988	62	0.979	82	0.970
24	0.996	44	0.987	64	0.978	84	0.969
26	0.995	46	0.986	66	0.977	86	0.968
28	0.994	48	0.985	68	0.976	88	0.967

TABLE 4

17. Calculate the Total Weight of Asphalt Available in kg (line "N") as follows:

' *Wt. of Asphalt Delivered % Wt. of Asphalt in Tanks*

18. At the end of the day:

a) Have the contractor measure the distance in metres to the nearest 0.05 m from the inside top surface of the tank shell to the surface of the asphalt in the tank. Record as Depth to Asphalt at End of Day (line "O").

b) Obtain the temperature of asphalt in storage at the time of measurement and record as Ending Temperature of Asphalt in Tank (line "T").

The depth measurement and temperature at the end of one day correspond to the beginning depth measurement and temperature of the next day.

19. Calculate the Depth of Asphalt in mm in the storage tank (line "P") as follows:

' *Total Depth of Tank & Depth of Asphalt* (*from top of tank*)

20. If asphalt calibration charts are available, use the charts and the Depth of Asphalt Remaining in Tank (line "P") to determine the Ending Volume of Asphalt in Tank and record it on line "S". Then, leave lines "Q" and "R" blank, and proceed to step 24.

21. If asphalt calibration charts are not available, calculate the Percent Depth Filled (line "Q") using the formula:

$$\textit{Percent Depth Filled}\ (\%) = \frac{\textit{Depth of Asphalt Remaining in Tank}}{\textit{Total Depth of Tank}} \times 100\%$$

22. Use Table 1 and the Percent Depth Filled (line "Q") to determine the Percent of Capacity Filled and record it on line "R".

23. Determine the Ending Volume in litres of the asphalt in the storage tank (line "S") using the formula:

$$\text{Vol. (R)} = \frac{\text{Capacity of Tank} \times \text{Percent of Capacity Filled with Asphalt}}{100\%}$$

24. With the Ending Temperature of Asphalt in Tank (line "T") and the Relative Density of Asphalt at 15EC (line "I") use Table 2 or 3 or 4 to determine the Weight per Litre of Asphalt at Tank Temperature and record it on line "U".

25. Calculate the Weight of Asphalt in kg in the storage tank (line "V") as follows:

= *Wt./Ltr. of Asphalt at Tank Temperature × Ending Volume of Asphalt in Tank*

26. When two tanks are being used, add the Ending Weight of Asphalt in Tank 1 (line "V_1") to the corresponding Ending Weight of Asphalt in Tank 2 (line "V_2") and record as Weight of Asphalt Remaining in Tanks (line "W").

27. Calculate the Weight of Asphalt Used during the bulk test (line "X") as follows:

= *Total Wt. of Asphalt Available & Wt. of Asphalt Remaining in Tanks*

28. Obtain from the Project Manager or office person the total weight in kg of moist mix produced during this interval and record as Weight of Paid Moist Mix (line "Y").

29. Add up all loads of mix that were diverted to other projects or rejected, and record as Weight of Rejected Mix (line "Z").

When calculating the total weight of mix produced during the bulk asphalt content test, ensure that you account for all mix produced by the asphalt plant during that time period. Include in the total:

a) the estimated weight of the loads rejected at the plant which did not pass over the weigh scale;

b) the loads of mix diverted to another project, e.g., patching. which are typically recorded on separate scale sheets.

30. Determine the Total Weight of Moist Mix in kg (line "AA") as follows:

= *Wt. of Paid Moist Mix % Wt. of Rejected or Diverted Mix*

31. Determine the average moisture content of the plant mix in percent and record as Average Moisture Content of Mix (line "BB").

32. Calculate the Weight of Dry Mix in kg (line "CC") using the formula:

$$Wt.\ of\ Dry\ Mix\ (kg) = \frac{Total\ Wt.\ of\ Moist\ Mix}{100\ \%\ Mix\ Moisture\ Content\ in\ \%} \times 100\%$$

33. Determine the Wt. of Dry Aggregate in kg (line "DD") as follows:

$$Wt.\ of\ Dry\ Aggregate = Wt.\ of\ Dry\ Mix - Wt.\ of\ Asphalt\ Used$$

34. Calculate the Bulk Asphalt Content in % (line "EE") using the formula:

$$Bulk\ Asphalt\ Content\ (\%) = \frac{Wt.\ of\ Asphalt\ Used\ (line\ "X")}{Wt.\ of\ Dry\ Aggregate\ (line\ "DD")} \times 100\%$$

4.0 HINTS AND PRECAUTIONS

1. The bulk asphalt content when compared to the day's individual extraction results and/or nuclear asphalt content results will give some indication of the fluctuation occurring in the mix production. Remedial action should be taken where the difference between the two becomes excessive, e.g., greater than ±0.3% in asphalt content. Also, a comparison of the bulk asphalt content and the average of the day's extractions and/or nuclear asphalt contents will give an indication of the accuracy of each. If individual results consistently differ by more than 0.5% investigate and resolve the differences.

2. Since the daily bulk check represents the actual, average asphalt content of the mix produced by the plant, it should correlate within ±0.3% to the plant setting used. The asphalt plant calibration and testing procedures should be checked whenever poor correlation is obtained.

3. After the first day of production only one set of tank measurements per day is required as one may use the weight of asphalt remaining in tanks (line "W") of day 1 as the beginning weight of asphalt in tanks (line "L") for day 2 and so on.

4. Technologists should add days of low production to high production days to increase the accuracy of the bulk asphalt content test. Weekly bulks for all mix produced during a seven day period should be performed, or arrangements can be made with the office person to calculate a weekly bulk based on his tabulation of the asphalt invoices and scale sheets.

5. If during production the asphalt plant runs out of asphalt, a bulk asphalt content may be obtained using the total of the asphalt delivery slip invoices to determine the total weight of asphalt used.