Service Area Drainage

Presented by: Division of Rural Services

Drainage Overview

- PLAN FOR EXCELLENT DRAINAGE
- WHEN TO RECOGNIZE THE PROBLEM
- INADEQUATE ROADSIDE DRAINAGE
- SEASONAL EFFECT
- CONSTRUCTION/MAINTENANCE
- RECOMMENDATIONS
- GOOD ROADSIDE DRAINAGE

PLAN FOR EXCELLENT DRAINAGE

- A good ditch is an essential asset to good road surfaces
- Maintain existing ditch shape and dimensions as designed
- Good ditches should have storage capacity to keep water off the road during spring breakup

PLAN FOR EXCELLENT DRAINAGE

- Culverts must be free of blockage
- Keep ditches clean
- Be aware of environmental issues associated with runoff that could impact the ditches

WHEN TO RECOGNIZE THE PROBLEM

RECOGNIZE AND PLAN

- Visually look at the roads during spring Breakup or heavy rainfall for ditch capacity, e.g. erosion
- While inspecting bring a map to write down remarks
- Take pictures of problem areas
- Consult with RS staff on solutions

INADEQUATE ROADSIDE DRAINAGE

Problems Due to Drainage Deficiencies (road surface and roadside)

- Spring Breakup or a rainy day is a good day to look at drainage in your service area
- Poor roadside drainage appears when there is:
  - Culvert overflow: Capacity/Blocked/Failed
  - Rutting: Rills/Piping
  - Water pooling on a gravel road surface during a heavy rain event
  - Soft Areas on the road

INADEQUATE ROADSIDE DRAINAGE

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Problem Culvert

INADEQUATE ROADSIDE DRAINAGE

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Gravel Road During
Heavy Rain/poor crown

INADEQUATE ROADSIDE DRAINAGE

INADEQUATE ROADSIDE DRAINAGE

SEASONAL EFFECT

SPRING BREAKUP

- Do not try to fix the roads during breakup – roads must dry prior to repair
- Frozen ground does not allow water to escape
- Weight restrictions are in place for a reason…damage control

SEASONAL EFFECT

SUMMER SAFETY

- **DEALING WITH INADEQUATE DRAINAGE**
  - Subgrades are strongest when kept dry and compacted
  - Repeated "loading" of wet/saturated subgrade can pump fine material into the base and surface materials which "weaken" causing rutting, deformation, etc.
- **SURFACE EROSION NEEDS TO BE CHECKED**
  - Rainfall and snowmelt must flow from the road surface quickly to maintain integrity

SEASONAL EFFECT

WINTER

- The strategy is to get the snow far enough off the road, during hardpack removal, that it will not impede drainage from the shoulders in the Spring

CONSTRUCTION

DRAINAGE CONSTRUCTION

- Adequate driveway culverts should be installed to allow ditches to carry water to the cross culverts

- A driveway permit from the Borough (Code: chapter 14.03) is required anytime an owner wants to construct access to a service area road

CONSTRUCTION

FNSB PERMITTING PROCESS:

- Each permit is reviewed by the RS staff engineer for legal access restrictions and for other engineering concerns such as drainage, whether a culvert is required, and the type of terrain considerations.
- Contact Rural Services office to consult on the best approach to your drainage needs

MAINTENANCE

CLEAN, CLEAR, AND CUT BRUSH

- Inspect and clean culverts regularly
- Thaw culverts as needed during spring Breakup
- Cut brush back (so drainage is not restricted)

RECOMMENDATIONS

- **EROSION:** Establish or re-establish 4% crown wherever the road is not in superelevation.

- **DEEP RUTTING:** For Snow Melt or Ponding: Improve drainage of road surface by re-establishing crown. Make sure that late winter maintenance clears ice pack and snow from road surface to prevent damming of melting water.

RECOMMENDATIONS

- **SOFT AREAS:** Evaluate drainage conditions. Re-establish a 4% crown if it has been lost. Check that existing drainage features are functioning properly in the vicinity of the problem area. Ditches may need cleaning or other repairs. Culverts may need repair or replacement. Ponding adjacent to the roadway should be drained if possible. May be necessary to consult with RS about constructing a new ditch or raising the roadbed

RECOMMENDATIONS

- **POTHOLES:** Surface regrading is required that must include re-establishment of 4% crown (and re-establishment of correct superelevation wherever necessary).

- **SPRING BREAKUP:** Do not try to fix the roads during breakup – roads must dry prior to repair. Temporary fixes are possible however, there is little gain as additional damage generally occurs

RECOMMENDATIONS

- **INADEQUATE DRAINAGE**: Clean ditches and culverts
- **SURFACE EROSION**: Clean or construct drainage ditches, blade the roadway surface and shoulders to establish a 4% crown
- **CRUSHED OR DAMAGED CULVERTS**: Repair or replace culverts as necessary and install culvert markers to prevent future damage

GOOD ROADSIDE DRAINAGE

Questions

THANK YOU!! for attending,
and for your dedication
to the Service Area