2023 ASPHALT BINDER AND MIXTURE REFERENCE GUIDE FOR LOCAL AGENCIES

This reference guide has been developed to assist local agencies with the selection of asphalt mixes for their projects. See SUDAS Design Manual Section 5D-1: Asphalt Pavement Mixture Selection for additional information

MIXTURE SELECTION TABLE

DESIGN TRAFFIC ($1X10^6$ ESALS)	MIXTURE DESIGNATION	LAYER	GYRATORY DENSITY		AGGREGATE[2]	
			N_{design}	Design (Target) % G_{mm}	Quality Type	Percent Crushed (min)
< 0.3	LT	Surface	50	96.0	A[1]	60[1]
		Intermediate				
		Base		97.0	A[1]	45
0.3 – 1.0	ST	Surface	50	96.0	A	75[1]
		Intermediate			A[1]	60[1]
		Base		97.0		
1.0 – 10.0	HT	Surface	75	96.0	A	75
		Intermediate				
		Base		96.5	A[1]	60

[1] Requirements differing from **Iowa DOT Materials I.M. 510**; for base mixes, aggregate quality improved from B to A and percent crushed aggregate increased by 15%.

[2] Flat & Elongated 10% maximum at a 5:1 ratio.

STEP-BY-STEP BID ITEM CONSTRUCTION

STEP 1: Select Maximum Aggregate Size

- ⅜" – Thin lifts, trails, athletic facilities
- ½" – General surface and intermediate mix
- ¾" – General base mix

STEP 2: Determine Traffic Level

- Low Traffic (LT) < 0.3M ESALs
- Standard Traffic (ST) 0.3M – 1M ESALs
- High Traffic (HT) 1M – 10M ESALs
- Very High Traffic > 10M ESALs *(See Iowa DOT)*

STEP 3: Choose Lift Designation

- Base
- Intermediate
- Surface
- Shoulder

(Minimum lift thickness = 3 X NMA size)

STEP 4: Choose the Appropriate Binder

- Determine location and type of work.
- Use binder selection guide below.

BID ITEM EXAMPLE

- HMA Standard Traffic (ST) Surface, ½", PG 58-28S

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SUDAS TABLE 5D-1.01: ASPHALT BINDERS FOR LOCAL AGENCIES

DESIGN TRAFFIC ($1X10^6$ ESALS)		DESIGN SPEED (MPH)	PG BINDER
< 0.3 M	AND	ANY	58–28S
0.3–1.0M	AND	> 45M	58–28S
0.3–1.0M	AND	15–45	58–28S[1]
1.0–10M	AND	15–45	58–28H
OVERLAYS (LT/ST/HT)			58–28S or H 64–22S[2]

1. Use of PG 58-28H should be considered if heavy truck or bus traffic is present.

2. If methods are used to retard reflective cracking, PG 58-28S or H is recommended.

EXAMPLE BINDER GRADE COMPARISON*

PREVIOUS PG	CURRENT PG	BINDER BUMP FOR RAP**
PG 58-28	PG 58-28S	PG 52-34S
PG 64-28	PG 58-28H	PG 52-34H
PG 70-28	PG 58-28V	PG 52-34V
PG 76-28	PG 58-28E	PG 52-34E

* Approximate equivalents

**Binder bump required when > 20% of binder is from RAP

ADDITIONAL INFORMATION

FULL DEPTH PAVEMENTS
- Use "S" binder at depths > 3" or 4"

TYPICALLY AVAILABLE BINDERS
- PG58-28S, PG 58-28H, AND PG 64-22S

NON-TYPICAL BINDERS
- Small quantities of specialized binders (<25 tons of binder) may not be available or have a high cost.

HMA INTERLAYER BID ITEMS
- **Mix** = HMA interlayer base course, ⅜"
- **Binder** = PG 58-34E

HIGH-PERFORMANCE THIN LIFT BID ITEM
- **Mix** = HMA thin lift surface course, ⅜"
- **Binder** = PG 64-34E+

WIDENING
- **Mix** = HMA ST base course, ½" or ¾"
- **Binder** = PG 58-28S

SHOULDERS PAVED SEPARATELY
- **Mix** = HMA base course, ½" or ¾"
- **Binder** = PG 58-28S, 3% air voids

PATCHING
- **Mix** = Any ½" or ⅜" mix
- **Binder** = PG 58-28S or PG64-22S

COLD-IN-PLACE RECYCLING
- **Foamed asphalt:** PG52-34S
- **Asphalt emulsion:** HFMS-2s or CSS-1

DETOUR PAVING
- HT or ST mixture, PG58-28S binder

LEVELING AND GRADE CORRECTION
- ST or HT mixture, PG 58-28S binder

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