

**WHY CONTRACTORS SHOULD NOT  
HAVE TO PAY  
FOR THE  
COST OF CORRECTING  
ASPHALT CRACKING, HEAVING AND  
SETTLING**

**THOMAS R. OLSON,  
ATTORNEY & CONSULTANT**



**OLSON CONSTRUCTION LAW, P.C.**  
ATTORNEYS AND CONSULTANTS

20730 Holyoke Avenue, Suite 202 | P.O. Box 520 | Lakeville, MN 55044

651-298-9884 Phone | 651-298-0056 Fax

[www.olsonconstructionlaw.com](http://www.olsonconstructionlaw.com)

- In much of Minnesota, asphalt roads crack, heave and/or settle after being constructed.
- When that occurs, contractors typically pay for the cost of correcting this.
- But **should** contractors pay?

Literally *all* public asphalt projects in Minnesota are **Bid-Built Projects**.

- On such projects, the engineer *specifies* **how the work is to be performed**.
- As a matter of Minnesota law, if a contractor constructs an asphalt road *as the engineer has so specified*, **the contractor is *not* responsible to pay for the cost to correct *cracking, heaving and/or settlement***.

# IMPLIED WARRANTY OF DESIGN

“W]here [a contractor] makes a contract to perform a given undertaking in accordance with prescribed plans and specifications . . . he is not permitted to vary from the prescribed plans and specifications even if he deems them improper and insufficient; and therefore cannot be held to guarantee that work performed as required by them will be free from defects, or withstand the action of the elements, or accomplish the purpose intended. **Where the contract specifies what he is to do and the manner and method of doing it, and he does the work specified in the manner specified, his engagement is fulfilled and he remains liable only for defects resulting from improper workmanship or other fault on his part. . . .**

The Minnesota Supreme Court first stated this in 1922, and it has continued to remain Minnesota law: the **Implied Warranty of Design**.

*See Alley Const. Co. v. State*, 219 N.W.2d 922 (Minn. 1974) (holding that a contractor’s claim for breach of warranty was properly submitted to the jury); *Eric A. Carlstrom Constr. Co. v. Independent School Dist. No. 77*, 256 N.W.2d 479, 484 (Minn. 1977) (affirming the implied warranty of fitness of plans and specifications and holding that the contractor “adequately demonstrated to the Tribunal that they had been damaged by reasonable reliance on the plans and specifications furnished by the School District”); *Zontelli & Sons, Inc. v. City of Nashwauk*, 373 N.W.2d 744, 754 (Minn. 1985) (holding that a contractor is entitled to damages if he is required to perform extra work due to a breach of the implied warranty of plans and specifications); *D.H. Blattner & Sons, Inc. v. Firemen’s Ins. Co. of Newark, New Jersey*, 535 N.W.2d 671 (Minn. Ct. App. (1995) (“A contractor is not liable for defects in plans and specifications provided to it by an owner, even where the contract requires it to visit the site and check the plans.”)).

I successfully relied upon this **implied warranty of design on a** previous asphalt paving project when I could NOT *cooperatively* resolve the dispute. *See KGM Contractors, Inc. v. Cass County*, 2006 WL 1605178, at \*3-4 (Minn. Ct. App. 2006), (“[A] contractor who is required to comply with an owner’s plans and specifications receives an implied warranty that the specifications furnished will permit the contractor to perform a job adequate under the contract.”)

I have also successfully relied upon this **warranty of design** to *cooperatively resolve cracking, heaving and settlement issues*. We accomplished this recently on an asphalt project on which MAPA assisted.

## I. DESIGN PHASE

Although design phase soil borings indicated subgrade soils were “wet” “clayey to silty clayey sands” throughout, geotechnical engineer concluded that soils “would be expected to have *R-values in the range of 20 to 50*. We would recommend using a value of no more than 20 for these soils.”

Engineer purported to determine “blow counts based on *Penetration Test results*, although it acknowledged that the soils “might have been partially frozen.”

## 2. BUILD PHASE

- Geotechnical engineer performed “**proof roll**” tests to purportedly determine if **subgrade** was properly **compacted**.
- **NOTE:** Per MnDOT’s “**PAVEMENT DESIGN MANUAL**,” “**Test rolling** is an evaluation of a subgrade or subbase with a heavy roller to evaluate the adequacy of the roadbed construction relative to uniformity and consistency of the subgrade support in terms of strength, stiffness, stability, density and moisture content. The test roller will detect weak/unstable subgrade areas due to ... unstable soils to a depth of about 5 feet.”
- “**Proof rolling** is a method, similar to test rolling, to evaluate the *adequacy of subgrade compaction*. The weight of the testing equipment (a loaded truck) is substantially lower with proof rolling and therefore the depth that is tested is less.”

### 3. POST-BUILD PHASE

- Both asphalt base and wear courses began to break up in Spring.
- Owner said break-up caused by “insufficient or nonexistent tack coat placed between the paving lifts.”
- I was hired to help contractor.
- We hired Braun to perform **pavement cores, auger borings and Falling Weight Deflectometer testing.**
- While the Owner’s geotechnical engineer concluded that soils “would be expected to have *R-values in the range of 20 to 50,*” Braun determined that “the average in-situ R-value of the subgrade is about an 8, which corresponds to a very soft lean clay.”
- Brandon Brever from MAPA determined as follows:

“There appears to be some discrepancies between the initial geotechnical report from 2023 and the current Falling Weight Deflectometer (FWD) response data taken on 8/1/24... **This R-value is well below the pavement design, as a result, excessive loading to a subgrade can result in premature pavement failures due to the pavement experiencing excessive strain when repetitive loads from traffic occur.**”

“In areas with low R-values, the subgrade may have been too weak to support the loads, leading to pavement failure. In such cases, the tack coat may not have had adequate support to bond the layers properly during initial construction.”

- Dispute **cooperatively resolved.**

**SO 'WHY' ARE ASPHALT ROADS HEAVING,  
SETTLING AND CRACKING WHEN THEY ARE  
CONSTRUCTED 'AS-DESIGNED'?**

- My experience of almost 40 years is that asphalt roads crack, heave and settle **notwithstanding that the contractor has constructed it as designed.**
- Why? **TOO MANY MINNESOTA ASPHALT PROJECTS ARE UNDER-DESIGNED.**
- Asphalt projects are *under-designed* because the engineer has **failed to properly evaluate the subgrade upon which the road is being built.**
- Much of Minnesota's *native soils* are “wet clays,” which are “**poor foundation soils.**”

## PER MNDOT'S "PAVEMENT DESIGN MANUAL:"

- Per AASHTO M 145-91, "Clayey Soils" provide a **"Fair to Poor" subgrade**. Their "General Classification" is A-6 and A-7.
- A subgrade of A-6 soils "generally **require a thicker pavement section to provide a non-yielding surface.**"
- **"A-7 soils are only used as a road subgrade where nothing else is available."**
- Per MnDOT, **"clay" is treated as A-7** within the AASHTO Group Index.
- **"Remove any poor/wet foundation soils** and backfill with uniform soils. . . . Wet soils are any soils that are described as 'wet' in the boring logs."
- For "new/reconstructed HMA pavement for projects that involve working the existing soil," the "standards to design" include a **"Granular Subbase."**

“The primary purpose of a soil survey is to discover subsurface materials and conditions that may affect construction or may negatively affect roadway performance and should be addressed in design. This includes discovering the limits of **poor foundation soils . . . or areas of wet conditions (any area where the soils are described as ‘wet’ in the boring logs.** These materials often require removal and replacement with a suitable material or constructing a drainage system.”

The importance of designing “**adequate drainage**” cannot be overemphasized. As stated in the “**ASPHALT INSTITUTE: THE ASPHALT HANDBOOK:**”

- “The concept of testing soils at their anticipated moisture and density should be the governing criterion for **thickness design.**”
- “Design strength or stiffness should be based on values obtained from soil samples taken in their **worst anticipated condition.**”
- “**Adequate drainage** of the pavement structure is considered the **most important element** in ensuring long-term pavement performance.”
- “Highway engineers recognize the critical need for good drainage in designing and constructing pavements. Probably no other feature is as important in determining the ability of a pavement to withstand the effects of weather and traffic, and in providing trouble-free service of long periods of time.”
- “**As water saturates the subgrade, the subgrade soils tend to lose stability and thus the strength required to support the loads on the pavement.**”

## **UNFORTUNATELY, BECAUSE OF 'COST' CONCERNS:**

- The subgrade is NOT adequately investigated during the design phase.
- 'Wet' "clayey" soils are NOT specified to be "removed."
- A "thicker pavement section" is NOT specified.
- A "Granular Subbase" is NOT specified.
- An adequate "drainage system" is NOT specified.

**CONCLUSION**

- 1. Because of 'cost' and sometimes, lack of competency, asphalt paving projects are going to continue to be UNDER-DESIGNED.**
- 2. As a consequence, cracking, heaving and settlement will continue to occur on projects *notwithstanding that the contractor has constructed the project as designed.***
- 3. When the contractor *has constructed the project as designed*, and cracking, heaving and/or settlement occurs, **THE CONTRACTOR SHOULD NOT HAVE TO PAY FOR THE COST TO CORRECT THESE PROBLEMS.****
- 4. Based on the IMPLIED WARRANTY OF DESIGN, the owner (as well the engineer) should pay for the cost to correct these problems.**
- 5. And, contractors should be able to COOPERATIVELY RESOLVE these problems ON THE JOBSITE if they utilize the information I have provided today.**

# QUESTIONS?

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