The Institute of Asphalt Technology
Irish Branch

Jim Campbell,
BE, MIEI,MIAT

The Institute of Asphalt Technology
Irish Branch

The Irish Road Network of 100,112km is broken down as follows

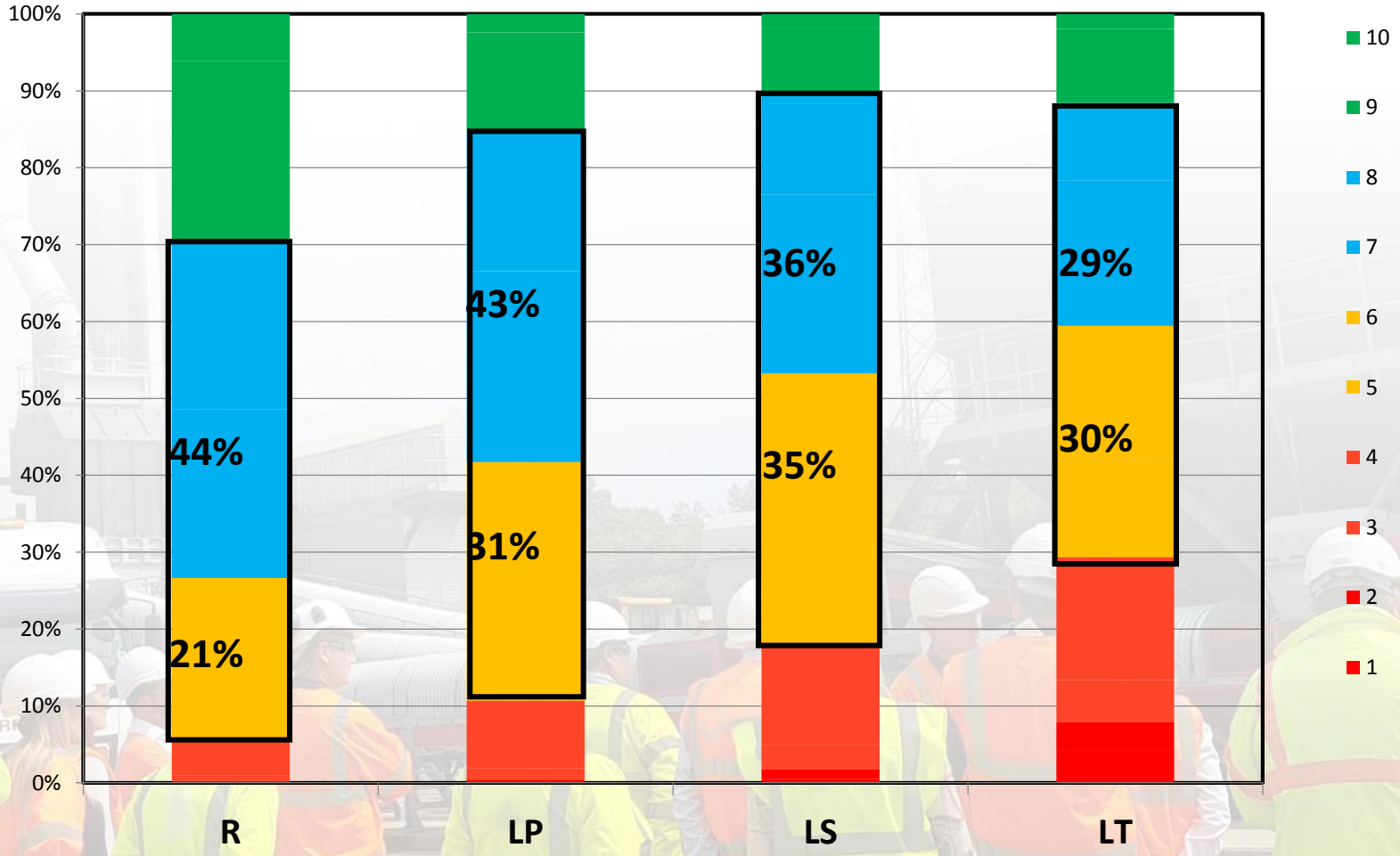
Roads in Ireland	Length (km)	% Surface Dressed
National Roads		
Motorway	916	0
National Primary & Secondary	4390	25%
Non National Roads		
Regional	13162	75%
Primary County	24177	82%
Secondary County	33404	86%
Tertiary County	24063	93%

Surface Dressing is the application of one or more alternating layers of Bitumen and Chippings to the surface of a road.

The Institute of Asphalt Technology
Irish Branch

- Surface Dressing is suitable for the majority of Irish roads and traffic conditions because:
- Surface dressing renews Skid Resistance on existing roads, contributing to user safety
- Seals the road against the effects of moisture, prolonging the pavement life
- Provides a cost effective and durable method of road surfacing.

Rating Percentage by Road Class



Technical Issues

- Surface Dressing is a complex process, requiring a high level of technical input.
- The process is Seasonal and weather dependent and requires:
- Assessment of the road
- Design of a solution
- Control of the work
- Record the work
- Observe & assess the result

To achieve the best result

- Be familiar with the Guidelines and apply them.
- Training is provided by the LASNTG

1. ‘Surface Dressing Basic’ one day for operatives/Supervisors
2. ‘Surface Dressing for Engineers’; one day online+2days lectures
3. ‘Surface Dressing TII Specification & Contracts'; one day after completion of 2 above

- Check details on LASNTG website for details, or ring your Regional Training Centre
- These are very good courses, prepared and delivered by experienced trainers

Development of IAT Guidelines

- Foras Forbartha Report……1977
- Surface Dressing (Blue Book)……1981
- IAT Review of S/D Practice……1991
- **IAT Guidelines for S/D in Ireland**……. 2003
  (2nd Edition……. 2007)
  (3rd Edition……. 2014)
  (3rd Edition Revised 2017)

The Institute of Asphalt Technology
Irish Branch

Why revise the Guidelines?

The existing print (1500 copies) run almost exhausted.

Need to reflect developments in Standards and Specifications.

Incorporate comments and observations from users.

Provide clarification where necessary ,e.g. seasonal factors, Surface Dressing on Trench reinstatement

Amendments

- All references to Standards and Specifications amended throughout, references are up to date at time of printing (August 2017)
- Section 1.1.3 SD on trenches-possibly two different surfaces, old & new
- 1.1.4 I.S. EN 12271 Surface Dressing by Contract need for CE marking provided by Contractor-SD is a Product
- Mention of the TII Analytical Design Method

Amendments

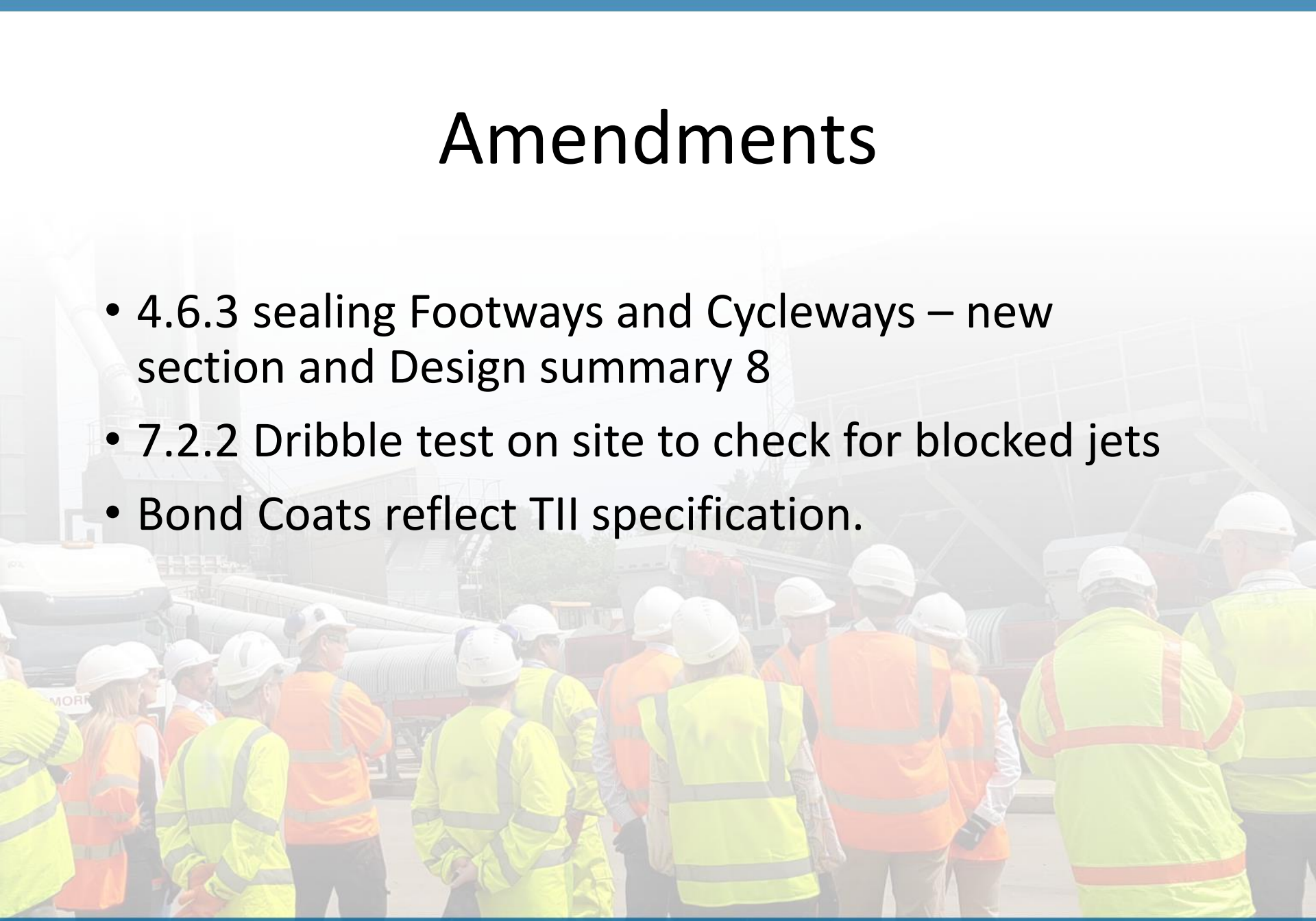
- 1.2.3 Need to protect the lower layer In Double Surface dressing until the work is complete
- 1.2.4 Use of inverted Double SD on HRA.
- 2.1.1 Refers to TII Binder Specification, now included in Appendix J
- 4.4.1 Design; Break road into sections where needed; differing hardness, texture or local conditions
- Table 4 allows more use of 2/6mm chippings on hard low trafficked roads.

Amendments

- Design Summary 1 Use 1.0 l/m^2 as basic ROS of binder for 2/6mm chippings
- Design Summary 2 reduces ROS of Chippings to 3-4 l/m^2
- Design Summary 3 recommends the use of pad coat and Double SD
- Design Summary 4 Allows adjustments to pad coat layer

Amendments

- 4.6.3 sealing Footways and Cycleways – new section and Design summary 8
- 7.2.2 Dribble test on site to check for blocked jets
- Bond Coats reflect TII specification.



The Institute of Asphalt Technology
Irish Branch

The Institute of Asphalt Technology Irish Branch

SURFACE DRESSING DESIGN SHEET

EXISTING ROAD PROPERTIES

Road Number	R1234	Location	Somewhere	Date	15/02/2018
		Road Authority/Client	A Local Authority	PCSI Rating	7.00
Type of old road surface	Old 14mm SD	Hard Shoulder	No	Speed limit	80 km/h
Lean/Fat (0-5 Ratings)	2	Porosity (0-5 Ratings)	0	AADT Vehicles/day	150
				No of lanes	2
Ravelling (0-5 Ratings)	1	Patched (0-5 Ratings)	1	HCV% %	6.20%
				Hardness mm	4
Tracking (0-5 Ratings)	0	Variability (0-5 Ratings)	2	Texture mm	1.2

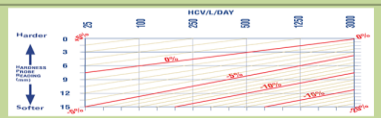
DESIGN SUMMARY

Proposed type of SD	Single Surface Dressing	Design Summary No	1
Type of Binder	Premium Polymer	Chipping PSV	60+

BASIC DESIGN

PRE-TREAT LAYER								
Type of Binder	None	at l/m²	0.00	Chip Size	0	Source	Quarry	at l/m² 0.00
Location	None							
FIRST LAYER								
Type of Binder	Premium Polym	at l/m²	1.50	Chip Size	6-10	Source	Quarry	at l/m² 7.00

ADJUSTMENTS TO RATE OF SPREAD OF BINDER

		% Adjustments 1st Layer
TOTAL TRAFFIC: 75	Traffic (Veh/l/d): 100, 500, 2000, 5000, 10000 — % Adjustment: +10, +5, 0, -3, -5	10
COMMERCIAL TRAFFIC (HCV/Lane/d): 4.65 HARDNESS (mm): 4		0
TEXTURE: 1.2	Texture mm: 0, 0.5, 1, 1.5, 2, 2.5 — % Adjustment: -5, 0, +5, +10, +15, +20	7
FLAKINESS INDEX: Layer 1: 15 — When using a 2-6mm chip use a value of 20 for flakiness	Flakiness %: 0, 10, 15, 20, 25 — % Adjustment: +15, +10, +5, 0, -2	5
GRAVEL CHIPPINGS: 0	Rounded Faces %: 30, 15, 0 — % Adjustment: +10, +5, 0	0
RATE OF SPREAD: 1st Layer 1.50		22%
	Adjusted Rate of Spread (l/m²)	1.8

FINAL ADJUSTED RATE OF SPREAD

SEASON	0.00	HIGH ROAD TEMP	0.00	CHIPPING SIZE	0.10
SHADED	0.20	HIGH ALTITUDE	0.00	UPHILL	0.00
		NORTH FACING	0.00	PORUS	0.00

RATE OF SPREAD OF BINDER - GENERAL	1.93
SHADED	2.13

NOTES

Use the TAB key to navigitate between the available cells where design information is required.

The Institute of Asphalt Technology
Irish Branch

The Institute of Asphalt Technology
Irish Branch

SURFACE DRESSING DESIGN SHEET

SELECT THE SURFACE DRESSING DESIGN YOU REQUIRE

Single Surface Dressing	Racked in Surface Dressing
Double Surface Dressing	Inverted Double Surface Dressing
Sandwich Surface Dressing	Surface Dressing Fresh Asphalt Concrete
Sealing Unbound Layers & Bituminous Cold Mixes	Sealing Footways and Cycleways

The Institute of Asphalt Technology
Irish Branch

SURFACE DRESSING DESIGN SHEET

EXISTING ROAD PROPERTIES

Road Number	R1234	Location	Somewhere	Date	15/02/2018
		Road Authority/Client	A Local Authority	PCSI Rating	7.00
Type of old road surface	Old 14mm SD	Hard Shoulder	No	Speed limit	80 km/h

Lean/Fat	*(0-5 Ratings)*	2	Porosity	*(0-5 Ratings)*	0	AADT	*Vehicles/day* 150
						No of lanes	2
Ravelling	*(0-5 Ratings)*	1	Patched	*(0-5 Ratings)*	1	HCV%	% 6.20%
						Hardness	*mm* 4
Tracking	*(0-5 Ratings)*	0	Variability	*(0-5 Ratings)*	2	Texture	*mm* 1.2

DESIGN SUMMARY

Proposed type of SD	Single Surface Dressing	Design Summary No	1
Type of Binder	Premium Polymer	Chipping PSV	60+

BASIC DESIGN

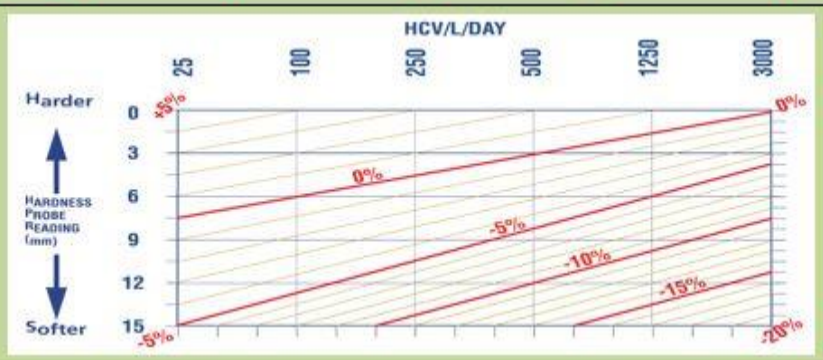
PRE-TREAT LAYER

Type of Binder	None	at l/m^2	0.00	Chip Size	0	Source	Quarry	at l/m^2 0.00
Location	None							

FIRST LAYER

Type of Binder	Premium Polym	at l/m^2	1.50	Chip Size	6-10	Source	Quarry	at l/m^2 7.00

ADJUSTMENTS TO RATE OF SPREAD OF BINDER

		% Adjustments	
		1st Layer	
TOTAL TRAFFIC: 75	Traffic (Veh/l/d): 100, 500, 2000, 5000, 10000 — % Adjustment: +10, +5, 0, -3, -5	10	
COMMERCIAL TRAFFIC (HCV/Lane/d): 4.65 HARDNESS (mm): 4		0	
TEXTURE: 1.2	Texture mm: 0, 0.5, 1, 1.5, 2, 2.5 — % Adjustment: -5, 0, +5, +10, +15, +20	7	
FLAKINESS INDEX — Layer 1: 15 (When using a 2-6mm chip use a value of 20 for flakiness)	Flakiness %: 0, 10, 15, 20, 25 — % Adjustment: +15, +10, +5, 0, -2	5	
GRAVEL CHIPPINGS: 0	Rounded Faces %: 30, 15, 0 — % Adjustment: +10, +5, 0	0	
RATE OF SPREAD — 1st Layer: 1.50		22%	
	Adjusted Rate of Spread (l/m^2)	1.8	

The Institute of Asphalt Technology
Irish Branch

FINAL ADJUSTED RATE OF SPREAD

SEASON	0.00		HIGH ROAD TEMP	0.00		CHIPPING SIZE	0.10	
SHADED	0.20		HIGH ALTITUDE	0.00		UPHILL	0.00	
			NORTH FACING	0.00		POROUS	0.00	

RATE OF SPREAD OF BINDER - GENERAL	1.93	
SHADED	2.13	

NOTES

The Institute of Asphalt Technology
Irish Branch

SURFACE DRESSING DESIGN SHEET

EXISTING ROAD PROPERTIES

Road Number	1234	Location	Anywhere	Date	15/02/2018
		Road Authority/Client	A Local Authority	PCSI Rating	
Type of old road surface	Clause 810	Hard Shoulder	No	Speed limit	80 km/h
		Porosity (0-5 Ratings)	0	AADT (Vehicles/day)	300
				No of lanes	2
				HCV% (%)	5.00%

DESIGN SUMMARY

Proposed type of SD	**Sealing Unbound Layers/Bituminous Cold Mixes**	Design Summary No	7
Type of Binder	Cationic 70	Chipping PSV	60+

BASIC DESIGN

PRE-TREAT LAYER								
Type of Binder	Catonic 70	at l/m²	0.00	Chip Size	0	Source	Quarry	at l/m²	0.00
Location	None							
FIRST LAYER								
Type of Binder	Catonic 70	at l/m²	2.20	Chip Size	10-14	Source	Quarry	at l/m²	9.50
SECOND LAYER								
Type of Binder	Catonic 70	at l/m²	1.80	Chip Size	6-10	Source	Quarry	at l/m²	7.00

ADJUSTMENTS TO RATE OF SPREAD OF BINDER

		% Adjustments	
		1st Layer	2nd Layer
FLAKINESS INDEX Layer 1: 14 / Layer 2: 18 When using a 2-6mm chip use a value of 20 for flakiness	Flakiness % 0 / 10 / 15 / 20 / 25 % Adjustment +15 / +10 / +5 / 0 / -2	6	2
GRAVEL CHIPPINGS 0	Rounded Faces % 30 / 15 / 0 % Adjustment +10 / +5 / 0	0	0
RATE OF SPREAD 1st Layer: 2.20 / 2nd Layer: 1.80		6%	2%
	Adjusted Rate of Spread (l/m^2)	2.33	1.84

The Institute of Asphalt Technology
Irish Branch

FINAL ADJUSTED RATE OF SPREAD

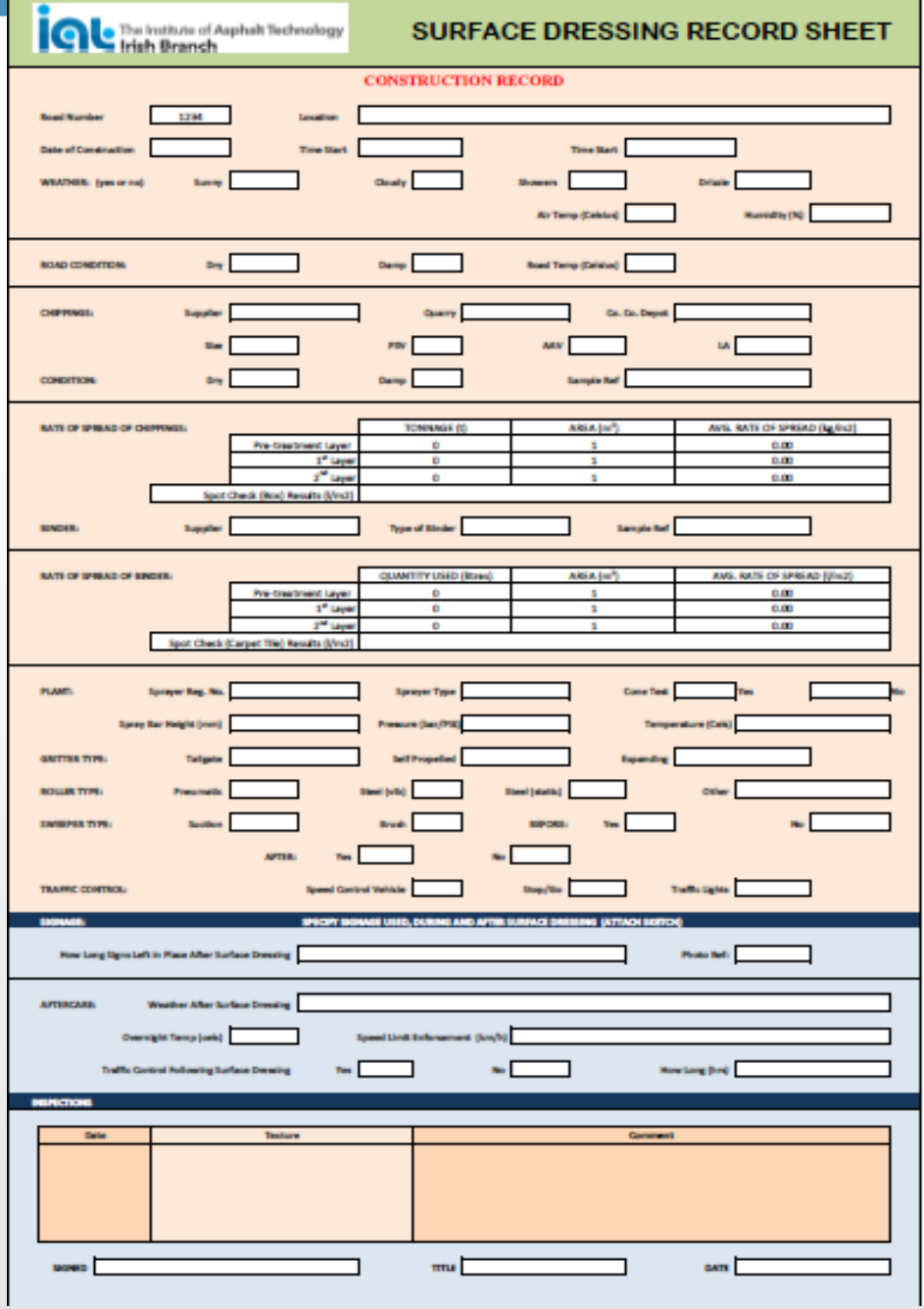
SEASON		0.00	HIGH ROAD TEMP		0.00	CHIPPING SIZE	0.10	0.00
SHADED	0.20	0.10	HIGH ALTITUDE	0.00	0.00	UPHILL	0.00	0.00
			NORTH FACING	0.00	0.00	PORUS	0.00	

RATE OF SPREAD OF BINDER - GENERAL	2.43	1.84
SHADED	2.63	1.94

NOTES

The Institute of Asphalt Technology
Irish Branch

The record sheet will allow records to be uploaded and calculate achieved application rates, records can be filed and shared electronically.



What to do if you are new to the process

- Get the Book
- Read and study it.
- Attend the Training Courses.
- Apply the Guidelines to the work.
- Plan and execute the work in Season.
- Spend time on site to understand the process

The Institute of Asphalt Technology
Irish Branch

Jim Campbell jim.campbell@coldchon.ie phone 087 2359772

The Institute of Asphalt Technology
Irish Branch

Jim Campbell jim.campbell@coldchon.ie phone 087 2359772