



# LRRB Research Need Statement 628

LRRB-7

Date: **April 3, 2020**

| Name  | Agency         | E-mail                   | Phone        |
|---|----------------|--------------------------|--------------|
| Jed Nordin  | Hubbard County | jnordin@co.hubbard.mn.us | 218-732-3302 |
| Need Statement Champion:  |                |                          |              |
| Submitted by: LRRB via Priority Process (3/25/20 Meeting)               |                |                          |              |
| Originated from: LRRB Idea Solicitation Process (Pre-Screen Board Mtgs) |                |                          |              |

### Select Type:

Research   OR    Implementation

### Need Statement Title:

**Cost Estimate of B vs C Grade Asphalt Binders**

### Need Statement: Describe the problem or the opportunity. Include background and objective.

Local agencies are wanting more data on Grade B vs. Grade C asphalt binders, specifically cost vs. performance. The table below is from the [MnDOT PG Binder Guidelines-MSCR](#):

**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

Grade C asphalt binder is polymer modified providing more elasticity at lower temperatures, which should be better to reduce thermal cracking. However, it costs more. The focus of this study is to evaluate the various asphalt binders under a range of temperatures, conduct a benefit-cost analysis (initial cost of binder vs. reduction in crack maintenance) and provide recommendations on when to use, specifically for lower volume roads.

As part of the research:

- Review performance data (via State Aid or MnDOT Pavement Management) and analyze to compare B versus C performance in Minnesota.
- Review case studies (survey MN local agencies to determine conclusive list). Some known agencies include:
  - Beltrami County using C asphalt binder; neighboring county uses B.
  - St Louis has at least one comparison example: Used B asphalt binder (with excessive wrap accidentally) and C asphalt binder (with less wrap) on nearby roads.



**Suggested Deliverables:**

B/C evaluation of Asphalt Binders  
Guide to assist local agencies on binder selection – some input parameters to include new construction or rehabilitation, traffic and local climatic conditions,

**How does this project build upon previous research (include title or reference to a completed research effort)?**

[Test Methods for Verification of Low-Temperature Cracking Resistance of Asphalt Binders and Mixtures Evaluation of Plus Grades of Performance Graded \(PG\) Asphalt Binder](#), WTI, 2014

**Provide names to consider for a Technical Advisory Panel:**

John Garrity, MnDOT  
Dave VanDuesen, MnDOT  
Paul Nolan, MnDOT  
Kent Exner, City of Hutchinson  
Dan Wegman, Braun Intertec  
Bruce Hasbargen, Beltrami County  
Jim Foldesi, St. Louis County  
Cory Slagle, Washington County  
Add city representative  
Add Southern MN County rep.