

NDDOT Hot Mix Asphalt Specifications

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Test/Assessment		Single Test Target Value Control Limit	Moving Average Target Value Control Limit
OLD Values	Percent Air Voids	2.0% to 6.0%	2.5% to 5.0%
NEW Values	Percent Air Voids	1.5% - 5.0%	2.0% - 4.5%

AIR VOIDS

- Occurred in 2022 edition
- Revised Mix Design target air voids from 4% to 3%
- Revised working ranges for air voids in Table 430-07 (shown on the right)

RAP MIXES

- Change occurred in 2023 edition
- Added the following data requirements to RAP mix design submissions:
 - RAP asphalt cement content
 - RAP specific gravity
 - RAP FAA
 - RAP gradation





UPDATED MIX DESIGNATIONS

Eliminated FAA 41 and 44 materials from the specifications (occurred in 2023 edition)

- Infrequently used
- Higher FAA materials were marginally more expensive

DENSITY PAY FACTORS – 2023

Old Spec Tables (2022)

Table 430-12 Adjustment Factors for FAA 40, 41, 42 and 43	
Adjustment Factor	Avg. Pavement Density
1.03	≥ 92.6%
1.02	92.1% - 92.5%
1.00	91.0% - 92.0%
0.98	90.0% - 90.9%
0.95	89.5% - 89.9%
0.91	89.0% - 89.4%
0.85	88.5% - 88.9%
0.70	88.0% - 88.4%

Table 430-13 Adjustment Factors for FAA 44 and 45	
Adjustment Factor	Avg. Pavement Density ¹
1.05	≥ 93.6%
1.03	93.1% - 93.5%
1.00	92.0% - 93.0%
0.98	91.0% - 91.9%
0.95	90.5% - 90.9%
0.91	90.0% - 90.4%
0.85	89.5% - 89.9%
0.70	89.0% - 89.4%

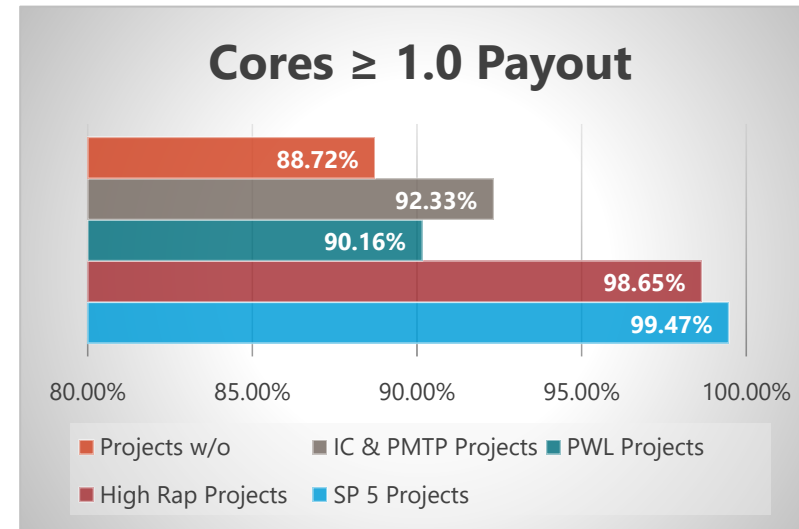
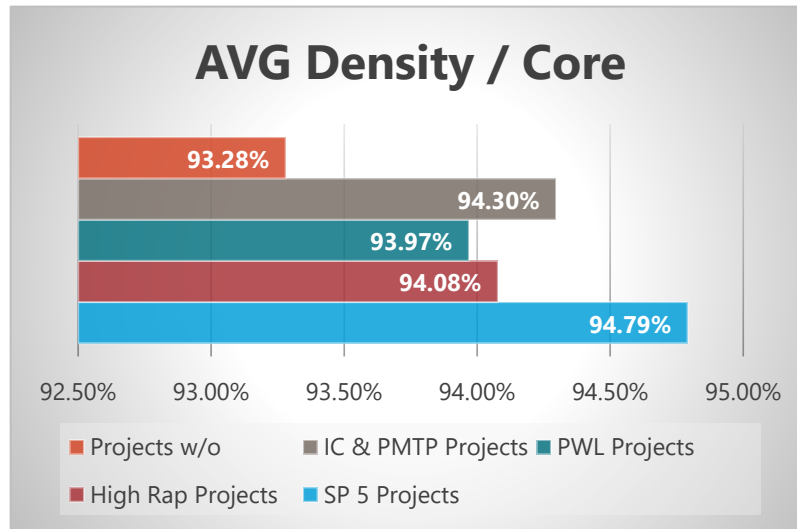
¹ The Engineer will apply the adjustment factors from Table 430-12 for lifts of pavement placed on aggregate base, reclaimed material, or cold in place recycle material.

New Spec Table (2023)

Adjustment Factor	Average Pavement Density *
1.04	≥ 94.0 %
1.02	93.0 to 93.9 %
1.0	92.0 to 92.9 %
0.95	91.0 to 91.9 %
0.90	90.0 to 90.9 %
Remove & replace	< 90.0 %

* All Average Pavement Density numbers are adjusted down by 1.0% when pavement is placed on aggregate base or reclaimed material.

2023 SPECIAL PROVISION COMPARISON



Special Provision	# of Projects	Total Tons	AVG Density	STD Deviation	AVG Density / Core	Cores \geq 1.0 Payout	Longitudinal Joint Density
Projects w/o	49	1,003,953	93.26%	1.33%	93.28%	88.72%	91.78%
IC & PMTP	10	397,088	94.17%	0.98%	94.30%	92.33%	92.73%
PWL	5	203,355	94.05%	1.02%	93.97%	90.16%	92.63%
High Rap	1	55,940	94.11%	0.50%	94.08%	98.65%	93.82%
SP 5	1	43,753	94.58%	0.68%	94.79%	99.47%	92.81%



NEW IDEAS

- Superpave 5
- Balanced Mix Design
- Reduce cores
- Rolling Density Meter
- “Smart” paving
- High RAP



QUESTIONS?

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