

Appendix E – Additional Information

TYPICAL SPREAD RATES FOR RESURFACING PROJECTS

The following are common spread rates used for resurfacing projects. These are just spread rates which are common. Different rates may be used, if directed by and/or approved by regional resurfacing coordinators, but values in Section IV of Design Guidelines should always prevail when calculating quantities.

Treatment	Mixture / Item	Rate	Thickness	Comments
Microsurfacing (Single Application)	414-03.02, Aggregate for Micro-Surfacing 414-03.02, Aggregate for Micro-Surfacing	22 lbs/yd ²	n/a	Pavement schedule should clarify two separate applications/lifts
Microsurfacing (Double Application)		32 lbs/yd ² (18 + 14 in two separate applications)	n/a	
Microsurfacing (Single Application over scrub seal)		24 lbs/yd ²	n/a	
Chip Seal (when size #7 aggregate is specified)	405-01.01, Bituminous Material for Bituminous Seal Coat (BSC), TON	28 lb/yd ²	n/a	Typically, no stone size is specified, and the midpoint of the total range (0.17 - 0.45) is used for calculation of quantities.
	Item No. 405-01.02, Mineral Aggregate for Bituminous Seal Coat (BSC)	0.38 gal/yd ²	n/a	Typically, no stone size is specified, and the midpoint of the total range (17 - 30) is used for calculation of quantities.
Chip Seal (when size #78 aggregate is specified)	405-01.01, Bituminous Material for Bituminous Seal Coat (BSC), TON	25 lb/yd ²	n/a	Typically, no stone size is specified, and the midpoint of the total range (0.17 - 0.45) is used for calculation of quantities.
	Item No. 405-01.02, Mineral Aggregate for Bituminous Seal Coat (BSC)	0.38 gal/yd ²	n/a	Typically, no stone size is specified, and the midpoint of the total range (17 - 30) is used for calculation of quantities.
Chip Seal (when size #8 aggregate is specified)	405-01.01, Bituminous Material for Bituminous Seal Coat (BSC), TON	28 lb/yd ²	n/a	Typically, no stone size is specified, and the midpoint of the total range (0.17 - 0.45) is used for calculation of quantities.
	Item No. 405-01.02, Mineral Aggregate for Bituminous Seal Coat (BSC)	0.33 gal/yd ²	n/a	Typically, no stone size is specified, and the midpoint of the total range (17 - 30) is used for calculation of quantities.

Treatment	Mixture / Item	Rate	Thickness	Comments
Chip Seal (when size #89 aggregate is specified)	405-01.01, Bituminous Material for Bituminous Seal Coat (BSC), TON	20 lb/yd ²	n/a	Typically, no stone size is specified, and the midpoint of the total range (0.17 - 0.45) is used for calculation of quantities.
	Item No. 405-01.02, Mineral Aggregate for Bituminous Seal Coat (BSC)	0.225 gal/yd ²	n/a	Typically, no stone size is specified, and the midpoint of the total range (17 - 30) is used for calculation of quantities.
Thin Overlay, 411-D	411-01.10, ACS MIX(PG64-22) GRADING D 411-02.10, ACS MIX(PG70-22) GRADING D 411-03.10, ACS MIX(PG76-22) GRADING D	132.5 lb/yd ²	1-1/4"	
Thin Overlay, 411-TLD	411-03.12, ACS MIX(PG64-22) THIN LIFT D ASPHALT 411-03.13, ACS MIX(PG70-22) THIN LIFT D ASPHALT 411-03.14, ACS MIX(PG76-22) THIN LIFT D ASPHALT	85 lb/yd ²	7/8 – 3/4"	
Thin Overlay, 411-TL	411-03.07, ACS MIX(PG64-22) THIN LIFT ASPHALT	65 lb/yd ²	~5/8"	
	411-03.08, ACS MIX(PG70-22) THIN LIFT ASPHALT	or	or	
	411-03.09, ACS MIX(PG76-22) THIN LIFT ASPHALT	85 lb/yd ²	7/8 – 3/4"	
Open-Graded Friction Course (OGFC)	411-03.23, ACS MIX (PG76-22) OGFC, ACS MIX (PG76-22) OGFC	110 lb/yd ²	1-1/4"	
Mill and Replace	415-01.01, COLD PLANING BITUMINOUS PAVEMENT	Match paving depth unless indicated otherwise.		Per Design Guidelines 4-415.00, tonnage item is calculated using 105 lb/yd ² /in. Items with yd ² or yd ³ units may only be used when estimated tons is <2000.
Hot In-Place Recycling	311-03.10 Asphalt Rejuvenating Agent, GAL.	0.20 gal/yd ²	n/a	Check with regional resurfacing and Materials and Tests office.
Spot leveling	Either 307-CS or 307-BM2	As directed by PS&E	Variable depth	
Full width leveling course	Either 307-CS or 307-BM2	As directed by Resurfacing Engineer	Variable depth	See SOG Chapter on "LEVELING COURSES AND MINOR REHABILITATION". A common minimum spread rate used for CS is 40 lbs/yd ² (~0.35"), but higher rates can be specified. The minimum spread rate often used for 307-BM2 is 100 lbs/yd ² (~0.9"), but 170 lbs/yd ² (1-1/2") is optimal.

SUMMARY OF LIMITS FOR EXISTING PAVEMENT CONDITION – (AS DEFINED IN SOG PAVEMENT TREATMENT GUIDELINES)

	Existing pavement condition										Life Extension	
	Flexible					Composite					Flexible	Composite
	PDI	PQI	HCIRI	Rut Depth	Pavement Age (yrs)	PDI	PQI	HCIRI	Rut Depth	Pavement Age (yrs)		
Crack Sealing	n/a	n/a	n/a	n/a	4-5	n/a	n/a	n/a	n/a	4-5	Up to 3 years	Up to 3 years
Fog Sealing	≥ 4.00	≥ 3.70	≤ 75	n/a	n/a	≥ 4.00	≥ 3.70	≤ 75	n/a	n/a	Up to 4 years	Up to 4 years
Longitudinal Joint Stabilization	n/a	n/a	n/a	n/a	2-3	n/a	n/a	n/a	n/a	2-3	Up to 3 years	Up to 3 years
Slurry Seal	≥ 4.00	≥ 3.70	≤ 75	≤ 0.125" (1/8")	≥ 7	≥ 4.00	≥ 3.70	≤ 75	≤ 0.125" (1/8")	≥ 7	Up to 5 years	Up to 4 years
Microsurfacing (Single Application @ 22lbs/yd2)	≥ 4.00	≥ 3.70	≤ 75	≤ 0.125" (1/8")	≥ 7	≥ 4.00	≥ 3.70	≤ 75	≤ 0.125" (1/8")	≥ 7	6 to 8	5 to 7
Microsurfacing (Double Application@ 32 lbs./s.y. [18 + 14])	≥ 4.00	≥ 3.70	≤ 75	<0.5" (1/2")	≥ 7	≥ 4.00	≥ 3.70	≤ 75	<0.5" (1/2")	≥ 7	7 to 9	7 to 9
Scrub Seal	n/a	n/a	n/a	≤ 0.125" (1/8")	≥ 7	n/a	n/a	n/a	≤ 0.125" (1/8")	≥ 7	Up to 7 Years	Up to 7 Years
Chip Seal	n/a	n/a	n/a	≤ 0.125" (1/8")	≥ 7	n/a	n/a	n/a	≤ 0.125" (1/8")	≥ 7	6 Years	6 Years
Cape Seal	≥ 3.60	≥ 3.50	≤ 75	≤ 0.25"	≥ 9	≥ 3.30	≥ 3.30	≤ 90	≤ 0.25"	≥ 9	10 Years	10 Years
Thin Overlay - "D" Mix (1 ¼")	≥ 3.60	≥ 3.50	≥ 75	≤ 0.25"	≥ 9	≥ 3.30	≥ 3.30	≥ 90	≤ 0.25"	≥ 9	12 Years	10 Years
Thin Overlay - Thin Lift "TL" or Thin Lift "D" Mix (3/4")	≥ 3.90	≥ 3.70	≤ 75	≤ 0.125"	≥ 7	n/a	n/a	≤ 75	≤ 0.125"	≥ 7	9 Years	n/a
Thin Overlay - Thin Lift Mix (5/8")	≥ 4.00	≥ 3.70	≤ 65	≤ 0.125"	≥ 7	n/a	n/a	≤ 65	≤ 0.125"	≥ 7	7 Years	n/a

	Existing pavement condition										Life Extension	
	Flexible					Composite					Flexible PQI	Composite
	PDI	PQI	HCIRI	Rut Depth	Pavement Age (yrs)	PDI	PQI	HCIRI	Rut Depth	Pavement Age (yrs)		
Chip Seal with 5/8" Thin Overlay	≥ 3.20	≥ 3.50	≥ 3.50	≤ 0.125"	≥ 7	n/a	n/a	n/a	n/a	≥ 7	12 Years	n/a
Chip Seal with 3/4" Thin Lift "TL" or Thin Lift "D" Mix (3/4") Overlay	≥ 3.50	≥ 3.40	≤ 80	≤ 0.125"	≥ 9	n/a	n/a	n/a	n/a	≥ 9	12 Years	n/a
Chip Seal with 1-1/4" 411-D Overlay	≥ 3.50	≥ 3.50	≤ 100	≤ 0.125"	≥ 9	n/a	n/a	n/a	n/a	≥ 9	12 Years	n/a
Mill, CS & OGFC	< 3.50	< 3.40	> 100	> 0.250"	≥ 9	< 3.50	< 3.40	> 100	> 0.250"	≥ 9	9 Years	n/a
Mill, C & OGFC	< 3.50	< 3.40	> 100	> 0.250"	≥ 9	< 3.50	< 3.40	> 100	> 0.250"	≥ 9	11 Years	n/a
Mill and Replace Treatment (1-1/4", 411D)	< 3.50	< 3.40	> 100	> 0.250"	≥ 9	< 3.50	< 3.40	> 100	> 0.250"	≥ 9	12 Years	12 Years
Mill and Replace Treatment (3/4", 411TL or 411TLD)	< 3.70	< 3.60	> 85	> 0.250"	≥ 9	< 3.70	< 3.60	> 85	> 0.250"	≥ 9	12 Years	12 Years
Hot In-Place Recycling Treatment (1-1/4") with 22 lb/sy micro	< 3.50	< 3.40	> 100	> 0.250"	≥ 9	< 3.50	< 3.40	> 100	> 0.250"	≥ 9	10 years	10 years
Hot In-Place Recycling Treatment (1-1/4") with 85 lb/sy 411-TLD	< 3.50	< 3.40	> 100	> 0.250"	≥ 9	< 3.50	< 3.40	> 100	> 0.250"	≥ 9	10 years	10 years
Mill, BM-2, & 411D	n/a	< 2.30	n/a	n/a	n/a	n/a	< 2.30	n/a	n/a	n/a	12 Years	12 Years
Mill, CS, & 411D	n/a	< 2.30	n/a	n/a	n/a	n/a	< 2.30	n/a	n/a	n/a	12 Years	12 Years