REPUBLIC OF ESTONIA
TRANSPORT ADMINISTRATION

Best practices in doing surface dressings

2022 Road Construction Conference Latvia

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Infra management department

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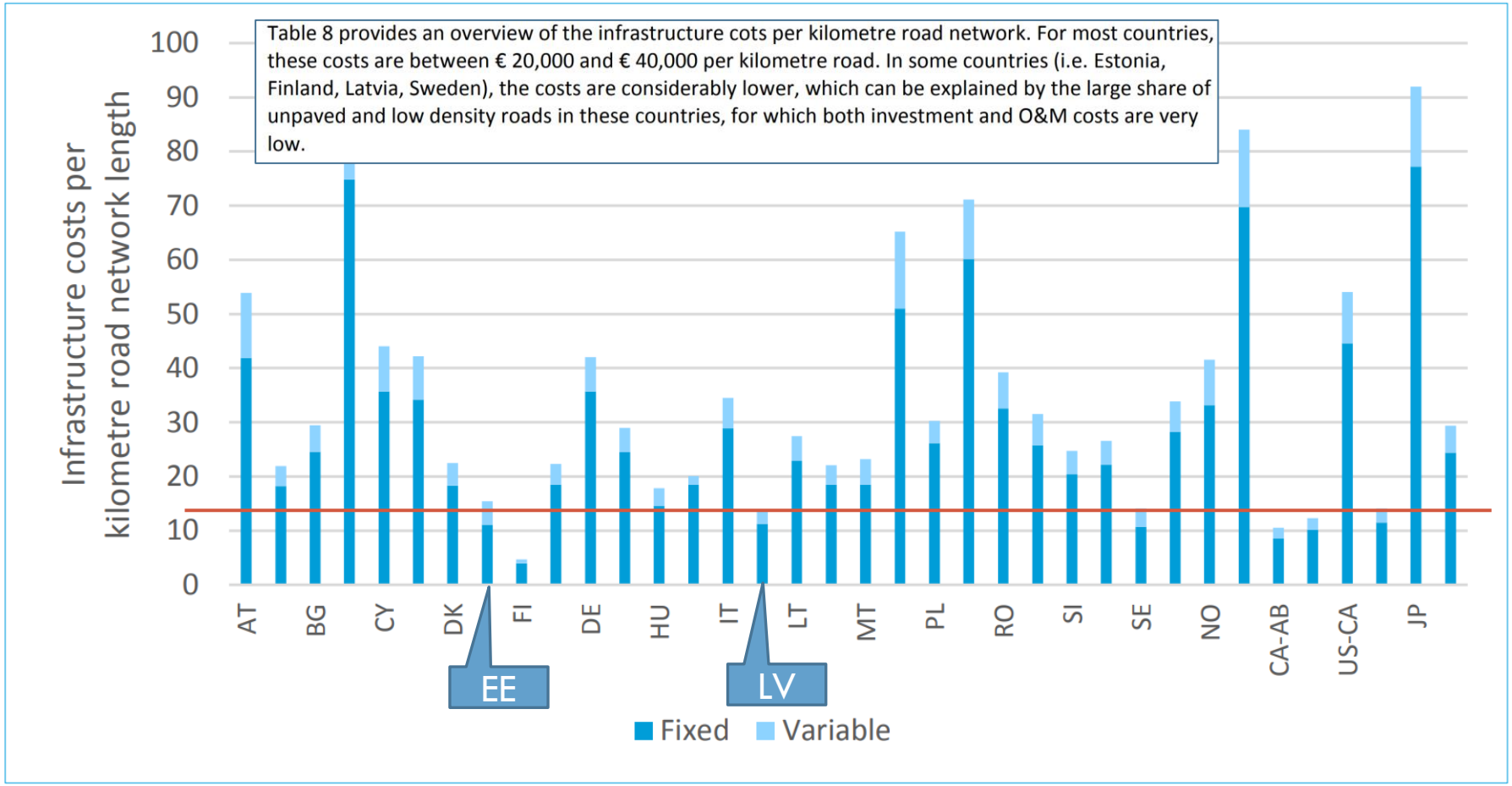
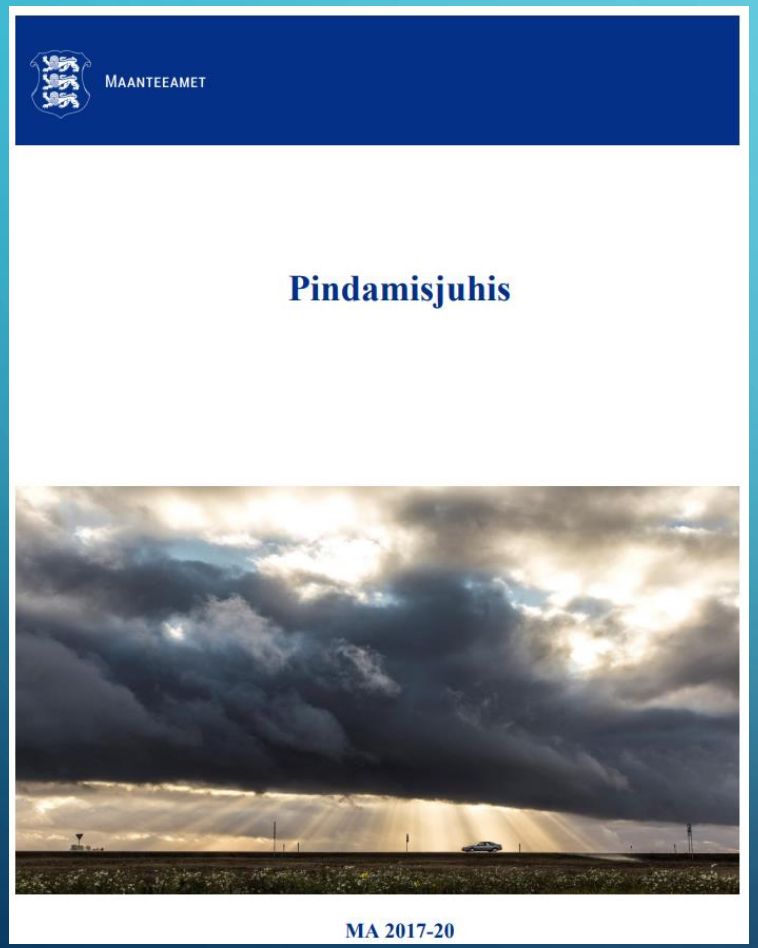
OVERVIEW OF THE TRANSPORT INFRASTRUCTURE EXPENDITURES AND COSTS (2016 DATA, EU 2019 REPORT)

Figure 9 - Infrastructure costs per kilometre road network length (x 1,000 €/km, PPS adjusted)



THE SURFACE DRESSING MANUAL



Surface dressing is the construction of a wear and weather protection layer on a road surface, in which case the surface is covered the bituminous binder and a suitable aggregate with a grain composition are applied alternately, then rolled.

Surface dressing is a product covered by European Construction Products Regulation 305/2011 which must comply with the harmonized product standard EVS-EN 12271 and a proper declaration of performance must be drawn up and must be provided CE marked.

PAVEMENT POROSITY LEVEL & DAILY TRAFFIC

3.1.1 Katte poorsuse määramine kõvakattega teel.

Tabel 2

Pavement Type	Liivaring (10 ml) (mm)	Hardness	Katte tüübi kirjeldus
Kõva, urbne:	60-100	Väga kõva, kõva	Struktuur kuiv ja kivide vahe selgesti visuaalselt eraldatav
Urbne-sile:	90-140	Kõva, keskmine	Kõikuv struktuur, urbne või osaliselt sile, erinevus märgatav eriti rattajälgede ja muu teeosa suhtes
Sile:	130-200	Pehme	Tugevasti kulunud pindamine, rattajälg siledam kui muu teeosa
Sile-pehme:	150-220	Väga pehme	Pealt bituumenirikas kate, kivid kattes vaevalt või aimatavalt nähtavad.

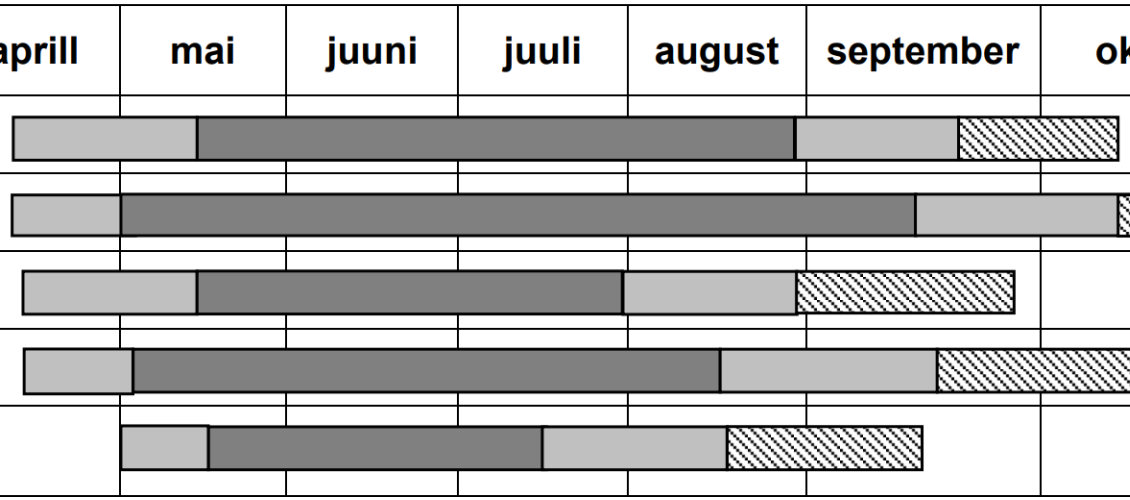
Tabel 3

Traffick veh/24h	Gravel pavement			Dust free pavement (sand circle with 10ml)			
	*Tolmune , pehme	**vahelduv alus	***kõva ühtlane	kõva, urbne	urbne-sile	sile	sile-pehme
				60-100	90-140	130-200	150-220
R3, R4, R5 > 1000	Ei pinnata	2x	1x (F)	1x (F)	1x (F)	1x (F)	1x
	Ei pinnata		1,5x (F)	1xK	1xV	1xV	1,5x
	Ei pinnata		2x	1,5x (F)	1,5x (F)	1,5x (F)	1x S
					1,5xV	1,5xV	
R1, R2 < 1000	2x E	2x	1x (F)	1x (F)	1x (F)	1x (F)	1x
		2x E	1,5x (F)	1xK	1xK	1,5x (F)	1x S
		1x S	2x	1,5x (F)	1,5x (F)		1,5x
		1x O		2x Ü			

THE RIGHT TIMES FOR EACH TECHNOLOGY TYPE

Tabel 9

Road class ADT		aprill	mai	juuni	juuli	august	september	oktoober
R1, R2 < 1000	1x; 1,5x							
	2x;							
R3 1000-2500	1x; 1,5x							
	2x;							
R4, R5 > 2500*	1x; 1,5x							

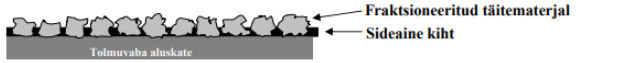


**Siia alla kuuluvad ka parkimisplatsid, intensiivsete ja järskude pööretega ristmikud, mis hoitakse talvel lumevabad kloriididega töötlemise teel.*

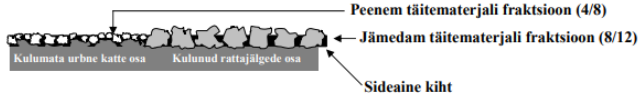
DIFFERENT TECHNOLOGYS

2. PINDAMISEL KASUTATAVAD TEHNOLOOGIAD

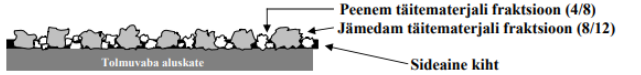
- **Ühekordne pindamine**: **(1 x)** ühele sideaine laotamisele järgneb üks täitematerjali puiste kiht.



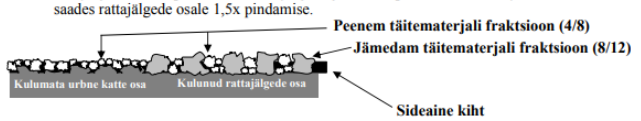
- **Ühekordne pindamine**: **(1 x V)** ühele sideaine laotamisele (kogu pindamispaani laiuses) järgneb kulunud rattajälgede osale üks jämedama täitematerjali (8/12) puiste kiht, mille järel koheselt peenema (4/8) täitematerjali puiste ülejäänud tee urbsematele osadele (tee telje osa, rattajälgede vahe ja katte serva osa). Sideaine norm kogu laiuses üks ja sama.



- **Ühekordne kahe puistega: (1,5 x)** ühele sideaine laotamisele järgneb hõredama jämedama täitematerjali fraktsiooni puiste, mida ei rullita ja mille vahele puistatakse kohe järgi peenem täitematerjali fraktsioon.

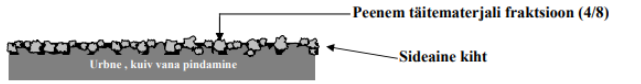


- **Ühekordne kahe puistega: (1,5 x V)** ühele sideaine laotamisele (kogu pindamispaani laiuses) järgneb jämedama täitematerjali fraktsiooni hõredam puiste kulunud rattajälgede osale, puistatakse kohe järgi kogu laiuses peenem täitematerjali fraktsioon, saades rattajälgede osale 1,5x pindamise.



- **Ühekordne kiilumismeetod: (1 x K)** urbsele, kuivale, vanale kattele.

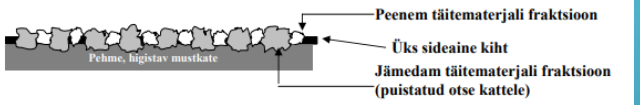
Olemasoleva urbse kuiva katte täitematerjali terade vahele kiilutakse ühe sideaine kihiga peenem fraktsioneeritud täitematerjali fraktsioon, mis täidab ära urbsed vahemikud kattes.



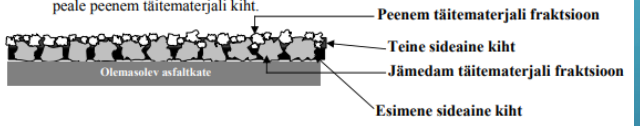
- **Fiiberpindamine: (1 x F või 1,5 x F)** Ühe läbikuga laotatava sideaine kihtide vahele lõigatakse ja puistatakse klaasfiiberkiud, mis aitab sideainel katte pragude avanemist vältida. Peale puistatakse kas üks fraktsioneeritud täitematerjali kiht või kaks, nagu

näiteks 1,5 x pindamise puhul. Kindlasti annab parema tulemuse 1,5x pindamine pragude tekkimise kaitseks.

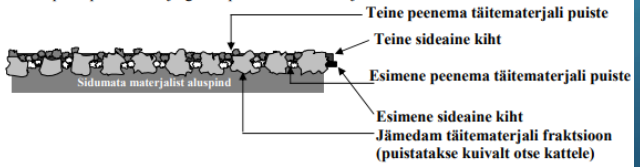
- **Sändvitš pindamine: (1 x S)** otse kattele eelpuistatud jämedamale täitematerjalile laotatakse üks sideaine kiht, mille peale tuleb peenem täitematerjali kiht.



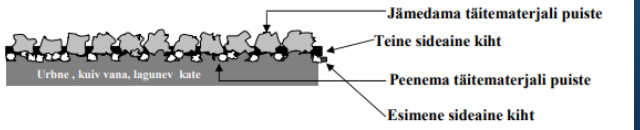
- **Kahekordne pindamine: (2 x)** Esimesena laotatakse esimene sideaine kiht ja selle peale jämedam fraktsioneeritud täitematerjali kiht, mille peale teine sideainekiht ja selle peale peenem täitematerjali kiht.



- **Eelpuistega kahekordne pindamine: (2 x E)** Otse kattele puistatakse jämedama täitematerjali fraktsioon. Seejärel laotatakse esimene sideaine kiht ning kiilutakse peenema fraktsiooniga täitematerjaliga. Pärast seda laotatakse teine kiht sideainet ning peale puistatakse järgmine peenema täitematerjali fraktsioon.



- **Kahekordne ümberpööratud pindamine (2 x Ü)** kattele laotatakse esimene sideaine kiht, mille peale tuleb aluskatte urbsete terade vahele puistata kiilumiseks ja vahede täiteks peene täitematerjali fraktsioon. Selle peale tuleb teine sideaine kiht ja jämedama täitematerjali puiste kulumiskihiks.



SUBSEQUENT INSPECTION OF THE WORKS (P.5.3):

- 5.3.1 If a subsequent inspection of the work reveals a surface dressing where the depth of the macrotexture exceeds the specified limits (Table 10), the customer must be informed and the diluted emulsion is sprayed with the "Fog Seal" method, with emulsion C35B5 or other method designed for this purpose to prevent possible detachment of rubble in autumn and winter. The C35B5 binder content of the diluted emulsion must not be less than 28%.
- 5.3.2 In the case of the "Fogseal" method, C35B5 emulsion is sprayed on the surface dressing with a flow rate of 0.4-0.9 kg / m2 depending on the surface porosity and on high traffic roads R3, R4, R5 (more than 1000/ADT, if necessary, elsewhere) also with sieves or sand.

SURFACE DRESSING VOLUMES 2020-2022

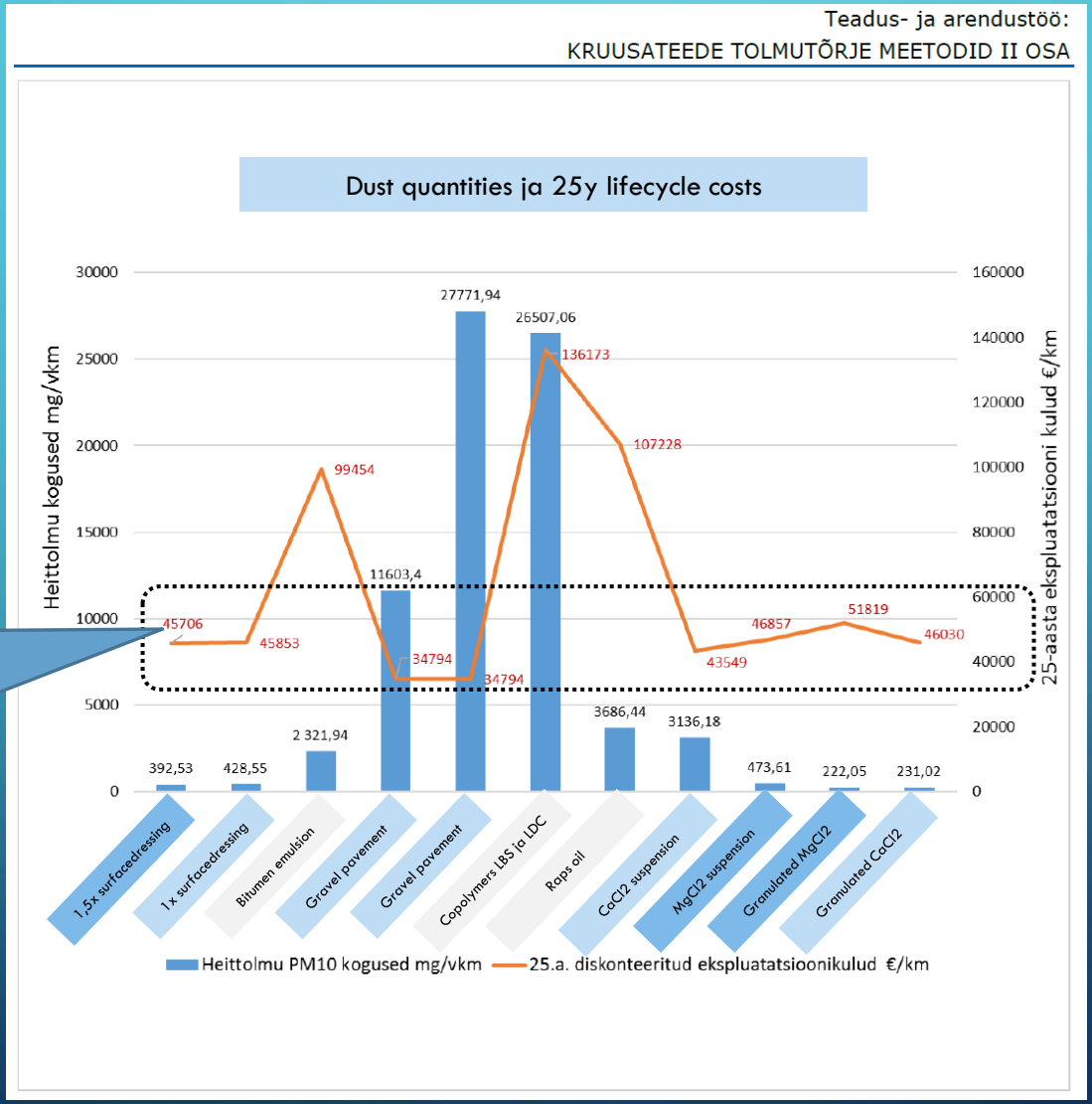
Quantity targets	2020 (km)	2021 (km)	2021 täitmine (km)	2022 eesmärk (km)
Kruusateid remonditud säilitusremondi meetoditega	272	285	319	284
Surface dressing (& micro surfacing) for the paved roads	1054	1162	1196	1137
Kattega teid remonditud taastusremondi meetoditega	263	187	219	200
Remonditud sildu - tk	20	20	22	22
Rekonstrueeritud teid	125	105	101	114
Ehitatud teid (valminud)	32	20	22	25
Surface dressing and pavement for the gravel roads	187	322	323	57
Ohutuse parandamine liiklusohtlikes kohtades - tk	38	57	46	66
Müratõkkeseinad				4
Rail Baltic ristumised			0	1

Our works are based on:

1) Surface dressing manual;
2) We generally divide the procurement of coating works into districts all over Estonia;
3) Step by step, the volume and budget for making the microsurfacing has been increased. In 2022, all regions are already making the microsurfacing. We order microsurfacing separately from surface dressing and on a region-by-region basis.
4) We also pilot the E-waybill in surface procurement.

GRAVEL ROAD DIFFERENT TREATMENT METHODS_2017

Surface dressing is cheaper then MgCl2 in 25y-lifecycle analyze



SURFACE DRESSING IN PRACTICE (1)

- More polymers are used last year's voluntarily by Contractors as there has been lack of good Venezuelan bitumen and warranty time 3 years is strong motivation to keep the high quality.
- „Fog Seal" is more common by Contractors in last years, especially in autumn time works (mainly to compensate not so good emulsion forming).

SURFACE DRESSING IN PRACTICE (2)

Profile fixes:

- AC 8 surf (EVS 901 requirements: 900 ≤ AKÖL <1499). The west district also allows AC 12 surf;
- As a general rule, the installation of asphalt mix on roads with a capacity of more than 100 t must be carried out with an asphalt paver;
- It is also allowed to demand: Joints of profile repair sections must be made with a milled tooth (smooth transitions must be ensured at the beginning and end of the sections);
- There must be a 7-day technological break between the completion of the levelling and the coating;
- For information: Coating 8/12 + 4/8 igneous stone - 1.5x coating is mostly used. It is also allowed to demand 1x coating.

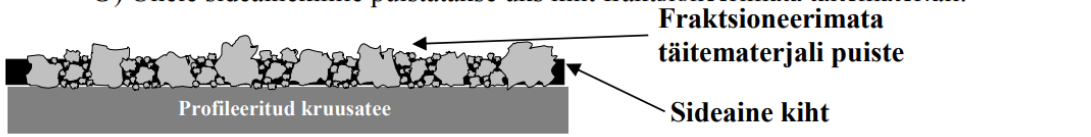
SURFACE DRESSING IN PRACTICE (3)

Repair of defects in surface work during the warranty period (loose gravel, sweating of coatings, worn / deformed markings) is one of the Contractor's obligations, except: situations which could not have been foreseen during the performance of the contract:

- Construction object - the surface dressing section is used as a construction object (side walks, bus stops, etc. situation is being built next to it);
- The surface dressed section is in use/affected during service handling of a large object;
- Forest clearcutting after surface dressing and now the surface dressing is in constant sunlight;
- The surface dressing has not been used for any other purpose;
- Reserve for surface dressing contracts 5%.

OTTA SURFACE DRESSING (BRA SITE VISIT 2017 SAAREMAA)

- **Fraktsioneerimata täitematerjaliga ehk ridakillustikuga pindamine (OTTA): (1 x O)** Ühele sideainekihile puistatakse üks kiht fraktsioneerimata täitemateriali.



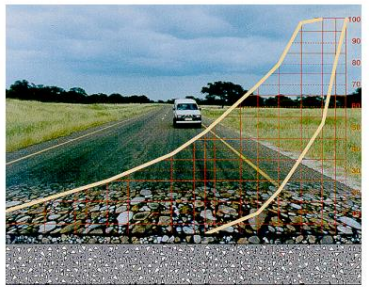
Pindamistüübid vastavalt standardile EVS-EN 12271 jaotatakse järgmiselt:

- T1 - tähistab ühekordseid pindamisi (1x, 1xV, 1xK, 1xO, 1xS, 1xF);
- T1,5 - tähistab kahekordse puistega ühekordseid pindamist (1,5x, 1,5xV, 1,5xF)
- T2 - kahekordseid pindamisi (2x, 2xF, 2xS, 2xE, 2xÜ)

Saaremaa final meeting and technical tour

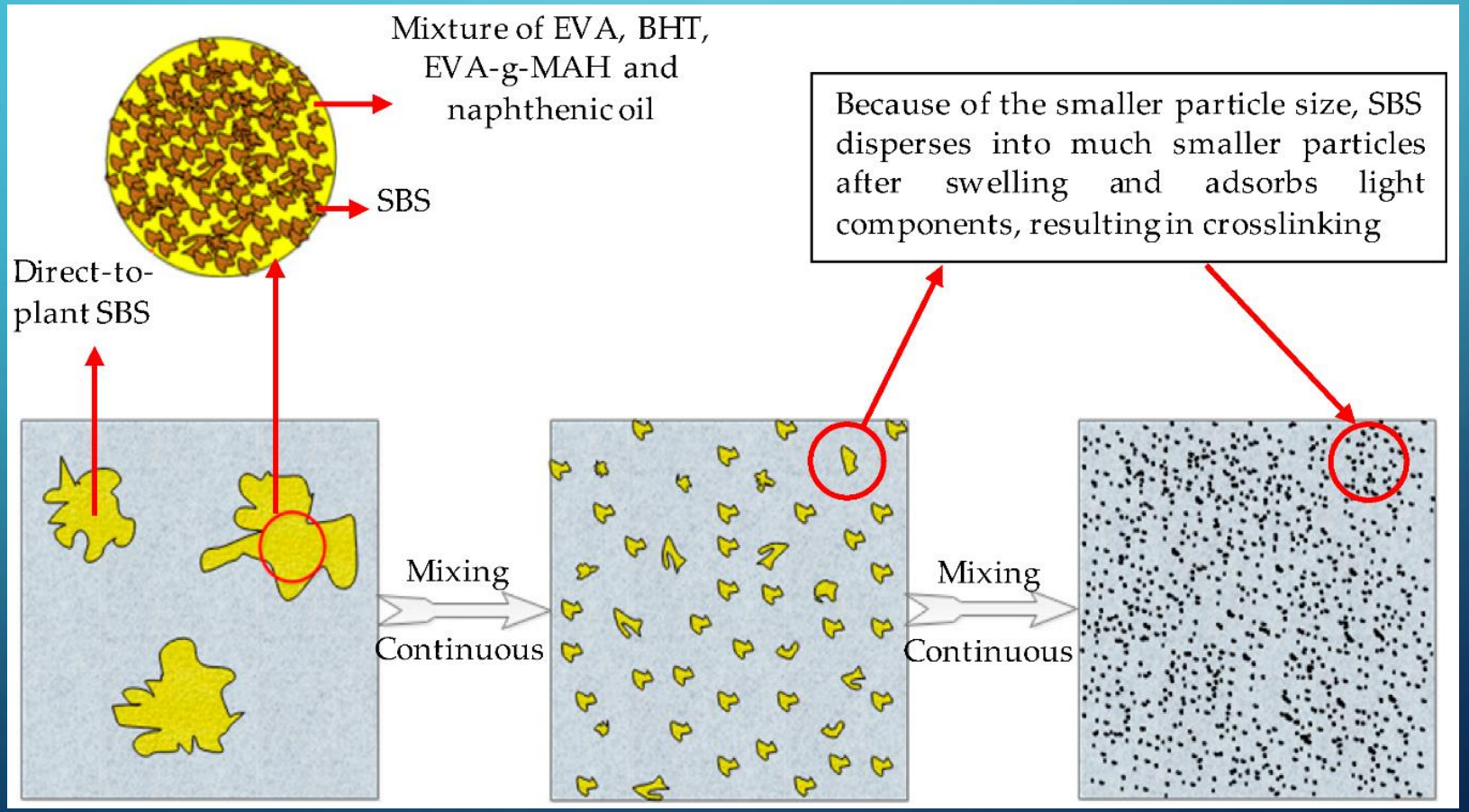
Local ERA specialist showing surfis dressings OTTA seal tech

OTTA PINDKATETE KASUTAMISE JUHEND

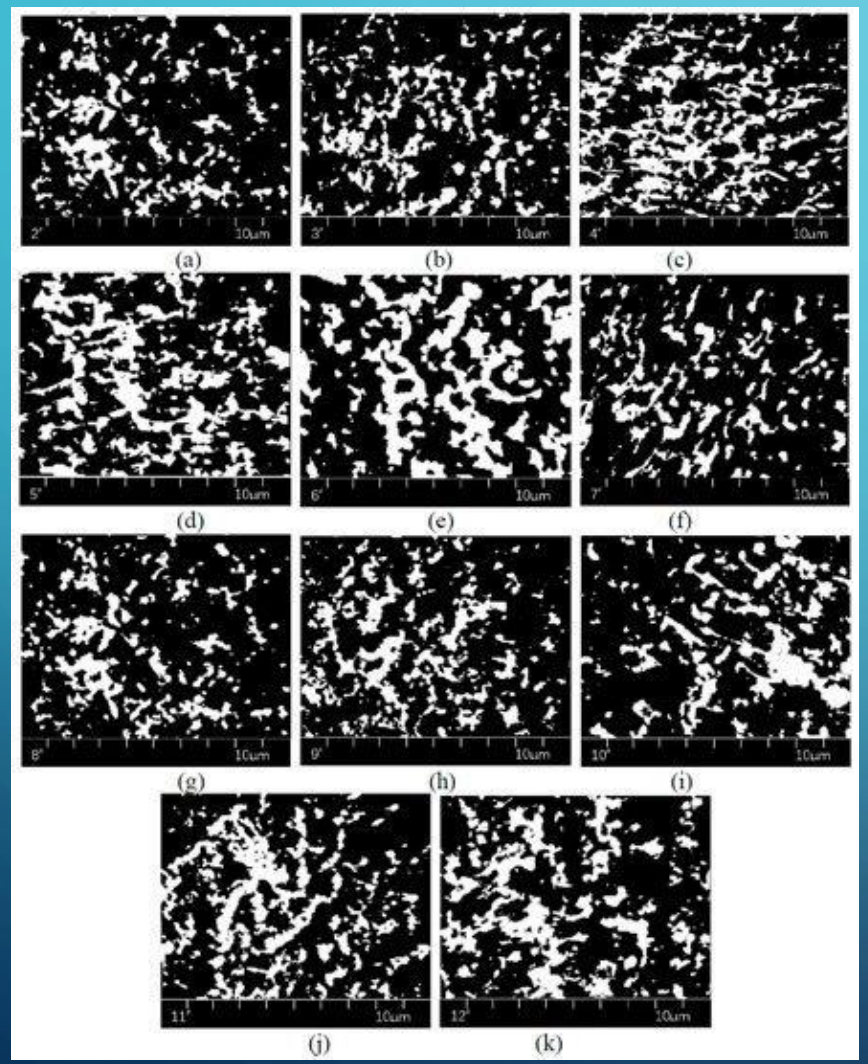


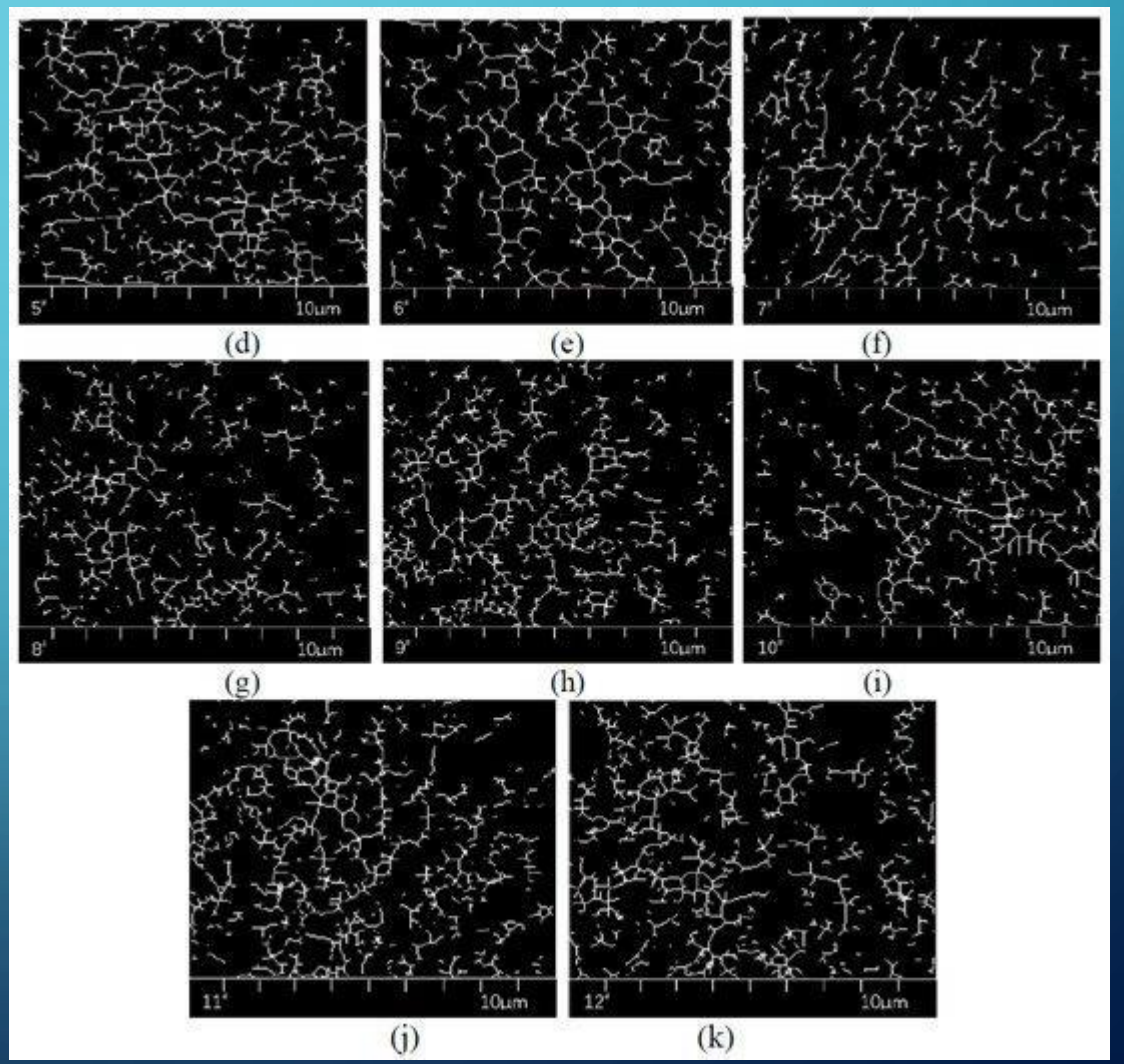
SURFACE DRESSING WITH FIBER (MOSTLY AGAINST MICRO CRAKS)

POLYMER ADDITIVE FOR THE SURFACE DRESSING BINDER

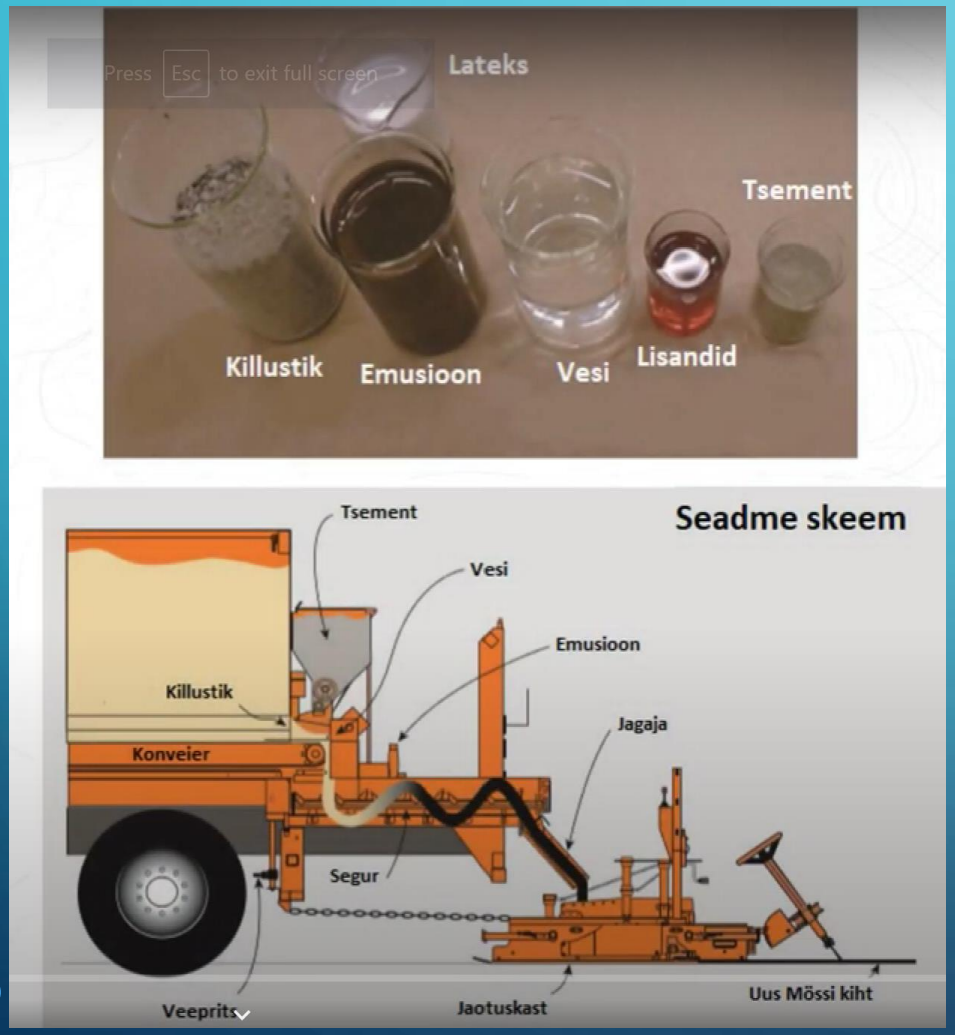


MUST BE ENOUGH POLYMER (MIN 4%) TO GRATE „SPIDER NET“





MICROSURFACING



QUICKLY PERFORMABLE

The road can be fully opened for traffic already in 1-2 hours.

CLEAN & SAFE

There will be no loose aggregate left on the road, the traffic noise decreases.

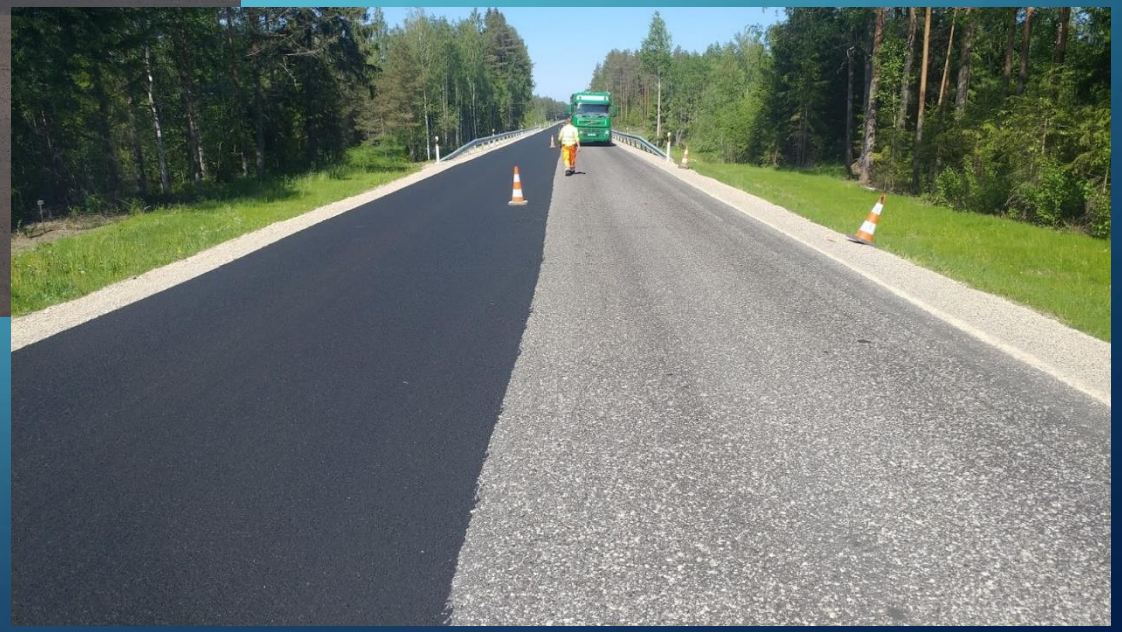
FILLING & LEVELLING

Fills smaller cracks, forming a new wearing course.

ADVANTAGEOUS & EFFECTIVE

The most cost-effective technology, compared to the construction of a new wearing course layer on the road surface.

MICROSURFACING SAMPLE WORKS



1,5X SURFACE DRESSING VIDEO (1,03 MIN)

THANK YOU !