

ROAD MAINTENANCE

Back to Basics

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2018 MAT Spring Short Course

Understanding the Basics of Road Maintenance

- Road Maintenance = biggest expenditure of a Township in terms of both time and money.
- General duty and general authority related to road maintenance are included in MN Statutes, “the Road Laws”, in Chapters 160 through 165 and 169.
- Chapter 164 entitled Town Roads authorizes Townships to maintain and supervise Town Roads.

Basic Principle of Road Maintenance

is the “Reasonableness Doctrine”

which is Reasonable People doing Reasonable Things

What is Maintenance?

The work accomplished on a roadway to maintain the original design or initial conditions and subsequent improvements; made up of two types:

- Routine – work which can generally be completed by maintenance staff in the field without engineering.
- Non-Routine – work which requires professional analysis or engineering and possibly one or more permits.

Road Tours, aka “inspections”

Part of a good road maintenance program is to Know “Your” Roads

WHY? To meet the responsibilities of a Road Authority spelled out in “the Road Laws” and to ensure the Public Health, Safety and Welfare regarding the use of public roads.

WHEN? Springtime is an excellent time to conduct a road tour to (1) observe and record overall conditions of your roads and (2) identify needed maintenance.

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WHAT? All elements of a road need to be inspected/observed on a regular basis – note what has changed since the last tour.

WHO? All Supervisors is ideal, a minimum of Supervisor assigned to roads and Maintenance staff or contractor.

Elements of a Road

A road is more than the travel way or driving surface!

- Right of Way – the overall width of the Road
- Travel Way – driving surface
- Shoulders – supports the driving surface, often integral with the driving surface of a gravel surfaced road
- Inslope – supports the driving surface and is part of the ditch
- Ditch – supports the road bed, conveys water, provides for snow storage
- Backslope – part of the ditch
- Appurtenances – such items as culverts, road signs, public utilities, mailboxes, E911 signs, etc.

Tips in observing overall conditions

- The Driving Surface is obvious BUT look for unusual conditions or degradation in general along with suspicious wear & tear which may become a safety concern and suggest a need for maintenance.
- Scan the overall Right-of-Way for such things as tree windfalls, debris or discarded garbage, etc., even hay bales that didn't get picked up...such items may pose a liability risk or restrict lawful uses of the Right-of-Way and/or impact water quality.
- Look for detrimental effects from snowplowing or late spring rainfalls which may have caused high shoulders or excess material to wash into ditches adversely affecting drainage.

Appurtenances of any type whether Township property or others should be noted; Culverts, Traffic Signs, Public Utilities, Mailboxes and Others

- Culverts – look for crushed ends from snowplowing especially at entrances, note scour & erosion requiring end treatments.
- Traffic Signs – they are installed for good reason and contribute to overall safety of a road. Are they visible, not bent from snowplowing or wind damaged?

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- Public Utilities – open or bent-over junction boxes, loose guide wires, sagging lines and leaning poles...**IF** it looks unusual it is likely a public nuisance or safety concern. Report It to the utility owner.
- Mailboxes – conforming or non-conforming; can be a safety concern.

Record & Use of Road Tour Information

- Information can easily be recorded these days with a Smart Phone including photographs or videos.
- Identify who was involved in conducting the Road Tour along with date, time, weather conditions, etc.
- Use information from Road Tour for planning purposes and follow-up; can identify routine maintenance work that needs to be accomplished and non-routine work that needs special analysis or engineering.
- Can be used to defend against liability claims and to respond to constituents.
- Helps Supervisors to simply do their jobs better.

Importance of Maintenance Policies

Liability Risk Reduced - **IF** a Road Authority (Town Board) implements and follows maintenance and inspection policies it will significantly reduce the likelihood of being found liable if an accident occurs or for some other legal claim.

Policies can be written or unwritten - “Not all policies need to be in writing, but Boards should strive to make a written record of its policies and supporting rationale whenever possible.” (Manual on Town Government, Town Roads)

Policies can be a “double edged sword”

- A number of policy considerations are involved when making Maintenance (and Improvement) decisions.
- Once adopted - a policy - Boards must be sure to follow it and apply it in a consistent manner so everyone is treated equally/fairly (doesn't mean all roads are equal).

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- Regularly revisit policies to make sure they are current and being followed – good time to review policies is at annual reorganizational meeting.

Examples of Typical Maintenance Policies

- Snow and Ice – establishes “when” and “priorities” along with general procedures.
- Blading (aka surface grading or smoothing) – sets forth bases for, frequency, extent of, routing.
- Dust Control – defines “when” and “where” including participating costs if any.
- Entrances (driveways or approaches) – establishes uniformity focused on location and construction for safety and cost participation.
- Mailboxes – defines permitted types for safety purposes and damage/repair responsibilities.
- Others include such as roadside/ditch mowing and brushing/tree trimming – sets forth when, how and frequency.

Benefit and Value of Resources

Resources are readily available and provide an abundance of material to benefit Town Boards, as road authorities, including maintenance staff and contractors – legal information & advice, general information & details, hands-on & more.

Benefit: Understand the Town’s or Road Authority’s powers and obligations toward roads to result in roads being properly maintained.

Value: Reduced overall road maintenance costs and increased satisfaction of road users and constituents.

Primary Resources

MAT (Minnesota Association of Townships) –

1. Manual on Town Government – updated annually
2. Information Library, especially Town Roads – online at www.mntownships.org
3. *Minnesota Township Insider* magazine – current topics
4. Staff – a telephone call away 763-497-2330

MnDOT (MN Department of Transportation)

1. Information Library online at www.dot.state.mn.us/library/

LTAP (MN Local Technical Assistance Program) –

1. Contact online at www.mnltap.umn.edu

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Additional Valuable Resources

Minnesota Statutes – Chapter 160-165, 169, “the Road Laws” – Chapter 164, Town Roads

Federal Highway Administration – Manual GRAVEL ROADS, Construction & Maintenance Guide - rewrite/published August 2015

Understanding Cross-Section & Crown – the first and most basic thing in good road maintenance.

Remember the several Elements of a Roadway

- Travel Way or Driving Surface – impacted most by good surface gravel and CROWN: note desirable crown is $\frac{1}{2}$ inch per foot or 4 % and is important in dealing with a critical issue for good road maintenance – drainage, drainage, drainage!
- Inslope – 2:1 slope should be minimum with 4:1 preferred for improved safety for errant (run-off the road) vehicles.
- Ditch – consider 2-foot deep as minimum with a 2-foot bottom, wider and deeper as required for proper drainage.
- Backslope – “natural” to right of way limits or to blend with surrounding topography, match inslope when possible.

What is Good Gravel?

- The Answer: It depends!...on the region of the State, local sources of aggregate available and other factors.
- High quality surface gravel must have a good blend of stone, sand and fines (binder).
- It pays to use the best quality material available – Bad or poor-quality gravel cannot be changed to good gravel by a motor grader operator.
- Often MnDOT Specifications for Class 5 Aggregate is used for Surface Gravel, however, since Class 5 is a Base Gravel in most regions or areas of the State the specification must be modified to contain a higher percentage of fines.
- Know what you are getting – understand that all gravels are not the same – know what to specify.
- Testing provides the answer to what is good gravel – the primary concerns are gradation and plasticity.

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- Understanding the benefits of testing helps to assure good quality surface gravel for performance and overall reduced maintenance costs.
- Information about Minnesota Class 5 Modified Specification and testing is available at your County Highway Department and/or MnDOT District Office.

What about Dust Control?

- All gravel roads will give off dust under traffic and the amount varies depending on quality of gravel, traffic volume and type, and annual precipitation.
- Generally, dust control will pay for itself on roads with higher traffic; intermittent application on roads with lower traffic.
- Several products are available – most common and likely the least cost are Chlorides – Calcium Chloride in either dry or liquid form and Magnesium Chloride in liquid form.
- Chlorides are hygroscopic products which means they draw moisture from the air.
- Good Gravel is required along with annual applications.

How about Stabilization?

- Several products available and marketed under various trade names; the burden to provide guidance is on the supplier – use reputable suppliers and beware of “snake-oil salesmen!”
- Generally, stabilizer agents are incorporated into both base gravel and surface gravel whereas dust control agents are most often surface applied.
- Stabilizer agents provide dust control as well as improving overall surface conditions.
- Benefit is that a road that remains tightly bound and stable will improve road safety and require much less (blade) maintenance.

When to Pave a Road?

See Appendix D in GRAVEL ROADS Manual

When to Seal Coat a Paved Road?

See MN Seal Coat Handbook 2006

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