

# MnDOT PG Binder Guidelines-MSCR

The new PG designations are different from the previous asphalt binder specification. Following AASHTO M332 (MSCR) the New PG grading designations for Minnesota will all be PG58, followed by traffic loading designation and minimum pavement design temperature. For example: PG58S-XX, PG58H-XX, PG58V-XX, and PG58E-XX.

S, H, V or E grade designations must be specified for standard, high, very high or extremely high traffic loading, respectively.

| Type of Construction   | Recommended Asphalt Binder for < 3 Million ESALs (20 yr) | Recommended Asphalt Binder for 3 - 10 Million ESALs (20 yr) | Recommended Asphalt Binder for > 10 Million ESALs (20 yr) |
|--|--|---|---|
| <b>Overlay</b><br>Wearing Mixture (Top 4'') <sup>3</sup>                       | PG 58S-28  | PG 58S-28 <sup>1</sup>                                      | PG 58H-28 <sup>1</sup>                                    |
| <b>New Construction</b> <sup>2</sup><br>Wearing Mixture (Top 4'') <sup>3</sup> | PG 58H-34  | PG 58H-34 <sup>1</sup>                                      | PG 58V-34 <sup>1</sup>                                    |
| <b>All Non-Wear Mixture</b><br>(Below 4'' from Surface)                        | PG 58S-28  |   |   |

| Recommended Binder Grade for Shoulders:   |  |  |
|---|--|--|
| With Traffic  | With No Traffic  | Next to Concrete Mainline and Concrete Curb and Gutter |
| Generally, use the same binder grade as the mainline, but, not to exceed PG 58H-xx. | PG 58S-28 or PG 52S-34<br>(match the mainline low PG number) | PG 58S-28 or PG 58H-28                                 |

**NOTES:** When varying from these guidelines or for further clarification, consult the MnDOT Bituminous Office.

1. Selecting a higher PG grade and/or mixture type (traffic level), for higher ESALs within the category, will provide better resistance to rutting. Contact the Bituminous Engineer for guidance.
2. New construction includes: reconstruction, rubblization, CIR, reclaiming (FDR)
3. For Non-Trunk Highway with traffic levels <3 million ESAL, consider modifying the "top 4" criteria to top 3".
4. With concurrence of the Bituminous Office the designer may allow, by Special Provision, the Contractor's option to use PG 64S-22 on overlay construction when both of the following conditions are met:
  - a. Overlay thickness 3" or less and,
  - b. Average inplace crack/joint spacing 30ft. or less

The Special Provision shall limit the allowable RAP usage to 15% for mixtures specifying PG 64S-22.

## **Rules of Thumb**

- Minimize the number of PG grades on any one project.
- The top 4” should be the same PG grade. Typically, specify PG xxx-34 for new construction. Typically, specify PG xxx-28 for overlay construction.
- Below 4” from the surface should be the same PG grade, typically, specify PG 58S-28.

## **Considerations**

- For non-trunk highway with traffic levels < 3 million ESAL, consider modifying the top 4” criteria described under “Rules of Thumb” to top 3” criteria.
- For temporary construction (2 years or less) consider using PG 64S-22 when PG 58H-28 or PG 58V-34 is otherwise recommended.
- For special or unique design considerations contact the Bituminous Office.

# **Asphalt Binder Grade Designation**

The PG Binder Grade letters should be used in all bituminous mixture designations, regardless of the specification number. These letters and PG Grade are listed below:

## **Binder Grades and Allowable Substitutions**

**A** = PG 52S-34

**B** = PG 58S-28 allowed as substitute for PG 58-28

**C** = PG 58H-34 allowed as substitute for PG 58-34 & PG 58-34(PMB)

**E** = PG 58H-28 allowed as substitute for PG 64-28 & PG 64-28(PMB)

**F** = PG 58V-34 allowed as substitute for PG 64-34 & PG 64-34(PMB)

**H** = PG 58V-28 allowed as substitute for PG 70-28 & PG 70-28(PMB)

**I** = PG 58E-34 allowed as substitute for PG 70-34

**L** = PG 64S-22

**M** = PG 49S-34