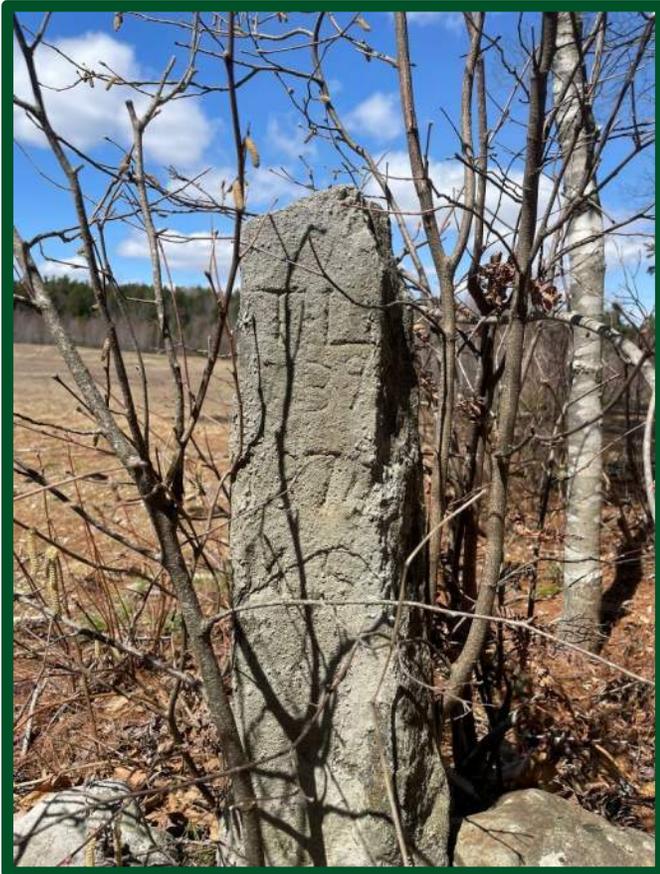


UNIMPROVED ROADWAY ASSESSMENT & ROADWAY MANAGEMENT PLAN

Prepared for the Town of Montville, Maine



Historic town line marker at Barrett Rd.



Modern town line marker at Prescott Hill Rd.

Prepared by:

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Field assessment conducted:

April 22nd-23rd, 2025

Final report issued on:

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TABLE OF CONTENTS

A. Introduction

B. Assessment

1. Base map preparation
2. Assessment and data collection methodology

C. Discussion & Recommendations

1. Typical defects & maintenance activities
2. Material sourcing
3. Repair and maintenance strategies
4. Cost forecasting

D. Conclusion

E. Attachments

- Roadway-specific discussion and recommendations
- Roadway assessment map – Google Earth .kmz supplemental
- Spot repair map – Google Earth .kmz supplemental file
- Roadway assessment data – Microsoft Excel .xls supplemental file



INTRODUCTION

Town of Montville, Maine
Select Board
414 Center Road, Montville, Maine 04941

December 30th, 2025

Subject: Unimproved Roadway Assessment and Roadway Management Plan

Members of the Selectboard:

It is Acorn Engineering's pleasure to provide the Town of Montville (the Town) with the following Report, which aims to provide a comprehensive analysis of the Town's gravel and unimproved roadway system as assessed in April 2025 and to inform future maintenance and planning efforts. Acorn understands the Town's roadways have been subject to increasing damage in recent years due to high intensity storms, and that significant investment by the Town has been made recently at select roadways in response to severe erosion and roadway failure.

The goal of this report is to assist the Town in planning for regular roadway maintenance and implementing a roadway improvement plan to improve the overall condition and resiliency of the network.

Understanding of Issues

This Report was developed to provide a summary of observed issues within the roadway network and to create an implementable management plan to improve the Town's unimproved and gravel roads. During a meeting at Montville Town Hall on November 18th, 2024, between Acorn, the Montville Select Board, the Montville administrative assistant, and Midcoast Council of Governments, Municipal staff provided a general overview of the roadway network and described several items on which they were seeking feedback. These included:

- Ability of the roadway network to effectively shed water.
- Vulnerability of certain roadways to severe, reoccurring erosion and washouts.
- Frequent maintenance performed at certain areas, with limited durability noted.
- Best practices for gravel material processing and/or selection.
- Prioritization of specific types of maintenance and scheduling of such.

Following the November 18th, 2024 meeting, the Town Selectboard engaged Acorn to complete the assessment and management plan. During a virtual conference call on January 27, 2025, Acorn and the Selectboard met to discuss the project schedule, the boundaries of the Town-maintained roadway network, the study area, current maintenance strategies, and to identify some specific problem areas. Additionally, the Selectboard and Acorn discussed the development of a map deliverable to assist the Town with examining their roadway network and communicate areas of concern identified by Acorn.

At a preliminary site visit on April 4th, 2025, Acorn, the Montville Selectboard, and the Montville Road Commissioner met to conduct a pre-assessment meeting at the Public Works building to review Town-owned equipment, discuss maintenance equipment typical of Subcontractors, and review bank-run material at Town-owned gravel pits, with members of the Selectboard familiarizing Acorn with the road network by providing a brief tour of Town roads later that day. After the pre-assessment meeting, Acorn performed an independent assessment of the roadway network on April 22nd-23rd, 2025, which is further detailed in this report.

Town's Objective

It is Acorn's understanding that the Town's overall goals are to improve general condition of the unimproved and gravel roadway network, prioritize annual maintenance strategies, identify priority sections of roadway in need of repair, reduce the frequency of comprehensive reconstructions, improve resiliency to severe weather events, and understand capital improvement costs. It is also understood that this Report may support the Town's efforts in identifying future projects which may be subject to outside funding, such as stream crossing replacements.

Organization of this Report

The report discusses findings of the roadway assessment conducted in April 2025, recommends general maintenance activities applicable to the entire roadway network informed by the assessment, identifies specific areas of repair noted during the assessment, provides high-level opinions of probable cost, and presents a proposed maintenance strategy for the network.

None of the recommendations included in this report are prescriptive or intended to replace the wealth of in-house knowledge of the roadway network and Municipal priorities. Additionally, Acorn has not provided an exhaustive list of all potential maintenance activities or sequencing. Instead, this report is intended to assist the Town in their efforts to appropriately staff, budget, and plan for continued maintenance of their infrastructure.

Sincerely,



Finn Bondeson, PE
Associate Project Manager



William Savage, PE
President



ASSESSMENT

The following section describes the assessment of the Town's unimproved gravel road network, data map creation, supplemental data sources, data collection methodology, data processing, and assumptions.

Base map preparation

As discussed with the Town Selectboard and administrative staff during the meetings on 11/18/24 and 1/27/25, the assessment scope of work was to include all Town-owned and Town-maintained gravel and unimproved roadways. The Selectboard provided Acorn with a road network inventory in Microsoft Excel format, as well as a map of roadways in PDF format. The Town-provided inventory contained roadway segments categorized by road surface data.

With the PDF map and tabular data as a base to define the scope of assessment, Acorn downloaded spatial data from the Maine Office of GIS GeoLibrary Data Catalog (MEGIS) for all roadways within the municipal boundary. The MEGIS spatial data was downloaded in Shapefile format and contained information from MDOT on roadway length, average annual daily traffic (AADT), and speed limit. Acorn compiled this data in a Google Earth-compatible KML/KMZ format to allow the data to be reviewed spatially in a free software, and for ease of use by Town staff. During the 1/27/25 meeting, Acorn reviewed the map virtually with Town staff to confirm the intended boundary of work, list of roadways, and to gain preliminary insights on "problem areas" and portions of the network subject to recent repairs. During this meeting, Acorn and Town staff briefly discussed and confirmed the inspection criteria to be assessed during Acorn's study.

After Selectboard feedback, Acorn finalized the map by making minor adjustments to roadway geometries to capture Town maintenance responsibilities across Town borders, and to delineate distinct segments within a given road which were appropriate to assess separately due to differences in construction, magnitude of recent repair, condition, or use. The final scope of assessment included 38 gravel and unimproved roads totaling approximately 32 miles and divided into 42 segments.

During the 4/4/25 site visit, Acorn and members of the Selectboard briefly toured the road network to familiarize Acorn with navigating the network during Acorn's independent assessment. During this site visit, Selectboard staff indicated areas of recent damage, recent maintenance, and recent significant investment.

Assessment and data collection methodology

With the base map and scope of assessment finalized, Acorn created an inspection form in Avenza software to assist with field data collection. Avenza is a free mapping application which includes the functionality to build an inspection form, associate the data collection form with a geospatial feature (i.e. point or line) in the application, and collect data to fill the form. In this way, Acorn was able to systematically collect and save data for bulk export.

Acorn staff performed the roadway assessment on April 22nd and April 23rd, 2025, by driving each roadway individually at low speed, and walking certain sections to more carefully inspect areas of concern and capture photos. Acorn collected two types of data: roadway assessment data and point data. Roadway assessment data was intended to capture general trends along each roadway observed at the time of inspection and is intended to inform general maintenance strategies for each roadway. Point data was intended to identify specific areas of concern which Acorn identified as requiring focused or individualized repair and are intended to supplement the general maintenance recommendations. During the evaluation, assessments were made visually, with the assistance of a smart level in some areas to assess cross-slope or crown.

Roadway assessment data

For each roadway or roadway segment in the network, Acorn collected data on various defects typical of gravel roads, and data on whether various maintenance activities were recommended.

Roadway defects were assessed on a 1-5 scale, with 1 being “minimal”, and 5 being “excessive”. Not all roads exhibited all defects, and the absence of a number in the ranking indicates that the defect was not present at the time of inspection. The following typical defects were assessed and will be further elaborated upon in the Discussion section of this report:

- *Erosion in ditch*
- *Erosion at roadway surface*
- *Potholes*
- *Ruts*
- *Washboards*

Typical maintenance activities were ranked on a “yes/no” basis, based upon Acorn’s assessment of whether the maintenance activity was required at the time of inspection. The following typical maintenance activities were assessed and will be further elaborated upon in the Discussion section of this report:

- *Establish crowned or superelevated roadway surface*
- *Establish or deepen ditch*
- *Grade roadway shoulders*
- *Resurface roadway with surface gravel*
- *Reconstruct roadway with base gravel and surface gravel*
- *Clear existing ditch*

Additionally, Acorn collected the following data for each roadway segment on a “yes/no”, or “presence/absence” basis, at the time of inspection:

- *Roadway is trenched* (i.e. roadway sits below surrounding grade)
- *Dust/fines at road surface*
- *Loose surface material*

Finally, Acorn ranked each roadway or roadway segment on a 1-5 scale based upon the PASER Gravel Roads Manual, developed by the University of Wisconsin-Madison’s Transportation Information Center to assist Municipal officials in understanding and rating gravel roads. The PASER acronym stands for Pavement Surface Evaluation and Rating, based upon the original manual created by the University for evaluating asphalt roads. Following the success of the asphalt manual, the gravel road-specific PASER manual and evaluation methodology was developed. The gravel PASER methodology was adopted by Acorn for use in this assessment due to its ability to provide consistent comparisons across a roadway network. PASER rankings were assigned as follows, as provided in the PASER manual:

1. *Failed*
2. *Poor*
3. *Fair*
4. *Good*
5. *Excellent*

Additionally, notes specific to each roadway were collected in the field by Acorn staff to provide the Town additional context on recommended maintenance actions. Photos were collected to document conditions observed at the time of inspection. Note that Acorn’s scope of work did not include geotechnical test pits to confirm roadway gravel depth or analyses of particle distribution. The recommendations and conclusions contained in this report are made strictly from visual observations of the road surface, nearby drainage conditions, and adjacent land use and hydrology at the time of inspection.

Point data

As Acorn conducted the roadway assessment, staff captured point data at locations in which more specific or critical repair was recommended, or where significant failure was observed. Point locations were logged in Avenza, and notable defects, maintenance recommendations, and other notes were captured in the point inspection form. Photographs of the area of concern were captured for most points. Typical point data recommendations included the following:

- *Ledge removal*
- *Ditch establishment or maintenance*
- *Culvert installation or maintenance*
- *Culvert inlet or outlet stabilization*

Post-processing

After the data collection and field assessment were complete, Acorn staff exported the spatial and tabular data from Avenza software in KML/KMZ format and performed various transformations in Windows Notepad and Google Earth to prepare the Roadway Assessment and Point Data map deliverables, which are supplemental to this report. Post-processing was conducted with the goal of transforming the raw spatial data into a clean visual format suitable for Town use and easily viewed in Google Earth.

Additionally, the raw tabular data were post-processed in tabular format using Microsoft Excel to allow Acorn to analyze general trends present in the data, which are discussed in the following section of this report. The tabular data has also been provided to the Town as a supplement to this report.



DISCUSSION & RECOMMENDATIONS

Typical Defects and Maintenance Activities

This section of the report discusses the typical defects observed throughout Montville's gravel and unimproved road network. Provided alongside this discussion are recommended best practices to improve the condition, performance, and resiliency of the network. Discussion and recommendations address the performance and maintenance of ditching, drainage, road base, and road surface across the road network, and give recommendations on how to improve road performance by conducting both routine and specific maintenance activities.

Discussion in this section has been kept brief and is generally focused on the condition of the roadway network as a whole, as observed at the time of assessment in late April 2025. Some specific examples were included to provide context. Otherwise, discussion and recommendations specific to each roadway are presented in the following section: Roadway-Specific Discussion & Recommendations. Town Staff may consider reviewing the following resources, which provide more in-depth analyses and discussions of road defects and maintenance techniques.

- The *Maine Gravel Road Maintenance Manual*, dated April 2016 developed collaboratively between Kennebec County Soil and Water Conservation District and the Maine Department of Environmental Protection: https://www.maine.gov/dep/land/watershed/camp/road/gravel_road_manual.pdf
- The *PASER Gravel Roads Manual* developed by the University of Wisconsin – Madison's Transportation information center: https://tap.engr.wisc.edu/wp-content/uploads/2019/12/Gravel-PASER_02_rep15.pdf
- The Federal Highway Administration's *Gravel Roads Maintenance and Design Manual*: https://www.epa.gov/sites/default/files/2015-10/documents/2003_07_24_nps_gravelroads_gravelroads.pdf



Typical Defects

Ditch erosion

Ditch erosion is often the result of inadequate soil stabilization. Because ditches are designed to concentrate and convey water away from the road base and surface, water flowing through them is often moving quickly, especially when the ditch side slopes and channel bottom are steep. Fast-moving water hitting small soil particles, such as loam or sand, easily moves and carries the soil, and erosion occurs. When ditch side slopes and channel bottom are composed of bare native soil, they are highly susceptible to erosion, and over time this can cause failure of the road shoulders, and eventually, the full road profile.



Ditch stabilized with erosion control blanket and hay mulch, Frye Mountain WMA, 4/4/25

Newly-maintained ditch side slopes should always be stabilized with mulch/straw and seed, erosion control blankets, erosion control mix, or riprap to stabilize the ditch as soon as possible. Ditches are most stable when they are cut in a u-shape (as opposed to v-shaped), and if possible, side slopes should not be steeper than a 2 horizontal to 1 vertical ratio (not more than half as high as they are wide). Steep slopes are prone to collapse and are difficult to establish with vegetation. If steeper side slopes are necessary, they should be stabilized with riprap. Angular/crushed products are preferred due to their ability to interlock, versus rounded, bank run stone due, which is susceptible to movement. During the April 2025 assessment, Acorn observed evidence of recent ditching on Goosepecker Ridge Road, Berry Road, and Peavey Town Road, with evidence of side slope erosion and no evidence of stabilization, mulch, or seed applied to the exposed soil.



Ditch channel erosion, Randlett Road, 4/22/25

In the channel bottom, grass stabilization is typically adequate for ditches with running slopes <5%. Where slopes exceed 5%, angular stone is preferred to protect the channel bottom from erosion, but erosion control blanket may be used to help stabilize the ditch before grass is established. All ditch channels >10% should receive angular riprap to protect the ditch from downcutting. Riprap should be generally 6" in average dimension, and larger at steep areas or areas subject to intense flow. In areas of significant slope or recurring erosion, stone check dams composed of angular riprap may be installed to slow water, but these must be maintained annually to remove sediment and reset any dislodged stones. When ditch maintenance is conducted, ditches along Halldale, Morrill, Twitchell Hill, North Ridge, Choate, Hidden Valley, Hogback Mountain, Haystack

Mountain, Randlett, and Howes roads would benefit most from riprap stabilization where portions of ditch exceed 10%, and if budget allows, where ditches exceed 5%.

On April 4, 2025, Acorn visited the State of Maine's Frye Mountain Wildlife Management Area in Montville (not within the Town's maintenance jurisdiction) and observed recently-constructed ditching and drainage installations. In general, ditches and turnouts in the Frye Mountain WMA were well-stabilized with hay mulch and erosion control blanket as shown in the image above, and provide a local, contextual example of proper ditch stabilization.

Roadway surface erosion

Roadway surface erosion is often the result of surface drainage not being able to access the ditches and running along the surface of the roadway with the direction of travel (longitudinally). Especially in spring, road surface erosion is most likely to occur when rainwater or snowmelt is trapped on the road surface by snowbanks or by berms along the shoulder of the road. During the April 2025 assessment, Acorn observed longitudinal erosion in at least one location on approximately 50% of Town roadways, with the most significant example being on Hidden Valley Road, as shown in the image provided in this discussion section.



Roadway surface erosion, Hidden Valley Road, 4/23/25

In general, roads which exhibited longitudinal erosion also required grading, shoulder, and ditch maintenance. Establishing a proper crown or superelevation at the road surface resulting in a cross slope of approximately 4% will direct runoff toward the shoulders and ditches and discourage flow along the road. Removing material that's been pushed and bermed along the road shoulders would allow runoff to access the ditches instead of flowing along the road surface. Additionally, improving ditch storage capacity by clearing woody vegetation and expanding the volume of the ditch would allow for snow to be placed in the ditches during winter, not on the shoulders, and may improve snowmelt's ability to adequately drain. Strategically creating cuts in snowbanks where run-on is persistent, such as on Hidden Valley Road and Penney Road, would also direct flow toward ditches.

Potholes

Potholes almost always result from water ponding on the road surface, and are often more severe when the roadway is constructed on poorly drained soils. When water is held on the road surface, vehicles traveling over the road compress the water, and the localized hydraulic pressure disrupts and loosens surface gravel. The use of bank run gravel can exacerbate this problem. Unlike crushed gravel, which has edges and can pack and interlock well, bank run gravel is rounded, allowing tires to easily roll and dislodge the rounded stones out of the road surface, leaving holes that start ponding water and cause compounding pothole problems.



Potholes, Burnham Hill Road, 4/22/25

When the road base is stable and compact, water is typically held on the surface when the road's running slopes and cross section are flat, and water cannot drain quickly toward the shoulder and ditches. When the road base is saturated or poor, water may be held on the surface due to ruts (as discussed below) interrupting drainage across the cross section, or by interruptions in the road surface created by expansion and contraction of water held in the road base during winter and spring.

During the April 2025 assessment, Acorn observed potholes dominating at least some portion of a roadway at approximately 90% of the network, and the average pothole severity was 3 (moderate) out of 5.



Typically, roads which appeared to have adequate base material, but advanced (4 out of 5) potholes, were through roads and roads with higher traffic volumes. On Burnham Hill, Morrill, and Peavey Town Roads in particular, it appeared that potholes were persistent and that water was held on the road surface by a flat road cross section or bermed material along the shoulders. In these situations, typical of most potholed areas across the network, grading the road surface and shoulders to establish a strong crown or superelevation and clear shoulders would help effectively shed water and reduce potholes. Further discussion about establishing cross sectional slopes is given below.



Potholes and ruts, Penney Road, 4/22/25

In some areas, such as sections of Berry, Goosepecker Ridge, and Penney Roads, it was evident that potholes were exacerbated by a combination of poor or saturated base material, ruts, and poor surface drainage. In these situations, regrading should be combined with localized road reconstruction to remove unsuitable material in the road base. Soils are generally considered unsuitable when they are poorly drained and/or do not have adequate bearing capacity to support the weight of upper roadway layers and vehicle loading.

Ruts

Ruts in gravel roads are caused by a combination of excess moisture, poor drainage, weak roadbed soils, and excessive traffic loading, which lead to the permanent deformation and displacement of the road's gravel layers. In wet conditions, water lubricates the gravel, allowing it to slide and form depressions, while a lack of proper grading and crown prevents water from draining, exacerbating the problem. Similar to pothole formation, rounded bank run gravels



Typical minor ruts, Halldale Road, 4/22/25

deform more easily under traffic loading than gravels made with crushed material, and are more easily rutted.

During the April 2025 assessment, Acorn observed ruts along at least some portion of a roadway for approximately 90% of the network, and the average rut severity was 2 (minor) out of 5. In most cases, ruts were not present along an entire road's length and were typical of the slight deformation found on gravel roads in Maine during spring thaw. In areas which do not require reconstruction, ruts should be remedied through a combination of routine grading, resurfacing, and shoulder maintenance, to move water away from the road surface. Additionally, ditch maintenance should be performed to move water away from the road base.

Washboards and loose gravel surface

Washboards and loose gravel surfaces are most often found on roads with high speeds and traffic volumes and are typically the result of insufficient moisture in the surface gravel, a low fines percentage, or improper grading techniques. When the road surface is dry and there are not enough fines to bind larger particles, traffic traveling at high speeds can loosen dry gravel and/or form a rippled washboard pattern which can worsen over time with repeated traffic loading and suspension bounce. Washboards may also be created when a grader is operated at high speed (>10 mph) and begins "bouncing", producing an inconsistently-graded surface prone to washboarding. Washboards and loose gravel

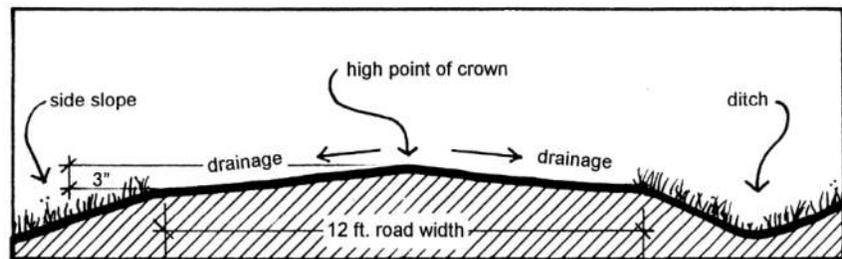
were not a dominant defect observed during the April 2025 assessment, likely due to sufficient moisture and fines in the surface gravels at the time of inspection. However, heavily traveled roads, such as North Ridge, Morrill, Goosepecker Ridge, Kingdom, and Halldale Roads, should be regularly monitored for washboards and loose gravel during late spring, summer, and autumn. Washboards and loose gravel should be remedied through routine grading, to scarify and blend the top 3-4" of surface gravel and establish a strong crown or superelevation. Additionally, applying dust control treatment, such as calcium chloride liquid or flake, to a freshly-graded surface will help bind the surface gravel together and combat the loss of fines. Where deemed appropriate by the Town, calcium chloride or similar dust control should be applied to reduce dust, retain fines, and slow the formation of washboards and potholes.

Typical Maintenance Activities

Establish crowned or superelevated roadway surface

Grading a gravel road to establish a crowned or superelevated roadway surface is the most common, and often most impactful, maintenance activity conducted to improve a road's performance. Establishing a smooth, well-graded, and compact road surface ensures that runoff can drain quickly off the road. When grading a gravel road, the existing

surface gravel should be cut with the grader blade to the full depth of any minor surface deformations (ruts, potholes, channels, or washboards), to blend and redistribute the surface material and to remove the surface deformation. This may be accomplished with a straight or toothed (scarifier) grader blade. Once the surface material has been cut, the loosened material should be shaped into a crown (high point in the center of road) or superelevation (high point along left or right shoulder of road).



Crown profile: $\frac{1}{2}$ " of crown per foot of road width (e.g., $\frac{1}{2}$ " x $\frac{1}{2}$ " x 12' road = 3" crown).

Excerpt from Maine Gravel Road Maintenance Manual depicting proper crown

As recommended in the Maine Gravel Road Maintenance Manual, the minimum established cross slope should be $\frac{1}{2}$ " rise per foot of width, or approximately 4% (rise over run) cross slope.



Flattened roadway cross section, North Ridge Road, 4/23/25

Acorn understands that the Town grades roads at least 3 times annually: in the spring to reshape the road after winter damage, in summer to maintain and remove washboards, and in fall to reestablish surface drainage patterns and prepare for winter. Acorn recommends that the Town continue this grading maintenance schedule.

Critical to ensuring the road surface retains a cross slope is compaction. Acorn recommends that all grading activities, particularly those conducted in the spring, be followed by compaction with a minimum 8-ton smooth drum roller. Compacting the freshly-graded surface locks the gravel particles together and reduces the likelihood that the newly graded surface is eroded or inconsistently compacted by vehicles.

During the April 2025 assessment, Acorn observed that approximately 85% of the network's road miles had inadequate cross slopes, possibly exacerbated during winter maintenance by snowplows. Of note, although spring grading had recently been conducted on Choate Road at the time of assessment, Acorn observed cross slopes and crown less than the recommended $\frac{1}{2}$ " per foot, or 4%. Evidence of recurring potholes was also observed, suggesting the recent grading may not have cut the surface gravel deep enough.

Flat road cross sections contributed to potholes most notably on the Town's highly-traveled through roads. While grading occurs, special attention should be paid to removing surface deformations, establishing the recommended 4% minimum cross slope, and compacting the graded surface.

Maintain shoulders

Maintaining shoulders to allow water to quickly drain off the sloped road surface and toward the ditches is another impactful grading-related maintenance activity. Over time, and particularly because of winter maintenance, surface gravel and winter sand are pushed off the road surface by snowplows, vehicle travel, and grading activities. As gravel migrates from the road surface to the road shoulders, the shoulder becomes elevated, and in many cases forms a berm or high point which blocks flow off the surface of the road, similar to a curb. If this condition persists, water that is held on the road surface contributes to potholes, and in heavy rains, longitudinal erosion can form along the road shoulder from the concentrated flow of water along the road's edge.

Over time, if shoulders are not regularly maintained, or gravel pushed toward the shoulders begins to fill the ditches, the shoulder becomes less apparent, and the travel surface can become artificially wide with "soft shoulders" due to uncompacted deposits of soil. This situation results in a road with limited transition between the driving surface and the fore slope of the ditch, and when this is combined with pothole formation in the center of the road, drivers are often forced toward the outside of the road. This results in an unsafe driving condition and can contribute to shoulder or ditch fore slope collapse under heavy load.



Wide road surface and shoulder absent, Peavey Town Road, 4/22/25

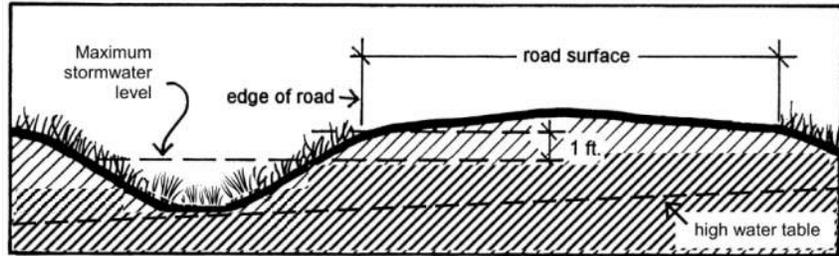


Berm along road shoulder, Choate Road, 4/23/25

During the April 2025 assessment, Acorn observed berms, absence of shoulder, or overall poor shoulder grading at approximately 90% of the roadway network's road miles. Berms were generally more apparent on low-volume roads, and absence of shoulders was more apparent of high-volume roads. Shoulders across the Town's road network should be graded approximately twice as steep (~8%) as the surface cross slope. Acorn recommends that all Town roads be maintained with a minimum 2-foot-wide shoulder before grade drops to the ditch fore slope. Particularly at Town through-roads, such as Goosepecker Ridge, Morrill, and Burnham Hill Roads, Acorn observed widened driving surfaces, and safety may be improved by maintaining shoulders to signal a transition between driving surface and ditch.

Establish or deepen ditch

Where roads are in a cut section, meaning one or both sides of the road surface are lower than the surrounding grade, a ditch should be established. Establishing a ditch is integral to ensuring stability of the road base by allowing the road base to drain. Saturated gravels and subgrade soils, particularly if they are fine-grained, are more easily deformed by traffic loading than dry, compact material. Ruts and potholes appear quickly when the road base is saturated and may increase in severity if water cannot drain from the road base and traffic loading continues to push weak, fine-grained native soils toward the surface of the road. When cutting new ditches or deepening existing ditches, the ditch should be cut deeper than the full-depth construction of the road, to allow road material and subgrade to drain. Ideally, the base of the ditch should not be cut deeper than the top of the local groundwater table. However, in some areas of Montville, where the investment to raise the road base to sit well above the spring groundwater table may not be feasible, such as Jane's Lane, establishing a ditch to drain the road may be the most appropriate and cost-effective solution to dry the road base.



Ditch above groundwater level and with sufficient depth.

Excerpt from Maine Gravel Road Maintenance Manual depicting proper ditching

Ditch running slopes should be cut to be generally parallel with the road surface profile, but in areas where the road surface undulates, tools such as a laser rod and level may be helpful in establishing adequate running slopes along the ditch channel, which may need to be cut deeper or shallower depending on surrounding grades. In all cases, ditches should be free-draining and should be directed toward a ditch turnout or cross culvert. Acorn recommends that ditch running slopes be established at no less than 1% grade when possible.



Suggested area to establish ditch (left of photo), road base appeared saturated, Jane's Lane, 4/22/25

contributing to a softer road base. In some areas, such as Howes Road, this was due to localized presence of high ledge, which should be removed in coordination with ditch maintenance, if investment is desired by the Town. Areas of suggested ditch improvement are discussed further in the individual roadway discussions and in the supplemental maps. Ditches should be sloped and stabilized as described in the "Ditch Erosion" section above.

In addition to conveying water away from the road base, a well-established ditch collects and conveys surface runoff from the road and from upgradient adjacent land, keeping the road dry and strong. Particularly in cut sections, if ditches are not present, runoff or snowmelt from adjacent land (run-on) runs down the surface of the road and contributes to erosion and loss of valuable surface gravel.

During the April 2025 assessment, Acorn observed that establishing a ditch, or deepening an existing ditch, along at least some portion of a roadway would improve drainage or reduce erosion at approximately 62% of the network's roads. At the time of assessment, the more common reason to establish or deepen a ditch was to reduce road surface erosion, although ditching was shallower than the road's full-depth construction in many areas,

Clear or maintain existing ditch

Where ditches are already established and have adequate depth, they should be kept clean of woody vegetation, and any surface gravel and sand which has been pushed or deposited into the ditches should be removed. Additionally, the running slope of the ditch should be smooth and positively draining, and water should not be held at the channel of the ditch by an inconsistent or variable channel bottom. Where the ditch is directed toward a culvert, the channel bottom should be cut to be level with, or slightly higher than, the culvert inlet to allow water to drain freely through the culvert.

Where the ditch is overgrown with thick, woody vegetation or is holding water in some areas, typical maintenance requires re-excavation of the ditch to remove woody growth and roots and clear the channel bottom of all berms, lumps of material, and any other hindrances to flow. When clearing ditches, a smooth edge bucket should be used to ensure smooth side slopes and channel bottom. Toothed buckets create ridges perpendicular to the direction of flow, holding water. Channel running slopes should ensure the ditch is free-draining, and maintenance may require re-cutting as discussed in the “Establish or deepen ditch” section above to ensure free drainage. Fresh excavation should always be stabilized as described in the “Ditch Erosion” section above.



Debris in ditch holding water, Goosepecker Ridge Road, 4/22/25



Woody debris in ditch, Penney Road, 4/22/25

Additionally, clearing ditches increases snow storage capacity and allows snow to be pushed away from the road surface. Ensuring that meltwater and runoff can access the ditches may reduce the likelihood of erosion at the road surface and shoulder during spring thaw and heavy rains.

At the time of the April 2025 assessment, Acorn observed that ditch maintenance along at least some portion of the roadway would benefit road performance for approximately 85% of the network. In general, most roads had fair ditching, but many roads, such as Goosepecker Ridge, Randlett, Penney, and Hidden Valley Roads would benefit from ditch clearing in specific areas. After a ditch is cleared of vigorous growth and re-shaped, vegetation should be mown at least once annually to

discourage woody vegetation from returning. Once ditches are brought to a fully operating status, they should be monitored annually for capacity and performance, and cleared of sediment at least every 5 years, or more or less frequently as ditch capacity and operation begin to diminish.

Culvert stabilization and maintenance

Culverts should be maintained and installed to convey water freely and not contribute to erosion. A properly performing culvert should be kept free of sediment, be set at an appropriate elevation relative to the surrounding ditching and ground elevation, and be protected from erosion at the inlet and outlet.



Perched & eroding culvert, Goosepecker Ridge Road, 4/22/25

In general, most of the culverts observed in April 2025 throughout Montville were clear of sediment, with a few requiring cleaning as indicated in the individual roadway discussions and supplemental maps. Numerous culverts observed had been installed at improper elevations, and predominantly shallower than desired. Culverts should be installed with a minimum of 18" of cover above the top of the culvert at the roadbed where possible to protect from crushing and heaving, and more where feasible. In general, shallow culverts were associated with shallow ditching, and any ditch maintenance performed to deepen ditches should be coordinated with adjusting culvert elevations where feasible, and where the elevation is not restricted by ledge.

Some culverts, particularly on Goosepecker Ridge and Hogback Mountain Roads, appeared to contribute to significant erosion at the culvert outlet. Erosion at the culvert outlet can occur when the culvert outlet is set too high, or is "perched" above the surrounding ground, and water exiting the culvert drops onto the surrounding ground, scouring the area. Scouring can also occur when the material at the culvert outlet is not stable enough to resist the erosive flow coming out of the culvert. This erosion then migrates beneath the culvert and up the road shoulder, undermining the road and culvert. In such cases, the culvert should be reset or pitched such that the outlet elevation is not perched above its surroundings, and the outlet area should be stabilized.

Culvert outlets should be stabilized with an angular riprap apron extending at least 10' out from the culvert outlet, approximately 5' wide, and should extend up the road or driveway shoulder above the top of the pipe. Angular riprap is preferred due to its ability to interlock, as compared to bank run stone, which is rounded and easily dislodged by gravity and runoff. Riprap should be generally 6" in average dimension, and larger at steep areas or areas subject to intense flow. Recently constructed and adequately-sized riprap aprons were observed during the Assessment at some locations, but in general were composed of bank run stone and were beginning to erode. Acorn recommends that the Town prioritize the use of angular stone when stabilizing culverts in steep or high-flow areas. At gentler grades, bank run stone may be used as a cost saving measure to afford some level of protection. Stabilizing culvert inlets is also recommended and may be conducted at the Town's discretion. Various culvert maintenance recommendations are provided in the individual roadway discussions and in the supplemental maps.



Bank run outlet stabilization exhibiting initial erosion, Haystack Mountain Road, 4/22/25

Resurface roadway with surface gravel

Roadway resurfacing should be conducted when the existing surface gravel has been lost, eroded, displaced, or no longer has the appropriate distribution of particle sizes (gradation) to properly interlock/compact and to effectively drain. The need to resurface is most evident when a portion of road exhibits recurring dense potholes, washboards, or loose aggregate on the surface. These signs can indicate that the surface gravel is poorly blended and that fines have been blown or eroded from the surface, reducing the surface material’s ability to self-bind. Additionally, the emergence of larger diameter aggregate at the road surface can indicate that surface gravel coverage is thin, and base gravel, which



Area of recommended resurfacing, Morrill Road, 4/23/25

should not be graded due to its large particle sizes, is at the road surface. In such cases, resurfacing should occur and may be the most effective investment after underlying issues (e.g. drainage, as discussed in previous sections) are remedied.

During the April 2025 assessment, Acorn observed that approximately 60% of the gravel road network would benefit from resurfacing. Note that resurfacing may not be required along the entire length of a given roadway, but is recommended in select areas to improve the performance of the road. The most heavily traveled Town roads exhibiting surface defects, such as Morrill, Peavey Town (main section), and Burnham Hill Roads, appeared to have degraded or poorly blended surface gravel and would benefit the most from refreshing the surface

with new material where defects reoccur, particularly where cross slopes or running slopes have historically been flat.

In many cases in Montville, roadway resurfacing with a significant amount of material (6-8”) has been recommended to elevate the road surface above surrounding grade or above the local water table, with the goal of improving surface drainage. In these areas, such as portions of N. Trotting Park Road and Mehuren Road, surface material gradation appeared adequate and could be re-graded, but elevating may be conducted to improve the road’s resiliency, drainage, and performance at the Town’s discretion, and as funds allow.

Sourcing the proper material is integral to road surface performance and ease of maintenance. We recommend that surface gravel meets the gradation standards of Maine DOT Standard Specification 703.06, type A, and that the gravel be tested by a material testing firm prior to placement to ensure its particle gradation meets standard. Recycled Asphalt Pavement (RAP) may be considered as a component of the surface gravel material due to its superior binding ability, and may provide cost savings if locally available from a State asphalt rehabilitation project. Additionally, use of angular, crushed material is highly encouraged to ensure the gravel compacts properly and that the particles interlock. Rounded, bank-run pebble and stone is more susceptible to deformation under traffic loads and is not recommended.

Prior to placement of surface gravel, the existing roadway should be scarified and shaped with adequate cross slopes, as outlined in the “Establish crowned or superelevated roadway surface” section above. After the existing surface is prepared, new gravel may be placed, graded with adequate cross slope, compacted with a minimum 8-ton smooth drum roller, and treated with a binding agent (calcium chloride) if desired. At most roads, we recommend a minimum of 3” of surface gravel installation when refreshing roadways. See additional context provided in the individual roadway discussions and supplemental maps.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves, Type A
1/2 inch	45-70
1/4 inch	30-55
No. 40	0-20
No. 200	0-6.0

* At least 50% by weight of the material retained on the No. 4 sieve shall have at least one fractured face as tested by AASHTO T 355

* Type A aggregate shall only contain particles of rock that will pass the 2-inch square mesh sieve

Maine DOT 703.06 Type A gravel spec.

Reconstruct roadway with base and surface gravel

Roadway reconstruction should be conducted at the Town’s discretion where the existing base gravels are known to be absent, of poor quality, or are unable to adequately support traffic loads. Base failure may indicate a road is at the end of its life cycle, is contaminated with poor-quality native soils, or has historically poor drainage and is saturated – or a combination of all factors. The need to reconstruct is most evident when a portion of road exhibits recurring deep ruts and “pumping” of the native soils and moisture to the surface. These signs are most apparent in the spring of the



Area of recommended spot reconstruction, Goosepecker Ridge Road, 4/22/25

year, when the road is saturated with spring snowmelt and rain, but can appear any time of year, typically during wet periods. Additionally, the emergence of pockets of fine, clay or silt material at the road surface can indicate that poor native soils are being forced toward the road surface by repeated traffic loads, inadequate gravel depth, and unstable base or subgrade.

During the April 2025 assessment, Acorn observed that approximately 7% of the gravel road network would benefit from reconstruction. Reconstruction was typically recommended for the Town’s most primitive, low-volume roads. Note that our assessment was conducted to provide recommendations on how roadways could be restored to a “like new” condition, and that the decision to reconstruct should be made

at the Town’s discretion, in consideration of budget constraints and in collaboration with residents. In addition to roadways generally recommended for reconstruction, areas of spot reconstruction have been made for wet or “problem” areas along the Town’s more well-traveled roads, as discussed in the individual roadway discussions and supplemental maps. To protect this investment, reconstruction should always be accompanied by improvements to drainage in the area, such as improving ditching, cross-slope, or installing underdrain drained to a ditch or road shoulder, to ensure the new road base is well-drained and durable over time.

Sourcing the proper material is integral to road base performance. We recommend that base gravel meets the gradation standards of Maine DOT Standard Specification 703.06, type D, and that the gravel be tested by a material testing firm prior to placement to ensure its particle gradation meets standard. Recycled Asphalt Pavement (RAP) may be considered as a component of the base gravel material due to its superior binding ability, and may provide cost savings if locally available from a State asphalt rehabilitation project. Additionally, use of angular, crushed material is highly encouraged to ensure the gravel compacts properly and that the particles interlock. Rounded, bank-run pebble and stone is more susceptible to deformation under traffic loads and is not recommended.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves, Type D
1/2 inch	35-80
1/4 inch	25-65
No. 40	0-30
No. 200	0-7.0

* Gradation above is for the portion of the material passing a 3-inch square mesh sieve

* Type D aggregate shall not contain particles of rock which will not pass the 6-inch square mesh sieve

Maine DOT 703.06 Type D gravel spec.

Prior to placement of base gravel, the existing roadway should be box cut to subgrade depth, subgrade sloped to matched the desired surface cross slope of 4%, and compacted with a smooth drum roller. If unsuitable subgrade soils are present (clay, silt, loam, and organic soils), placing woven geotextile fabric atop the prepared subgrade may be considered to add strength and to separate the road base from the underlying soils. After the existing surface is prepared, base gravel may be placed in lifts <12” depth, graded with adequate cross slope, and compacted with a smooth drum roller to receive surface gravel as described above. At most roads, we recommend a minimum of 15” of base gravel installation when reconstructing. See additional context provided in the individual roadway discussions and supplemental maps.

Material selection

As discussed in the resurfacing and reconstruction sections above, it is recommended that surface and base gravels be gradation-tested for comparison with MDOT 703.06 Type A and Type D specification prior to purchase and placement. All material used for roadway construction should be free of lumps of clay, loam, organic material, or other similar unsuitable material. Aggregate material used in base and surface gravels, as well as large aggregate used for riprap stabilization, should be crushed products with rough, angular faces, to improve the materials' ability to lock together and stabilize.

During the April 4, 2025 visit to the Town-owned Halfmoon and Randlett pits, Acorn observed stockpiles of bank-run and screened materials. In general, the bank-run material observed contained rounded pieces of pebble, stone, cobble, and boulder.

Rounded materials are not ideal for road construction due to the particles' ability to slide past each other and deform and shift under traffic or hydraulic loads.



Stockpile of 2-6" screened stone suitable for crushing, Halfmoon Pit, 4/4/25



Stockpile of 12"+ screened stone suitable for crushing, Halfmoon Pit, 4/4/25

The dominant parent material of the glacial deposits in the bank-run pits appeared to be durable igneous and metamorphic stone, and the Town should continue to use material from these pits, provided the material is screened and crushed prior to blending and placement. Processing and blending Town-owned material may provide cost savings as compared to purchasing material from outside sources. The bank-run material should be screened to segregate various size ranges (e.g. 2-3" stone, 3-6" stone, 6-8" stone, 12"+ stone) suitable for crushing, secondary screening, and incorporation in base gravel, surface gravel, and riprap products.

Care should be taken when excavating bank run gravel to avoid veins of finer-grained clay, loam, and silt, particularly at the Randlett pit.

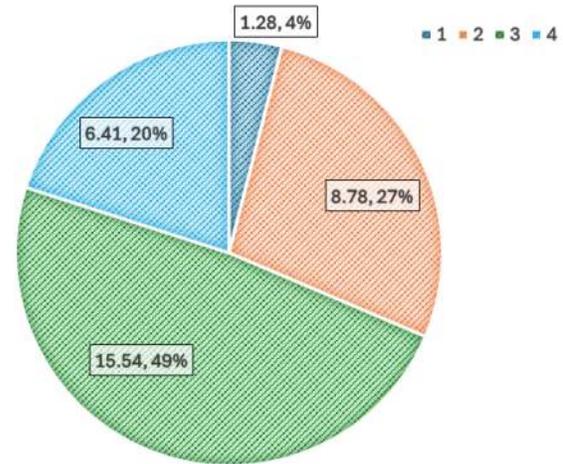


Repair and Maintenance Strategies

The April 2025 assessment showed the average PASER rating of Montville's unimproved and gravel road network to be 2.85, weighted by rating per road mile. Roads were assigned a PASER value as a general evaluation of how functional the road section was, and the rating considered variabilities in surface condition, drainage, and erosion, as well as areas recommended for spot repair.

It is understood that it is not feasible for the Town to restore the entire roadway network to a like-new condition in the near term. This report and strategy discussion are intended to be used as a tool to assist the Town in establishing a management strategy that fits within the Town's available capital improvement and maintenance budgets, and to provide a functional road network serving the Town's and region's needs.

ROADWAY MILES BY PASER RATING



Pie chart depicting PASER status of Montville's unimproved and gravel roadways in April 2025, by percentage and road miles

Ideally, the Town would utilize the majority of its maintenance budget to perform routine maintenance on roadways which have PASER rating of ≥ 3 , as these require the least investment to restore to fully operating condition. The recommended maintenance should ideally be performed by Town employees with Town equipment, and if practicable, with Town materials, to save cost. Activities such as routinely maintaining ditches and culverts should be conducted at regular intervals as discussed in sections above (mowing and monitoring ditches annually, cleaning and stabilizing ditches every ~5 years), completing as much as practicable each year and minimizing the period between routine maintenance across the gravel road system.

For roadways that have a PASER rating of ≤ 2 , the Town would typically only perform enough maintenance to keep the road passable for life safety reasons while deferring any major work to the road until there are sufficient capital funds available to perform full rehabilitation or reconstruction of the road. However, at the time of the April 2025 assessment, certain heavily traveled through roads key to circulation across Town and to neighboring Towns, such as Morrill and Burnham Hill Roads, were assigned PASER ratings of 2. These could be brought to a 3 or higher with moderate levels of investment, such as establishing adequate cross-slopes, ditch maintenance and stabilization, ledge removal in key areas, culvert maintenance, and selective resurfacing in known problem areas. We recommend that modest investment should be prioritized for PASER ≤ 2 roadways which receive the most traffic, to restore these roads' function and improve safety. PASER ≤ 2 roads with lower traffic volumes should then receive substantial upgrades as surplus funds become available.

All roadways, regardless of PASER status, should be monitored annually, with heavily traveled roads graded at least thrice annually to establish adequate cross slopes, clear shoulders, and to address potholes and washboards. Roads with lower traffic volumes may be graded twice annually in spring and fall, and ditches at all roads should be monitored and mown annually and maintained every 5 or fewer years. Please reference the individual roadway discussion and supplemental maps for a PASER rating of each road.

Irrespective of PASER status, maintenance activities which improve drainage conditions and the stability of drainage infrastructure should be prioritized. Considering the varied topography, surficial geology, and soil conditions present across Montville, Acorn's recommendation is to ensure that ditches and culverts are adequately installed, cleared, sloped, and stabilized to move water away the road efficiently and without causing erosion. Although proper grading

and surface maintenance should continue to be conducted at the intervals discussed in previous sections, the stability of the road surface and road base are best protected by moving water away from the road. Improving functional and stable drainage may require higher capital investment initially, but if properly and frequently maintained, well-constructed ditches and drainage will help protect the investment in the road network from damage by erosion, higher intensity storms, and heavy traffic loads. The sooner deficiencies are remedied with routine maintenance or capital improvements, the slower the degradation timeline, and the lower the cost associated with significant repair.

Cost Forecasting

Presented in this section is a discussion of high-level cost to maintain the roadway network to a like-new condition based upon inspection data gathered during the April 2025 roadway assessment. As stated previously, it is understood that it is not feasible to restore all portions of the entire 32-mile gravel road network to a like-new condition, and the following discussion is intended to provide a consistent comparison of potential investment between roads across the network to assist the Town in staffing, budgeting, and decision-making. To form our high-level opinion of probable cost for each roadway's potential level of investment, we generated unit costs for performing the following critical maintenance activities key to rehabilitating gravel roads. Unit costs assume the activity is performed one (1) time for one (1) mile of two-lane gravel road with 10-foot lanes, 2-foot shoulders, and 10-foot wide ditches:

- *Establish crowned or superelevated roadway surface*
 - Assumes 4 hours per mile with a 10-ton grader and 8-ton roller, with a cost of \$400/mile for calcium chloride treatment
- *Grade roadway shoulders*
 - Assumes 1.5 hours per mile with a 10-ton grader and 8-ton roller
- *Establish, deepen, or clear ditch*
 - Assumes 2 hours per mile with a 16 to 21 metric ton excavator, a 14 cubic yard dump truck, and a ditch width of 10' on each side of the road stabilized with hydromulch.
- *Resurface roadway with surface gravel*
 - Assumes 8 hours per mile with a 10-ton grader and an 8-ton roller, 4" of MDOT Type A gravel at \$20/CY delivered to site, and a cost of \$400/mile for calcium chloride treatment.
- *Reconstruct roadway with base gravel and surface gravel*
 - Assumes 24 hours per mile with a 10-ton grader and an 8-ton roller, 4" of MDOT Type A gravel and 15" of MDOT Type D gravel @ \$20/CY delivered to site, and a cost of \$400/mile for calcium chloride treatment.

Equipment rates (with operator) were sourced from the Maine DOT's published 2025 Labor Reimbursement and Private Equipment Rates. Material cost and durations were sourced from publicly available 2025 MDOT bid tabs, in-house roadway construction administration knowledge, and relevant online data from various Federal and State transportation management authorities.

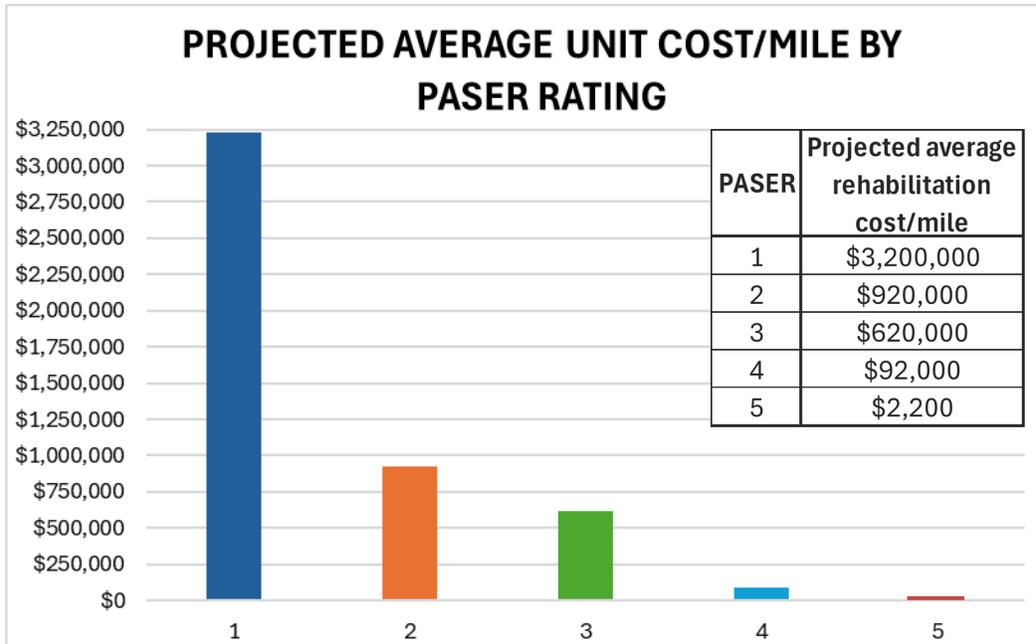
Unit costs for these primary maintenance activities were then applied to the results of the April 2025 assessment. For each roadway, the road's mileage was multiplied by each unit cost if the need for the maintenance activity was indicated at the time of inspection, and summed, generating an opinion of probable cost for each roadway. These whole-roadway cost opinions and related calculations are presented fully in the supplemental Microsoft Excel document.

Note that cost projections are intended to assist with high-level comparisons for planning and decision-making purposes. Cost projections for each roadway do not include additional costs related to maintenance of the road system including, but not limited to, engineering fees, mobilization fees, routine mowing, or completion of various spot repairs and installations identified during the April 2025 assessment.

Note also that cost projections assume the maintenance activity would be conducted along the whole roadway length.

When conducting the April 2025 assessment, maintenance activities for each roadway were recommended when a majority of the roadway would benefit from the activity, but some activities, e.g. ditching or resurfacing, may not need to be conducted along the road’s entire length. Any roadways identified by the Town for significant investment should receive further engineering study to identify in more granular detail where certain maintenance activities should be conducted, or may not need to be conducted.

Whole-roadway opinions of cost were then divided by each road’s mileage to generate a projected unit cost/mile for each roadway. These unit costs/mile were then averaged within each PASER group to generate an average cost to rehabilitate a mile of road for each PASER rating. As presented in the following figure and table, it becomes substantially more expensive to rehabilitate roads which have been allowed to fall to a PASER rating of 1, with rehabilitation cost decreasing as the PASER rating and roadway function improve.



Bar chart depicting average opinion of unit cost per mile to rehabilitate roadways with each given PASER rating to functioning status

While cost to rehabilitate a road is generally related to PASER rating, some variability in repair cost should be expected when comparing and evaluating roads with similar PASER ratings. Overall, as individual roadways are improved, it becomes less burdensome for the Town to continue routine maintenance and “keep good roads good”, ensuring that the network remains functional and cost-effective to maintain into the future.

When determining which roadways are most appropriate for investment, Town staff should consider the road’s existing condition, level of service, intended use, cost to rehabilitate, traffic volume, emergency importance, and local significance, in consultation with Town citizens.

CONCLUSION

Acorn has been pleased to assist the Town of Montville with this roadway assessment. We understand the importance of the roadway network to the Town's identity and are proud to have partnered with the Town as they work to sustain this network for generations to come. We recognize the significant work performed by Town staff to maintain and improve their gravel road network in a proactive manner and stand ready to assist the Town will help with these efforts in any way we can.

ROADWAY-SPECIFIC DISCUSSION & RECOMMENDATIONS

The following presents an individual discussion of notable roadway characteristics, conditions observed during the April 2025 assessment, and recommendations for maintenance and improvement. Discussion is provided to contextualize general conditions observed at each roadway, as well as specific areas noted for spot improvement or maintenance. Additionally, inspection criteria assessed for each roadway are given, as applicable or relevant to each road.

To visualize the recommendations and assessment, please reference the Google Earth mapping documents provided to supplement this report. The supplemental maps contain geolocated pins and line features depicting spot repairs and roadway segments, as well as all data and photo documentation captured during the April 2025 assessment.

Note that some activities identified in this section, particularly at stream crossings, may require review by the Maine DEP and US Army Corps of Engineers, and that any applicable permits should be obtained prior to the start of work. Several stream crossings throughout Montville in need of replacement may be competitive for funding through the Maine DOT's Municipal Stream Crossing Grant program, which is typically administered annually in the 4th quarter of the calendar year. As of the creation of this report, Acorn is not aware of an advertisement by the DOT inviting Municipalities to apply for 2025-2026 funding but will continue to monitor.



Barrett Road

Observed Conditions – 4-23-25

Barrett Road lies at the eastern side of town, extending east from Center Rd. through the Searsmont town line. It is Acorn's understanding that the Town of Searsmont provides summer maintenance of this 0.71-mile section of dead-end road, with Montville providing winter maintenance, and that the only residential structure on this road lies within Searsmont. Regardless, Acorn is including discussion of Barrett Road in the report to assist the Town if summer maintenance of this road is adopted in the future.

In general, Barrett Road is characterized by flat running slopes and a flat roadway cross-section, and minimal crown and ditching were observed at the time of inspection. Gravel pits exist along either side of the roadway, and minor ruts and moderate potholes were observed. Numerous sections of road sit below surrounding grade, it was evident that surface material has been pushed to the shoulders, possibly during winter plowing activities.

Recommendations

Barrett Road should be regraded to reestablish a strong crown and improve surface drainage. Additionally, Acorn recommends that the roadway be resurfaced with 3-4" of suitable surface gravel and roller-compacted. It may be possible with a grader to salvage surface gravel which has been pushed into the shoulder to reduce material import. Berms along the shoulders should be removed, and shoulders should be graded to allow water to drain off the roadway surface and away from the road base.

Where surrounding grades allow, ditch maintenance would improve drainage of the road base and reduce rutting. The roadway is generally exposed to sunlight and tree clearing is not a critical maintenance recommendation.

Inspection criteria:

PASER rating: 3 (Fair)

Establish Crown: Yes

Potholes: 3 (Moderate)

Ruts: 2 (Minor)

Roadway is trenched: Yes

Grade shoulders: Yes

Resurface: Yes

Clear ditch: Yes



Barrett Road, looking east near gravel pit entry



Barrett Road, looking west near Searsmont town line

Bean Road

Observed Conditions – 4-22-25

Bean Road lies in north-central Montville, extending west for approximately 0.21 miles from Rt. 220 to the dead end. The road crosses Bartlett Stream near the intersection with Rt. 220.

In general, Bean Road is characterized by rolling running slopes and a flat roadway cross-section, and minimal crown and ditching were observed at the time of inspection. The road serves approximately 3 residences, and minor ruts and potholes were observed. Minor erosion was observed along the south shoulder of the road east (downhill) of the driveway to address #16.



Bean Road at Bartlett Stream crossing, looking east

Recommendations

Bean Road should be regraded to reestablish a strong crown and improve surface drainage. During grading, any berms at the shoulders should be cleared to allow water to completely drain from the road surface. Additionally, Acorn recommends that approximately 200 LF of the roadway - from Rt. 220 across Bartlett Stream, be resurfaced with 4-6" of suitable surface gravel, crowned, and roller-compacted to reduce potholes. Finally, Acorn recommends that a ditch be created along the south side of the road from address #16 downhill toward Bartlett Stream to reduce erosion in the roadway.



Bean road, looking east near #16 driveway

The Bartlett Stream crossing consists of three corrugated metal culverts set at an appropriate elevation. However, there was notable erosion on the road shoulder above the culverts, and inverts appeared to be degraded. The stream appeared to be artificially widened locally to the crossing and some erosion was observed along the streambanks upstream and downstream, indicating that the crossing regularly constricts flow and is undersized. Acorn recommends this crossing be replaced with a concrete box culvert or other span sized appropriately to convey intense storm events.

Inspection criteria:

PASER rating: 3 (Fair)
Establish Crown: Yes
Establish Ditch: Yes
Potholes: 2 (Minor)

Ruts: 1 (Minimal)
Grade shoulders: Yes
Resurface: Yes

Berry Road

Observed Conditions – 4-22-25

Berry Road lies in north-central Montville, extending west for approximately 0.9 miles from Rt. 220 to the dead end.

In general, Berry Road is characterized by rolling to steep running slopes and a crowned but interrupted roadway cross-section and serves approximately 2 residences. The first 0.7 miles of road contain numerous flat sections with limited slope along the direction of travel. Acorn observed that portions of Berry Road had recently been ditched, with ditch depth variable and shallow in some locations. Excessive ruts and potholes were observed at the time of inspection, and due to the severity of ruts, it is evident that the roadway base was saturated or was still frozen. The road is generally wooded along both sides and appears to receive limited sunlight.



Berry Road near its end, facing west

Recommendations

Berry Road should be regraded to reestablish a strong crown and improve surface drainage. It is likely that the recent ditching has improved road conditions, however deeper ditches should be created to better drain the road base. The driving surface was wide and, as appropriate to low traffic volume, could be narrowed and raised to create a higher road with deeper ditches to fit within the Town's ROW. The Town may consider reconstructing approximately 0.3 miles of roadway in the wettest, middle section with new base and surface gravels, which may be underlain by woven geotextile fabric to separate the road from the poorly drained native soils. The roadway is generally shaded and tree clearing is recommended, in coordination with landowners as needed, to hasten drying during spring thaw, primarily in the wettest, middle 0.3-mile section of road.



Berry Road at approx. mile 0.3, facing north. Shallow ditch present

Inspection criteria:

PASER rating: 2 (Fair)
Establish Crown: Yes
Establish Ditch: Yes
Erosion in Road: 1 (Minimal)
Potholes: 4 (Advanced)
Ruts: 5 (Excessive)
Washboard: 3 (Moderate)

Roadway is trenched: No
Grade shoulders: Yes
Resurface: Yes
Reconstruct: Yes
Clear ditch: Yes

Bog Road

Observed Conditions – 4-23-25

Bog Road lies in South Montville, running north-south between Route 3 and Trues Pond Rd. The middle portion of road, approximately 300 LF, passes through the bog upstream of Trues Pond, and is generally low in elevation, approximately 2-3' above bog surface. Evidence of road overtopping and washouts was observed, with sediment and road material present in the bog downstream of the crossing.

In general, Bog Road is characterized by flat running slopes and a flat roadway cross-section, and minimal crown and ditching were observed at the time of inspection. Minor ruts and moderate potholes were observed. Some sections of road sit below surrounding grade, especially at the end of the road closest to Route 3, and it was evident that surface material has been pushed to the shoulders, possibly during winter plowing activities.

Recommendations

Bog Road should be regraded to reestablish a strong crown and improve surface drainage. Additionally, Acorn recommends that the roadway be resurfaced with 3-4" of suitable surface gravel and roller-compacted. It may be possible with a grader to salvage surface gravel which has been pushed into the shoulder to reduce material import. Berms along the shoulders should be removed, and shoulders should be graded to allow water to drain off the roadway surface and away from the road base. Where the road sits below surrounding grade, primarily closest to Route 3, creating cuts in the berm along the road would improve drainage of the road surface and may reduce potholes. Approximately 300' of road closest to Route 3 may be elevated by 6-8" to raise it above surrounding grade.

At the bog crossing, the two (2) existing culverts at the main channel appeared undersized, were >50% full of sediment, and should be replaced with an appropriate span capable of conveying a severe storm event. Supplemental emergency bypass culverts placed north and south of the main channel may help convey water during flood events.

In concert with drainage structure installations, the road may be raised by 12-18" through the crossing to reduce the likelihood of overtopping during flood events.

Inspection criteria:

PASER rating: 3 (Fair)
Establish Crown: Yes
Establish Ditch: Yes
Potholes: 3 (Moderate)
Ruts: 1 (Minimal)

Roadway is trenched: Yes
Grade shoulders: Yes
Resurface: Yes
Clear ditch: Yes



Bog Road looking north, toward Route 3.



Bog Road, looking south at the bog crossing

Bragdon Road

Observed Conditions – 4-22-25

Bragdon Road lies in the north-central part of Montville, extending west 0.86 miles from Rt 220 to the dead end, and serves approximately 6 residences.

In general, Bragdon Road is characterized by flat to rolling running slopes, with a steep section near the road's end. Roadway cross section is generally flat, especially near Rt. 220 and west of the hairpin turn. Minor ruts and moderate potholes were observed at the flat sections of road, and minor erosion was observed near steep sections at the hairpin turn and at the road's end. It was evident that surface material has been pushed to the shoulders and ditches, possibly during winter plowing activities.



Bragdon Road looking north, at low section of road west of hairpin turn

Recommendations

In general, Bragdon Road should be regraded to reestablish a strong crown, or to establish superelevation at sharp corners, to improve surface drainage. Routine ditch maintenance should be conducted to reestablish deep ditches and to clear debris and vegetation. For approximately 200 LF at the intersection with Rt. 220, Acorn recommends that the roadway be resurfaced with 3-4" of suitable surface gravel, superelevated to drain toward the south shoulder, and roller compacted. A ditch should also be created along this south shoulder to improve drainage.

West of the hairpin turn, where the road runs through a low, flat area for ~400 LF, the roadway should be reconstructed or raised 6-8" with strong crown established to improve drainage and elevate the roadway above the surrounding water table. Additionally, ledge removal is recommended at three areas totaling approximately 120 LF along the south and east of the road to improve positive drainage in the ditch.



Bragdon Road looking west at Rt. 220 intersection.

Inspection criteria:

PASER rating: 3 (Fair)
Establish Crown: Yes
Establish Ditch: Yes
Erosion in Ditch: 1(Minimal)
Erosion in Road: 2(Minor)

Potholes: 2 (Minor)
Ruts: 2 (Minor)
Grade shoulders: Yes
Clear ditch: Yes

Burnham Hill Road

Observed Conditions – 4-22-25

Burnham Hill Road lies at the west side of town and is a through road. The gravel section extends east for 0.76 miles from the Freedom town line to the pavement transition.

In general, the gravel portion of Burnham Hill Road is characterized by flat to rolling running slopes and a flat roadway cross-section, and minimal crown was observed at the time of inspection. Advanced potholes were observed along much of the road. Much of the roadway, which is wide, is elevated above surrounding grade or ditched. It was evident that surface material has been pushed to the shoulders and ditches, possibly during winter plowing activities. Additionally, it was evident that users travel this road at a higher rate of speed than is desired, hastening pothole formation.



Burnham Hill Rd., typical pothole severity and road width



Burnham Hill Rd., typical pothole severity and road width

Recommendations

Burnham Hill Road should be resurfaced with 3-4" of suitable surface gravel, graded to establish a strong crown, and roller compacted. Prior to resurfacing, the existing road should be scarified, and may be narrowed as deemed appropriate by the Town. Narrowing the road slightly may naturally reduce travel speed and would allow a higher crown with deeper ditches to fit within the Town's ROW. Bermed material along the shoulders should be removed, and shoulders should be graded to allow water to drain off the roadway surface and away from the road base. It may be possible with a grader to salvage surface gravel which has been pushed into the shoulder and ditches to reduce material import. Select areas of ditch maintenance and creation near the Freedom town line would improve drainage of the road base in this area. The roadway is generally exposed to sunlight, but tree clearing along the ~0.3 miles east of the Freedom town line may help hasten road stability during the spring thaw.

A portion of road shoulder opposite address #264 is vulnerable to erosion from the nearby stream and should be stabilized with large (>12" mean diameter) angular riprap. A 50 LF section of roadway west of address #186 was saturated and pumping at the time of inspection and may be reconstructed with a French drain, "rock sandwich", or similar drainage enhancement, outletted to the ditch to move water away from the road base. Additionally, two culverts, approximately ~200' and 1000' from the Freedom town line required maintenance or replacement to clear sediment and stabilize the inlets and outlets with angular riprap.

Inspection criteria:

PASER rating: 2 (Poor)
Establish Crown: Yes
Establish Ditch: Yes
Potholes: 4 (Advanced)

Ruts: 1 (Minimal)
Grade shoulders: Yes
Resurface: Yes

Cemetery Road

Observed Conditions – 4-23-25

Cemetery Road lies at the south side of town, extending south from Rt. 173. through the Searsmont town line, and serves approximately 4 residences and the cemetery in Searsmont. It is Acorn's understanding that the Town of Searsmont provides winter maintenance of this 0.33-mile dead-end road.

In general, Cemetery Road is characterized by flat running slopes and a flat roadway cross-section, and minimal crown and ditching were observed at the time of inspection. Moderate potholes were observed in some areas, with much of the road in fair condition. It was evident that surface material has been pushed to the shoulders, possibly during winter plowing activities.



Cemetery Road, typical view.

Recommendations

Cemetery Road should be regraded to reestablish a strong crown and improve surface drainage. Additionally, Acorn recommends that approximately 400 LF of the roadway, in areas where potholes are persistent, be resurfaced with 3-4" of suitable surface gravel and roller compacted. It may be possible with a grader to salvage surfacing gravel which has been pushed into the shoulder to reduce material import. Bermed material along the shoulders should be removed, and shoulders should be graded to allow water to drain off the roadway surface and away from the road base. The roadway is generally exposed to sunlight and tree clearing is not a critical maintenance recommendation.

Inspection criteria:

PASER rating: 3 (Fair)

Establish Crown: Yes

Potholes: 1 (Minimal)

Grade shoulders: Yes

Resurface: Yes

Choate Road

Observed Conditions – 4-23-25

Choate Road is a 2.13-mile through road in southeast Montville, running north-south between Route 173 and Route 3.

Choate Road is characterized by a steep climb north from Route 173 along the Georges River, then is characterized by flat and rolling running slopes north to Route 3. At the time of inspection, the road appeared to be recently graded and crown slopes were fair, although there was evidence of reemerging potholes, particularly at the southern quarter mile along the Georges River. Ditching along Choate Road was fair, although vegetated, and was generally well-drained. Although the road surface was well-drained, shoulders were bermed in some areas, with evidence that surface material had been pushed to the shoulders, possibly during winter plowing activities.

Recommendations

At the next opportunity to grade Choate Road, berms along the shoulders should be cleared to allow surface runoff to properly access the ditch, and a sharper crown should be created. Additionally, ditches should be routinely maintained to remove vegetative growth and refresh the ditchline. The roadway is generally exposed to sunlight and tree clearing is not a critical maintenance recommendation.

Spot work should be conducted at the southernmost quarter mile along the Georges River, where the road is wide with evidence of recurring potholes. A deeper

ditch along the east side of the road should be established to properly convey runoff from the adjacent hillside, and any backslopes >2:1 slope should be stabilized with riprap. This may require slight narrowing of the road in this area, which is wide. Tree removal may help dry the road in this area during spring thaw. Where surrounding grades allow, ditch maintenance would improve drainage of the road base and reduce rutting.

A 100 LF section of roadway at the sweeping bend south of the Route 3 intersection was saturated and pumping at the time of inspection and may be reconstructed with a French drain, “rock sandwich”, or similar drainage enhancement, outletted to the ditch to move water away from the road base. Raising the road surface 6-8” during reconstruction, and providing localized deeper ditching, would elevate the roadway above the surrounding water table and improve drainage.

Additionally, approximately 60 LF of ledge removal is recommended along the east ditch south of the Jackson Rd. intersection to improve positive drainage in the ditch.

Inspection criteria:

PASER rating: 4 (Good)

Potholes: 1 (Minimal)

Ruts: 1 (Minimal)

Grade shoulders: Yes

Clear ditch: Yes



View along Choate Road, showing berm along shoulder



View north at Choate Road along Georges River

Foy Road

Observed Conditions – 4-22-25

Foy Road lies in South Montville, running east-west for 0.48 miles between Route 220 and Route 3.

In general, Foy Road is characterized by flat to rolling running slopes and a flat roadway cross-section, and minimal crown or superelevation was observed at the time of inspection, especially closest to the intersections with Route 220 and Route 3. In general, ditches were heavily vegetated, and it was evident that surface material has been pushed to the shoulders, possibly during winter plowing activities.

Recommendations

It is recommended that ditch maintenance be conducted on Foy Road to remove vegetation, and that a strong crown be reestablished to improve surface drainage. Additionally, Acorn recommends that approximately 600 LF roadway, 300' at either end, be resurfaced with 3-4" of suitable surface gravel, crowned or superelevated to drain, and roller-compacted. Bermed material along the shoulders should be removed, and shoulders should be graded to allow water to drain off the roadway surface and away from the road base. It may be possible with a grader to salvage surfacing gravel which has been pushed into the shoulder to reduce material import.

A ditch should be established along the south side of the road east of the Public Works facility to drain this area, where standing water was observed during inspection. If possible, drainage should be directed to the east but may require a cross culvert to direct water to the north side of Foy Road. The roadway is generally exposed to sunlight and tree clearing is not a critical maintenance recommendation.

Inspection criteria:

PASER rating: 3 (Fair)
Establish Crown: Yes
Establish Ditch: Yes
Potholes: 2 (Minor)



Foy Road looking west



Standing water along Foy Road, looking east near Public Works/Route 220 intersection.

Grade shoulders: Yes
Resurface: Yes
Clear ditch: Yes

Goosepecker Ridge Road

Observed Conditions – 4-22-25

Goosepecker Ridge Road lies at the northwest side of town and is a through road, running north-south for 2.21 miles between Freedom Pond Rd. and Penney Rd. At the Penney Rd. intersection, both roads briefly enter the Town of Freedom, and Acorn understands that negotiation of maintenance responsibilities between the two towns is ongoing.

In general, Goosepecker Ridge Road is characterized by flat to rolling running slopes and a flat roadway cross-section; minimal crown was observed at the time of inspection. The road was in overall poor condition at time of inspection, with advanced potholes observed along much of the road. Much of the roadway, which is wide, has shallow, woody ditches, and is poorly drained. It was evident that surface material has been pushed to the shoulders and ditches, possibly during winter plowing activities.



Goosepecker Ridge Road, looking north near Address #268



Goosepecker Ridge Road, looking south, typ.

Recommendations

Goosepecker Ridge Road should be regraded to establish a strong crown, and roller compacted. Ditch and shoulder maintenance should be conducted along the length of the road to clear and deepen the ditches, improving drainage. Ditching should be coordinated with culvert maintenance or replacement at approximately 5 low points along the road, where culvert elevations should be lowered to allow a deeper ditch and to reduce erosion and perching at the culvert outlets. Culvert inlets and outlets should be stabilized with angular riprap.

If funds are available, the road should be resurfaced with 3-4" of suitable surface gravel, graded to

establish a strong crown, and roller compacted. Narrowing the road slightly may naturally reduce travel speed and would allow a raised road profile with deeper ditches to fit within the Town's ROW. It may be possible with a grader to salvage surface gravel which has been pushed into the shoulder and ditches to reduce material import.

A 200 LF section of roadway near address #268 was saturated and severely pumping at the time of inspection and may be reconstructed with a French drain, "rock sandwich", or similar drainage enhancement, outletted to the ditch to move water away from the road base. Raising the road surface 6-8" during reconstruction, and providing localized deeper ditching, would elevate the roadway above the surrounding water table and improve drainage. Some ledge removal may be required along the east side of the road to facilitate ditching.

Inspection criteria:

PASER rating: 2 (Poor)

Establish Crown: Yes

Establish Ditch: Yes

Erosion in Road: Yes

Potholes: 4 (Advanced)

Ruts: 2 (Minor)

Grade shoulders: Yes

Clear ditch: Yes

Halldale Road

Observed Conditions – 4-22-25

Halldale Road lies at the western side of town, and the gravel section runs generally north-south for 1.13 miles.

The gravel portion of Halldale Road is characterized by steep and rolling grades, and minimal crown was observed at the time of inspection. Minor erosion running with the direction of travel was observed in the ditches and on the roadway surface, likely due to snowbanks trapping snowmelt on the road surface. At the time of inspection, it was evident that surface material had been pushed to the shoulders, possibly during winter plowing activities. In general, ditches were well-draining but shallow.

Recommendations

Halldale Road should be regraded to establish a strong crown, and roller compacted. Ditch maintenance to clear and deepen the ditches along both sides of Halldale Road should occur, particularly from the Cemetery uphill (south) to address #485, with angular riprap installed to stabilize ditches >10% running slope and discourage erosion. Ditch turnouts, stabilized with riprap and a stone spreader, should be installed every 100 LF where possible. The roadway is generally exposed to sunlight and tree clearing is not a critical maintenance recommendation.

Additionally, at a cross culvert ~150 LF downhill of the cemetery, the westerly road shoulder should be properly stabilized with angular riprap. This shoulder exhibited moderate erosion at the time of inspection and may contribute to culvert washout if not stabilized prior to future storm events. If funds allow, this cross culvert may be replaced with an upsized, longer culvert with inlet and outlet extending further into the ditch to reduce the likelihood of eroded road shoulders.

Inspection criteria:

PASER rating: 4 (Good)

Establish Crown: Yes

Establish Ditch: Yes

Erosion in Ditch: 2 (Minor)

Erosion in Road: 2 (Minor)

Ruts: 2 (Minor)

Grade shoulders: Yes

Clear ditch: Yes



Halldale Road looking south at steep section. Shoulder erosion center right of photo.



Halldale Road looking south, typical condition.

Hannan Road

Observed Conditions – 4-23-25

Hannan Road is a primitive, single-lane road in the east-central part of Montville, extending east 0.12 miles from North Ridge Rd. to the dead end, and serves approximately 5 residences.

In general, Hannan Road is characterized by flat to rolling running slopes and has a flat cross-section; minimal crown or superelevation was observed at the time of inspection. Moderate potholes and ruts were observed in some areas, with the road in generally fair condition. Surface material has been pushed to the shoulders and ditches, creating a bermed shoulder and interrupting positive surface drainage.

It was evident that recent grading and material placement by residents of the road had been performed at the culvert crossing ~450 LF west of North Ridge Rd.

Recommendations

Per Town and resident discretion, Hannan Road should be resurfaced with 6-8" of suitable surface gravel to raise the road elevation, graded to establish a strong crown or superelevation, and roller compacted. Additionally, bermed material along the shoulders should be removed, and shoulders should be graded and ditches maintained to allow water to drain off the roadway surface and away from the road base.

An ~18" corrugated metal cross culvert near the end of the road was heavily corroded at time of inspection and should be replaced with a new, HDPE culvert.

Inspection criteria:

PASER rating: 3 (Fair)
Establish Crown: Yes
Potholes: 3 (Moderate)
Ruts: 2 (Minor)

Grade shoulders: Yes
Resurface: Yes
Clear ditch: Yes



Hannan Road looking west at recent maintenance by others



Hannan Road looking west near road's end

Haystack Mountain Road

Observed Conditions – 4-22-25

Haystack Mountain Road is a through road in south Montville, extending southwest 0.55 miles from Route 3 to the Liberty town line. It is Acorn's understanding that Montville invested in significant drainage and reconstruction efforts on this road in response to damage in late 2022 and early 2023.

In general, Haystack Mountain Road is characterized by flat to steep running slopes and a flat roadway cross-section; minimal crown was observed at the time of inspection. At the north and south extents, the road sits below surrounding grade in many areas, and shallow ditching is present. It was evident that surface material has been pushed to the shoulders, possibly during winter plowing activities. In the middle, steep section of road, ditches were generally clear, but shallow.

Recommendations

Haystack Mountain Road should be regraded to establish a strong crown, and roller compacted. Approximately 500 LF of road north of the steep hill and south of address #96 could be resurfaced with 6-8" of suitable surface gravel to raise the road elevation above surrounding grade, and at the least, ditch maintenance should be performed in this area to deepen the ditches and clear woody vegetation. Bermed material along the shoulders should be removed, and shoulders should be graded to allow water to drain off the roadway surface and away from the road base. It may be possible with a grader to salvage surfacing gravel which has been pushed into the shoulder to reduce material import.

Multiple new HDPE culverts in good condition were observed along Haystack Mountain Road, and angular riprap should be installed at these culvert inlets and outlets to improve their stability during severe storm events. Moderate erosion was observed at the culvert outlets at the time of inspection. Additionally, ledge removal at the ditches along the steepest section of road would help increase ditch capacity and reduce the possibility of road surface erosion.

Inspection criteria:

PASER rating: 3 (Fair)
Establish Crown: Yes
Potholes: 3 (Moderate)
Ruts: 1 (Minimal)
Roadway is trenched: Yes



Haystack Mountain Road, looking south toward Liberty



Haystack Mountain Road, looking north toward Route 3

Grade shoulders: Yes
Resurface: Yes
Clear ditch: Yes

Hidden Valley Road

Observed Conditions – 4-23-25

Hidden Valley Road lies in center Montville, extending south 2.23 miles from Center Road to the dead end at Hidden Valley Camp.

Hidden Valley Road is characterized by rolling to steep running slopes and a flat roadway cross-section, and minimal crown was observed at the time of inspection. Ditches were generally shallow and ranged from clear to brushy. It was evident that surface material had been pushed to the shoulders, possibly during winter plowing activities.

A significant section of erosion running along the road shoulder was observed extending from the blueberry field uphill of Hidden Valley Camp, down the steep hill to the camp.

Recommendations

Hidden Valley Road should be regraded to establish a strong crown, and roller compacted. Regular shoulder maintenance should be performed to remove any berms interrupting drainage off the road surface. Regular ditch maintenance should be performed to clear the run of the ditch and remove woody vegetation. Angular riprap should be installed to stabilize ditches >10% running slope and discourage erosion, particularly north of Hidden Valley Camp. Ditch turnouts, stabilized with riprap and a stone spreader, should be installed every 100 LF where possible.

Particular attention should be paid to establishing an adequate ditch along west side of the road uphill of the Camp, beginning at the blueberry field. During the inspection, it appeared that runoff from spring snowmelt could not access the ditch in the blueberry field, and ran down the snowbank along the road, eroding the road surface. The ditch in the blueberry field should be deepened to increase snow storage capacity and allow runoff to access the ditch during spring thaw, or spring maintenance should be performed to provide frequent cuts in the snowbank along this field. Additionally, approximately 25 LF of ledge removal is recommended in a ditch along the east side of the road where indicated in the supplemental map.

Inspection criteria:

PASER rating: 3 (Fair)
Establish Crown: Yes
Establish Ditch: Yes
Erosion in Road: 3(Moderate)
Potholes: 3 (Moderate)

Ruts: 2 (Minor)
Grade shoulders: Yes
Resurface: Yes
Clear ditch: Yes



Hidden Valley Rd., looking north at eroded shoulder



Hidden Valley Rd. looking north near Center Rd.

Hogback Mountain Road

Observed Conditions – 4-22-25

Hogback Mountain Road begins at Route 220 near Beans Corner, extends north 0.57 miles to the dead end, and serves approximately 3 residences. It is Acorn's understanding that Montville invested in significant drainage and reconstruction efforts on this road in response to significant damage and full washout of this mountain road in recent years.

In general, Hogback Mountain Road is characterized by steep running slopes and a fair roadway cross-section; some crown and superelevation were observed at the time of inspection. The west side of the road is in a cut condition, with moderately stabilized ditching observed upgradient of the address #82 driveway. Recently installed cross-culverts along the steep section of road were observed in good condition, but were perched at the outlet, with considerable erosion observed at outlet scour pools.

Recommendations

To increase the road's resiliency to storm events, all cross culverts along the steep section of road should be properly stabilized at the inlet and outlet with angular riprap. Due to steep slopes in the area, it is recommended that angular riprap with a mean size of 8" or greater is utilized. Additionally, culverts may need to be reset to properly adjust the outlet elevations to the downslope and reduce perching and subsequent erosion.

Ditching should be established along the west side of the road downgradient of address #82 driveway.

Angular riprap should be installed at all ditching on Hogback Mountain Road to stabilize ditches >10% running slope and discourage erosion. Ditch turnouts, stabilized with riprap and a stone spreader, should be installed every 100 LF where possible, and coordinated with adjacent landowners. The driving surface is wide and, as appropriate to low traffic volumes on this road, could be narrowed to allow deeper ditches to be constructed within the Town's ROW.

If limited investment in the road is desired by the Town, regular grading, shoulder, and ditch maintenance should be performed to establish a strong crown or superelevation and direct water away from the road surface, and culvert outlets should receive angular riprap.

Inspection criteria:

PASER rating: 4 (Good)

Establish Crown: Yes

Establish Ditch: Yes

Erosion in Ditch: 3 (Moderate)



Perched culvert and outlet erosioint at Hogback Mountain Road, typ.



Limited ditch along Hogback Mountain Road downgradient of address #82 driveway.

Erosion in Road: 2 (Minor)

Potholes: 1 (Minimal)

Clear ditch: Yes

Howard Road

Observed Conditions – 4-22-25

Howard Road is a primitive, single-lane road in the west-central part of Montville, extending northeast 1.19 miles from Halldale Rd. to the dead end, and serves approximately 3 residences.

After a steep climb in the first quarter mile, Howard Road is characterized by rolling running slopes and has a flat cross-section; minimal superelevation was observed at the time of inspection. Moderate to advanced potholes and ruts were observed in some areas, particularly in the first half mile of road, which was in generally poor condition and is level with or below surrounding grade. Acorn understands the Town has recently invested in resurfacing and drainage improvements at the last half mile of road, and this section of road was observed in fair condition. Surface material has been pushed to the shoulders and ditches, likely during plowing activities, creating a bermed shoulder and interrupting positive surface drainage.



Howard Road, typical view at unimproved section



Howard Road, typical view at improved section

Recommendations

Per Town and resident discretion, low and ponded areas within the first half mile of Howard Road should be resurfaced with 6-8" of suitable surface gravel to raise the road elevation, graded to establish a superelevation draining to the west, and roller compacted. Along the entire road, bermed material along the shoulders should be removed to allow water to drain off the roadway surface, and ditches should be maintained and deepened where possible to improve drainage of the road base and reduce rutting. One section of ledge removal is recommended along the east shoulder of the road, approximately 1500 LF north of Halldale Road, to allow a ditch to be established in this area. Some tree clearing along the first half mile section may help hasten road stability during the spring thaw.

Inspection criteria:

PASER rating: 2 (Poor)
Establish Crown: Yes
Establish Ditch: Yes
Erosion in Road: 1(Minimal)
Potholes: 3 (Moderate)
Ruts: 2 (Minor)

Roadway is trenched: Yes
Grade shoulders: Yes
Resurface: Yes
Clear ditch: Yes

Howes Road

Observed Conditions – 4-23-25

Howes Road lies at the eastern side of town, extending north from Center Rd. 0.79 miles to the dead end, and serves approximately 5 residences.

Howes Road is characterized by flat to steep running slopes and a flat roadway cross-section, and minimal crown was observed at the time of inspection. Ditching was generally present, but was wooded and generally shallow, due to localized ledge, especially along the upper section of road. Ruts and longitudinal erosion were observed at the time of inspection, and it is evident that spring runoff could not access the ditches.



Howes Road looking north near top of climb

Recommendations

Howes Road should be should be regraded to establish a strong crown, and roller compacted. Regular shoulder maintenance should be performed and regular ditch maintenance should be conducted to clear and reestablish the run of the ditch, remove woody vegetation, and increase snow storage capacity. At steeper sections, angular riprap may be installed to stabilize ditches >10% running slope and discourage erosion. Along both sides of Howes Road, reestablishing a deep ditch may require ledge removal in some areas, namely near the top of the last climb on the road. In lieu of creating a deeper ditch, the driving surface could be narrowed as appropriate to low traffic volumes and raised above grade with 6-8" of suitable surface gravel. It may be possible with a grader to salvage surfacing gravel which has been pushed into the shoulders and ditches to reduce material import. The roadway is generally exposed to sunlight and tree clearing is not a critical maintenance recommendation.



Howes Road looking south along climb, erosion and ruts present

At the intersection with Center Road and Barrett Road, the road surface should be scarified to remove potholes, and the addition of 3-4" of compacted suitable surface gravel is recommended. This intersection is wide and flat, and new surface material should be graded to provide positive drainage toward the adjacent ditches.

Inspection criteria:

PASER rating: 3 (Fair)

Establish Crown: Yes

Establish Ditch: Yes

Erosion in Road: 2 (Minor)

Potholes: 2 (Minor)

Ruts: 2 (Minor)

Grade shoulders: Yes

Clear ditch: Yes

Jackson Road

Observed Conditions – 4-23-25

Jackson Road lies at the eastern side of town, extending east from Choate Rd. for 0.18 miles through the Searsmont town line, and serves approximately 4 residences, 3 of which are in Searsmont. It is Acorn's understanding that the Town of Searsmont provides summer maintenance of this dead-end road, with Montville providing winter maintenance. Regardless, Acorn is including discussion of Jackson Road in the report to assist the Town if summer maintenance of this road is adopted in the future.



Jackson Road looking west toward the Choate Road intersection.

In general, Jackson Road is a primitive, single-lane road characterized by flat to rolling running slopes and has a flat cross-section; minimal crown or superelevation was observed at the time of inspection, and ditches were generally absent or shallow. Advanced potholes were observed in the first 200 LF of road, with the remainder of the road in generally fair condition and level with surrounding grade. Surface material has been pushed to the shoulders, creating a bermed shoulder and interrupting positive surface drainage.

Recommendations

In coordination with the Town of Searsmont, Jackson Road may be resurfaced with 3-4" of suitable surface gravel to raise the road elevation, graded to establish a superelevation draining to the south, and roller compacted. It may be possible with a grader to salvage older surface gravel which has been pushed into the shoulder to reduce material import. Where surrounding grades allow, ditching should be reestablished and/or cleared of vegetation. The roadway is generally exposed to sunlight and tree clearing is not a critical maintenance recommendation.

Particular attention should be paid to the first 200 LF of road east of the Choate Road intersection, where the road surface was wide, potholes are advanced, and the roadway cross section and running slopes are flat. This section should be narrowed as appropriate to traffic volumes, scarified to remove potholes, surface graded to establish a strong crown or superelevation, and resurfaced with 6-8" of suitable surface gravel and roller compacted.

Inspection criteria:

PASER rating: 2 (Poor)
Establish Crown: Yes
Potholes: 4 (Advanced)

Grade shoulders: Yes
Resurface: Yes

Janes Lane

Observed Conditions – 4-22-25

Janes Lane is a primitive, single-lane road in southwest Montville, extending north 0.11 miles from Peavey Town Rd. to the dead end, and serves approximately 1 residence.

In general, Janes Lane is characterized by flat running slopes and has a flat cross-section; minimal crown or superelevation was observed at the time of inspection. Moderate ruts were observed in some areas, and much of the road's length sits below grade, with ditches absent or shallow. Surface material has been pushed to the shoulders and ditches, creating a bermed shoulder and interrupting surface drainage.

Recommendations

Janes Lane should be maintained to remove berms at the road shoulders, and a ditch should be established along the west side of the road to drain the road base. The road surface should be graded to establish a superelevation draining to the west, and roller compacted. If additional investment is desired, Janes Lane should be resurfaced with 3-4" of suitable surface gravel to raise the road elevation. It may be possible with a grader to salvage older surface gravel which has been pushed to the shoulders to reduce material import. The roadway is generally exposed to sunlight and tree clearing is not a critical maintenance recommendation.

Inspection criteria:

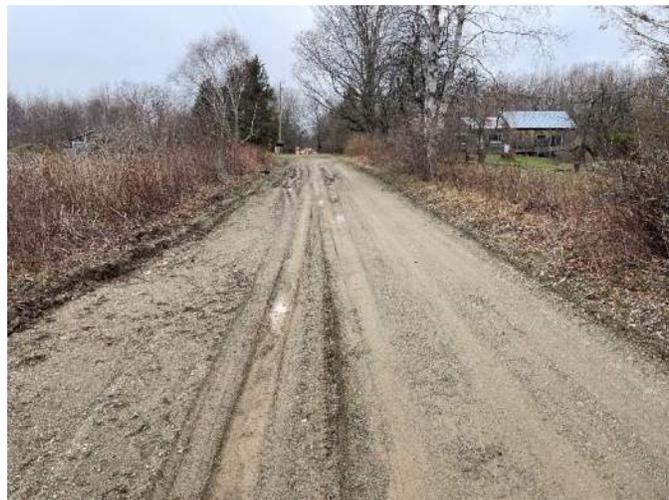
PASER rating: 2 (Poor)

Establish Crown: Yes

Establish Ditch: Yes



Janes Lane looking south, typical shoulder condition



Janes Lane looking south, typical ruts

Ruts: 3 (Moderate)

Roadway is trenched: Yes

Kingdom Road

Observed Conditions – 4-22-25

Kingdom Road lies in south Montville, extending north 1.83 miles from Route 3 to the end of Town maintenance at the Robbins pit entrance. Kingdom Road is characterized by rolling running slopes and a flat roadway cross-section, and minimal crown was observed at the time of inspection. Ditches were generally shallow and ranged from clear to brushy. Numerous sections of minor potholes existed along the length of the road at the time of inspection, and the road base appeared generally strong and well-drained. Two areas of road were observed acting as a dam, and cross culverts were absent in these areas. One cross-culvert approximately 1.25 miles north of the Route 3 intersection was beginning to collapse, and had <12" of cover.



Kingdom Road looking south, typical resurfacing by others

Resurfacing of numerous areas along Kingdom Road was ongoing by others at the time of inspection to address potholes and washboards. This road is subject to regular heavy truck traffic from the active gravel pit at the end of the road, and it is Acorn's understanding that maintenance observed at the time of inspection was being conducted by entities associated with the gravel pit as a good-faith effort to maintain the road critical to their operations. Overall, the road was observed in fair condition.



Kingdom Road looking north, typical condition

Recommendations

It is recommended that routine grading, shoulder, and ditch maintenance be conducted along Kingdom Road, and that a strong crown be established and roller compacted. Resurfacing with 3-4" of suitable surface gravel is recommended at areas of recurring potholes and washboards, and in select low areas. Numerous shallow ditches were observed, and ditches should be deepened to allow water to drain away from the road base. Ditching should be coordinated with culvert maintenance and new culvert installation along Kingdom Road as depicted in the supplemental point repair map. Culverts should be installed with no less than 18" of cover, and should be capable of withstanding repeated AASHTO H-20 loading, such as an ADS N-12 HDPE product, or stronger. Deepening the ditches along Kingdom Road where possible will allow culverts to be set at lower elevations and allow sufficient cover depth.

The steel arch span stream crossing near the beginning of the road appeared in good condition at the time of inspection, with fair capacity and a stable condition observed. Improvement is not recommended at this time.

Inspection criteria:

PASER rating: 3 (Fair)
Establish Crown: Yes
Potholes: 2 (Minor)

Washboard: 2 (Minor)
Loose Surface: Yes
Resurface: Yes

Lefty Lane

Observed Conditions – 4-23-25

Lefty Lane is a primitive, single-lane road in east Montville, extending north 0.14 miles from Morrill Rd. to the dead end, and serves approximately 2 residences.

In general, Lefty Lane is characterized by flat running slopes and has a flat cross-section; minimal crown or superelevation was observed at the time of inspection, and much of the road's length sits below the road shoulders, with ditches absent. Surface material has been pushed to the shoulders, creating a bermed shoulder and interrupting surface drainage.



Lefty Lane looking south, typical condition

Recommendations

Lefty Lane should be maintained to remove berms at the road shoulders, and a ditch may be established along the west side of the road to intercept upgradient overland flow. The road surface should be graded to establish a superelevation draining to the east, and roller compacted. If additional investment is desired, Lefty Lane could be resurfaced with 3-4" of suitable surface gravel to raise the road elevation. It may be possible with a grader to salvage older surface gravel which has been pushed to the shoulders to reduce material import. The roadway is generally exposed to sunlight and tree clearing is not a critical maintenance recommendation.

Inspection criteria:

PASER rating: 4 (Good)

Roadway is trenched: Yes

Grade shoulders: Yes

Martin Road

Observed Conditions – 4-22-25

Martin Road begins at Route 220 in central Montville, extends north 0.57 miles to the dead end, and serves approximately 1 residence.

In general, Martin Road is characterized by steep running slopes and a fair roadway cross-section; some crown and superelevation were observed at the time of inspection. The road is wide and minor erosion was observed in the roadway surface and shoulders, running downslope and with the direction of travel. Ditches were shallow or heavily vegetated along much of the roadway's length, and surface gravel had been pushed to the shoulders and ditches.



Martin Road looking north, minor surface erosion observed

Recommendations

Martin Road should be graded to repair erosion and to salvage gravel that has been pushed to the ditches and shoulders. A crown should be established along the straight climb in the road, and a superelevation at the corners, pitched toward the inside of the curve.

Ditches should be reestablished along the east side of the road at its northerly end, and along the west side of the road along the central and southerly end. The driving surface is wide and, as appropriate to low traffic volumes on this road, could be narrowed to allow deeper ditches to be constructed within the Town's ROW, which may allow snowmelt to access the ditches. Where ditches exceed 10% running slope, angular riprap may be installed to stabilize ditches and discourage erosion. Ditch turnouts, stabilized with riprap and a stone spreader, may be installed every 100 LF where possible, and coordinated with adjacent landowners. The roadway is generally exposed to sunlight and tree clearing is not a critical maintenance recommendation.



Martin Road looking south, minor shoulder erosion observed

Inspection criteria:

PASER rating: 4 (Good)
Establish Ditch: Yes
Erosion in Road: 2(Minor)
Erosion in Ditch: 2(Minor)
Ruts: 1 (Minimal)

Loose Surface: Yes
Grade shoulders: Yes
Clear ditch: Yes

Mehuren Road

Observed Conditions – 4-23-25

Mehuren Road lies in east Montville, extending southwest 0.93 miles from Center Rd. to the dead end, and serves approximately 8 residences.

In general, Mehuren Road is characterized by flat to rolling running slopes and a flat or inwardly-draining roadway cross-section; minimal crown and ditching were observed at the time of inspection. Moderate ruts and potholes were observed and numerous sections of road sit below surrounding grade. It was evident that surface material has been pushed to the shoulders, possibly during winter plowing activities, and that water is held on the road surface. Additionally, a ~100 LF section of severe potholes was observed just west of the Bartlett Stream bridge crossing.



Mehuren Road looking southwest, typical condition.

Recommendations

The northernmost 0.6 miles of Mehuren Road should be resurfaced with 6-8" of suitable surface gravel to raise the road surface elevation, graded to establish a strong crown, and roller compacted. Along the entire road, bermed material along the shoulders should be removed to allow water to drain off the roadway surface, and ditches should be maintained and deepened where surrounding grades allow to improve drainage of the road base and reduce rutting. The ditch along the west side of the road for the southern 0.33 miles of the road should be reestablished and cleared of vegetation.



Mehuren Road looking northeast, minimal ditch along west of road

Particular attention should be paid to the ~100 LF section of severe potholes west of the Bartlett Stream bridge crossing, where the road should be scarified prior to placement of new surface material, and ditching established in this area. Additionally, the driveway culvert at address #158 should be reset at lower elevation and erosion in this area should be repaired, in coordination with ditching along the west side of the road in this area.

Inspection criteria:

PASER rating: 2 (Poor)
Establish Crown: Yes
Establish ditch: Yes
Erosion in road: 3(Moderate)
Potholes: 3 (Moderate)
Ruts: 3 (Moderate)

Roadway is trenched: Yes
Grade shoulders: Yes
Resurface: Yes
Clear ditch: Yes

Morrill Road

Observed Conditions – 4-23-25

Morrill Road lies in northeast Montville and is a through road. The gravel section extends east for 1.18 miles from the pavement transition to the Morrill town line.

In general, the gravel portion of Morrill Road is characterized by flat to rolling running slopes and a flat roadway cross-section; minimal crown was observed at the time of inspection. Advanced potholes were observed along much of the road. Much of the roadway, which is wide, is elevated above surrounding grade or ditched, and ditches are generally shallow with woody growth. Surface material had been pushed to the shoulders and ditches, possibly during winter plowing activities. Additionally, it was evident that users travel this road at a high rate of speed, and potholes in the center of the road push drivers toward the edge of the road.

Recommendations

Morrill Road should be resurfaced with 3-4" of suitable surface gravel, graded to establish a strong crown, and roller compacted. Prior to resurfacing, the existing road should be scarified, and may be narrowed as deemed appropriate by the Town. Narrowing the road slightly may naturally reduce travel speed and would allow a higher crown with deeper ditches to fit within the Town's ROW. Bermed material along the shoulders should be removed, and shoulders should be graded to allow water to drain off the roadway surface and away from the road base. It may be possible with a grader to salvage surface gravel which has been pushed into the shoulder and ditches to reduce material import. Select areas of ledge removal 0.25 miles west of the Pierce Hill Rd. intersection would allow a ditch to be established along the north side of the road in this area. From Pierce Hill Rd. east to the Morrill town line, ditches should be cleared and stabilized. Where ditches exceed 10% running slope, angular riprap should be installed to stabilize ditches and discourage erosion. Ditch turnouts, stabilized with riprap and a stone spreader, may be installed every 100 LF where possible, and coordinated with adjacent landowners.

Additionally, the twin culverts approximately 0.4 miles west of the Pierce Hill Rd. intersection require maintenance to clear sediment and stabilize the inlets and outlets with angular riprap. The Town may consider increasing the diameter of these culverts or installing an additional bypass culvert ~50 LF west to convey water in storm events.

Inspection criteria:

PASER rating: 2 (Poor)

Establish Crown: Yes

Establish ditch: Yes

Erosion in road: 3(Moderate)

Potholes: 4 (Advanced)

Ruts: 3 (Moderate)

Grade shoulders: Yes

Resurface: Yes

Clear ditch: Yes



Morrill Road, typical condition



Morrill Road, typical condition

New Ireland Road

Observed Conditions – 4-22-25

New Ireland Road is a primitive, single-lane road in south Montville, extending northeast 0.16 miles from Route 3 to the dead end, and serves approximately 4 residences.

In general, New Ireland Road is characterized by flat to rolling running slopes and has a fair cross-section; crown and superelevation were observed at the time of inspection. Surface material has been pushed to the shoulders, creating a bermed shoulder and interrupting surface drainage. Potholes were observed within the first 0.1 miles, where the road cross section was the flattest. Elsewhere, ditching and drainage appeared adequate for the road's use.



New Ireland Road looking west, typical of first 0.1 mile

Recommendations

Regular grading, shoulder, and ditch maintenance should be conducted along New Ireland Road. Additionally, Acorn recommends that the first 0.1-miles of the roadway be resurfaced with 3-4" of suitable surface gravel, superelevated to drain to the south, and roller-compacted. Prior to resurfacing, the existing road should be scarified. It may be possible with a grader to salvage surfacing gravel which has been pushed into the shoulder to reduce material import.



New Ireland Road looking southwest, typ.

Inspection criteria:

PASER rating: 4 (Good)

Potholes: 2 (Minor)

Ruts: 1 (Minimal)

Grade shoulders: Yes

North Ridge Road

Observed Conditions – 4-23-25

North Ridge Road lies in Center Montville and is the Town's longest gravel through road, extending north 3.43 miles from Route 3 to Center Road.

North Ridge Road is characterized by rolling to steep running slopes and a flat roadway cross-section, and minimal crown and ditching were observed at the time of inspection. Moderate ruts and potholes were observed at the time of inspection, particularly in the 1.5 miles south of Hannan Rd., which was generally more shaded. The road surface is wide; ditching was generally present but shallow and was interrupted by ledge outcrops in some areas. Additionally, it was evident that users travel this road at a high rate of speed, and potholes in the center of the road push drivers toward the edge of the road.

Recommendations

Where potholes are persistent, a total of ~1 mile of North Ridge Road should be resurfaced with 3-4" of suitable surface gravel, particularly along the south end, and at the dip in the road near address #636 in the north end. Prior to resurfacing, the existing road should be scarified. The entire length of road should be graded to establish a strong crown, and roller compacted. It may be possible with a grader to salvage surfacing gravel which has been pushed into the shoulder to reduce material import. Bermed material along the shoulders should be removed, and shoulders should be graded to allow water to drain off the roadway surface and away from the road base.

Regular ditch maintenance should be conducted to reestablish and deepen ditches, and ledge removal in the east shoulder of the road at two areas about 0.75 miles north of the Route 3 intersection would improve safety and establish a consistent ditchline. The road may be narrowed slightly as deemed appropriate by the Town to allow deeper ditching within the ROW. The Town may consider tree removal within the ROW in select areas along the southern 1.5 miles of road, which are generally more shaded. Acorn did not observe evidence of significant ruts or softening of the road base, but understands from the Town that areas near the intersection with Center Road often experience significant pumping during spring thaw. If desired by the Town, select areas could be reconstructed with a French drain, "rock sandwich", or similar drainage enhancement, outletted to the ditch to move water away from the road base.

Inspection criteria:

PASER rating: 3 (Fair)
Establish Crown: Yes
Potholes: 3 (Moderate)
Ruts: 3 (Moderate)
Clear ditch: Yes

Grade shoulders: Yes
Resurface: Yes
Clear ditch: Yes



North Ridge Road looking north, typical section



North Ridge Road looking south, typical section

North Trotting Park Road

Observed Conditions – 4-23-25

North Trotting Park Road lies in south Montville, extending southeast 1.01 miles from Center Rd. to the dead end, and serves approximately 10 residences and Camp NEOFA.

In general, North Trotting Park Road is characterized by flat to rolling running slopes and a flat roadway cross-section; minimal crown and ditching were observed at the time of inspection. Minor ruts and moderate potholes were observed. Numerous sections of road sit below existing grade, and shoulders were bermed. It was evident that surface material has been pushed to the shoulders over time and that water is held on the road surface.

Recommendations

North Trotting Park Road should be resurfaced with 6-8" of suitable surface gravel to raise the road surface elevation above surrounding grade, graded to establish a strong crown, and roller compacted. Along the entire road, bermed material at the shoulders should be removed to allow water to drain off the roadway surface. If investment in raising the road is not desired, stabilized turnouts or cuts in the shoulder should be created at low points in the road, which may require a level rod/survey equipment, or observation during heavy rain, to accurately determine. Where possible, ditches should be created to drain the road base and reduce rutting.

Inspection criteria:

PASER rating: 3 (Fair)
Establish Crown: Yes
Establish Ditch: Yes
Potholes: 3 (Moderate)
Ruts: 2 (Minor)



North Trotting Park Road looking west, typical condition



North Trotting Park Road looking east, typical condition

Roadway is trenched: Yes
Grade shoulders: Yes
Resurface: Yes

Peavey Town Road – end section

Observed Conditions – 4-22-25

Peavey Town Road's end section lies in southwest Montville, extending from the Sheepscot River bridge northwest to the Palermo town line. It is Acorn's understanding that this section of road serves one structure in the northeast corner of Palermo, and Acorn is not aware if the structure is inhabited. This section of Peavey Town Road once connected to Cellar Kitchen Road in Freedom.

In general, the end 0.55 miles of Peavey Town Road is an unimproved, primitive double-track trail, and is traversable only by high-clearance vehicles. The road sits at or below surrounding grade, with ditches absent.

Recommendations

As deemed appropriate or necessary by the Town, Peavey Town Road should be reconstructed with a full-depth gravel road profile to sit above existing grade, and be graded with positive crown or superelevation. If significant investment is not desired, areas of significant failure, totaling ~0.2 miles, may receive 6-8" of compacted surface gravel to facilitate emergency access.

Inspection criteria:

PASER rating: 1 (Failed)

Establish Crown: Yes

Establish Ditch: Yes

Potholes: 5 (Excessive)

Ruts: 5 (Excessive)

Roadway is trenched: Yes

Grade shoulders: Yes

Reconstruct: Yes



Peavey Town Road, end section, typical condition where passable



Peavey Town Road, end section, typical ruts

Peavey Town Road – main section

Observed Conditions – 4-22-25

The main section of Peavey Town Road stretches approximately 1.24 miles northwest, from the intersection with Route 220 to a point in the road past address #215 where recent roadway improvement began.

In general, this portion of Peavey Town Road is characterized by flat to rolling running slopes and a flat, wide roadway cross-section; minimal crown was observed at the time of inspection. Advanced potholes and minor ruts were observed along much of the road. Much of the roadway is elevated above surrounding grade or ditched, but ditches are generally shallow with woody growth. Surface material has been pushed to the shoulders and ditches, and some interruption of surface drainage was evident. Additionally, it was evident that potholes in the center of the road push drivers toward the edge of the road.

Recommendations

This section of Peavey Town Road should be resurfaced with 3-4" of suitable surface gravel, crown or superelevation (where appropriate) established, and roller compacted. Prior to resurfacing, the road should be scarified to remove potholes. It may be possible with a grader to salvage surfacing gravel which has been pushed into the shoulder to reduce material import. Bermed material along the shoulders should be removed, and shoulders should be graded to allow water to drain off the roadway surface and away from the road base. Regular ditch maintenance should be conducted to reestablish, clear, and deepen ditches. In consideration of low traffic volumes, the road may be narrowed as deemed appropriate by the Town to allow deeper ditching within the ROW. Particular attention should be paid to establishing positive drainage – recommend superelevation to the inside of the curve and deeper ditching – at the intersection with Twitchell Hill Road.

Inspection criteria:

PASER rating: 2 (Poor)
Establish Crown: Yes
Establish Ditch: Yes
Potholes: 4 (Advanced)
Ruts: 1 (Minimal)



Peavey Town Road looking east, main section near Rt 220, typical condition



Peavey Town Road, main section, looking east at Twitchell Hill Rd. intersection2

Grade shoulders: Yes
Resurface: Yes
Clear ditch: Yes

Peavey Town Road – middle section

Observed Conditions – 4-22-25

The middle section of Peavey Town Road stretches approximately 0.82 miles northwest, from near address #215 to the Sheepscot River bridge. Acorn understands that recent investment has been made to resurface and ditch this section of Peavey Town Road

In general, this portion of Peavey Town Road is characterized by rolling to steep running slopes and generally deep ditches, as well as adequate crown and surface drainage. In general, ditches were shallower downhill (north) of address #238, down the long hill to the Sheepscot crossing.

Recommendations

If investment is desired along this section of Peavey Town Road, light ditching to deepen the ditches north of address #238 may allow for more snow storage along this section of road and allow spring runoff to access the ditches, reducing road surface erosion. Overall, this section of road was in good condition, but recent ditching had not been stabilized and was highly susceptible to erosion. Whenever ditch maintenance is performed, exposed earth should be stabilized with vegetation, bark mulch, jute mat, or similar non-erosive cover material to protect the ditch invert and side slopes from erosion.

Inspection criteria:

PASER rating: 4 (Good)

Establish ditch: Yes

Erosion in ditch: 1 (Minimal)

Erosion in road: 1 (Minimal)

Ruts: 1 (Minimal)

Grade shoulders: Yes

Clear ditch: Yes



Peavey Town Road, middle section, looking northwest, shoulder erosion present



Peavey Town Road, middle section, looking northwest, recent ditching not stabilized

Penney Road

Observed Conditions – 4-22-25

Penney Road is a through road in northwest Montville, running north-south for 1.03 miles between Goosepecker Ridge Road and Halldale Road. At the Goosepecker Ridge Rd. intersection, both roads briefly enter the Town of Freedom, and Acorn understands that negotiation of maintenance responsibilities between the two towns is ongoing.

In general, Penney Road is characterized by flat to rolling running slopes and a flat roadway cross-section, and minimal crown or superelevation was observed at the time of inspection, especially closest to the intersection with Goosepecker Ridge Road. Moderate potholes and ruts were observed along much of the road. Much of the roadway is elevated above surrounding grade or ditched, but ditches are generally shallow with woody growth, and the road base appeared poorly-drained in some locations. Additionally, it was evident that potholes in the center of the road push drivers toward the edge of the road.

Recommendations

Penney Road should be regraded to establish a strong crown, and roller compacted. Ditch and shoulder maintenance should be conducted along the length of the road to clear and deepen the ditches, improving drainage and snow storage capacity. Particular attention should be paid to ditch capacity and snow maintenance along the field north of Grant Road, where it appeared that runoff from spring snowmelt could not access the ditch, and ran down the snowbank along the road, eroding the road surface. Ditching should be coordinated with culvert maintenance or replacement at approximately 2 culverts within the first 0.1-miles of road south of the Goosepecker Ridge Rd. intersection, where culvert elevations should be lowered to allow a deeper ditch and to reduce erosion and perching at the culvert outlets. Culvert inlets and outlets should be stabilized with angular riprap.

Additionally, a 300 LF section of roadway south of the Goosepecker Ridge Road intersection was saturated and pumping at the time of inspection and should be reconstructed, with the road surface graded or superelevated toward a deeper ditch on the inside of the curve. Reconstruction could be accompanied by the installation of French drain, “rock sandwich”, or similar drainage enhancement, outletted to the ditch to move water away from the road base. Acorn understands that maintenance responsibility for this portion of Penney Rd. is under negotiation between Montville and the Town of Freedom.

Inspection criteria:

PASER rating: 3 (Fair)
Establish Crown: Yes
Erosion in Road: 2 (Minor)
Potholes: 3 (Moderate)

Ruts: 3 (Moderate)
Grade shoulders: Yes
Clear ditch: Yes



Penney Road looking north, typical condition



Penney Road looking south, shoulder erosion present south of Grant Rd.

Pierce Hill Road

Observed Conditions – 4-23-25

Pierce Hill Road is a 1.5-lane road in east Montville, extending west 0.24 miles from Morrill Road to the dead end, and serves approximately 4 residences.

In general, Pierce Hill Road is characterized by rolling running slopes and has a fair cross-section; crown and superelevation were observed at the time of inspection. Surface material has been pushed to the shoulders along the westernmost 0.1 miles of road, which is generally constructed at grade with limited ditches. Potholes were observed within the westernmost 0.1 miles, where the road cross section was the flattest. Elsewhere, ditching and drainage appeared adequate for the road's use.



Pierce Hill Road looking east, typical view

Recommendations

Routine grading, shoulder, and ditch maintenance should be conducted along Pierce Hill Road. If investment is desired, the westernmost 0.1-miles of the roadway may be resurfaced with 3-4" of suitable surface gravel to bring the road surface above surrounding grade, crowned, and roller compacted. Prior to resurfacing, the existing road should be scarified to remove potholes. It may be possible with a grader to salvage surfacing gravel which has been pushed into the shoulder to reduce material import.



Pierce Hill Road looking west, typical view

As funding allows, the stone stream crossing near the intersection with Morrill Road may be replaced with a longer and wider span, or embedded culvert, aligned to the run of the stream and sized appropriately for flood events. Evidence of prior roadway overtopping and shoulder erosion were observed at the crossing. The road shoulders at the inlet and outlet of the new structure should be stabilized with angular riprap, but the streambed should be reconstructed with parent material.

Inspection criteria:

PASER rating: 4 (Good)

Establish Crown: Yes

Potholes: 2 (Minor)

Ruts: 1 (Minimal)

Clear ditch: Yes

Prescott Hill Road

Observed Conditions – 4-23-25

The section of Prescott Hill Road (through road) maintained by Montville is approximately 0.16 miles long and extends from Route 173 in South Montville south to the Liberty town line. Approximately one residence in Montville is served by this section of Prescott Hill Road.

In general, Montville's portion of Prescott Hill Road is characterized by flat running slopes and a flat roadway cross-section, and minimal crown and ditching were observed at the time of inspection. Surface and base drainage appeared poor, with ditches dominated by woody vegetation at the time of inspection. Recent maintenance/surfacing with uniformly graded $\frac{3}{4}$ " bank run stone was observed at the time of inspection, and Acorn understands the maintenance was not performed by the Town of Montville. The new surfacing material was loose, and it was evident that older surfacing material has been pushed to the shoulders over time, possibly during winter plowing activities.

Recommendations

Prescott Hill Road should be resurfaced with 3-4" of suitable surface gravel, crown established, and the surface roller compacted. Regular ditch maintenance should be conducted to reestablish, clear, and deepen ditches. Particular attention should be paid to the intersection with Route 173, which is flat with numerous potholes and is wide with large radii. Narrowing the road entrance slightly may help slow traffic turning onto Prescott Hill Road and may assist with surface drainage. The Town may consider coordinating with MaineDOT to maintain or lower the culvert beneath Route 173 at the intersection, which appears to be heaving.

Inspection criteria:

PASER rating: 3 (Fair)

Establish Crown: Yes

Potholes: 2 (Minor)

Loose Surface: Yes

Resurface: Yes

Clear ditch: Yes



Prescott Hill Road looking north, typical condition



Prescott Hill Road looking northeast at intersection

Randlett Road

Observed Conditions – 4-22-25

Randlett Road is a through road in north Montville, running east-west for 0.37 miles between Route 220 and Halldale Road.

Randlett Road is characterized by rolling running slopes and has a fair cross-section; crown and superelevation were observed at the time of inspection. In some areas, it was evident that surface material had been pushed to the shoulders, possibly during winter plowing activities, and surface runoff was not able to reach the ditches, leading to minor shoulder and road surface erosion along the steep climb. Ditches were generally adequately-sized, but were not stabilized and exhibited moderate erosion at the time of inspection.



Randlett Road looking west, typical perched culvert and ditch erosion

Recommendations

Randlett Road should receive routine grading to preserve the existing crown. Where ditches exceed 10% running slope, angular riprap should be installed to stabilize ditches and discourage erosion. Ditch turnouts, stabilized with riprap and a stone spreader, may be installed every 100 LF where possible, and coordinated with adjacent landowners. Where ditch running slopes are shallow, ditches should be mulched and vegetated to establish permanent stabilization.

Additionally, driveway culverts at the auto service shop and the residence uphill should be reset to eliminate perched outlets, which are contributing to ditch erosion. Culvert inlets and outlets should be stabilized with angular riprap. One cross culvert passing beneath Randlett Road just east of address #71 should be maintained or replaced to restore drainage to the north side of the road and the residence's lawn at the corner with Halldale Road. Localized surface gravel may be installed in this area, and the road surface superelevated to the south to discourage the localized potholes observed during inspection.



Randlett Road looking west, typical ditch erosion

Inspection criteria:

PASER rating: 4 (Good)

Establish Ditch: Yes

Erosion in Ditch: 3 (Moderate)

Erosion in Road: 2 (Minor)

Potholes: 2 (Minor)

Grade shoulders: Yes

Sewall Road

Observed Conditions – 4-22-25

Sewall Road is a primitive, single-lane road in south Montville, extending north 0.08 miles from Route 3 to Kingdom Road. Acorn understands that Sewall Road is a summer-only road and is primarily kept open to allow convenient circulation for USPS rural delivery staff accessing the Kingdom Road mailboxes at the corner of Sewall Road and Kingdom Road.

In general, Sewall Road is characterized by flat running slopes and a flat roadway cross-section, and minimal crown and ditching were observed at the time of inspection. The road sits at or below surrounding grade, and advanced potholes were observed at the time of inspection. The roadway was in a poor to failed condition at time of inspection.

Recommendations

If deemed necessary by the Town, Sewall Road may be reconstructed along its entire length to bring the roadway surface above existing grade and remove potholes, particularly at the Kingdom Road intersection. The road surface should be superelevated toward the west, and particular attention should be paid to creating positive surface drainage at the Kingdom Road intersection. If limited investment is desired by the Town, Sewall Road may be resurfaced with 3-4" of suitable surface gravel, compacted, and superelevated to drain toward the west.

Inspection criteria:

PASER rating: 1 (Failed)
Establish Crown: Yes
Potholes: 4 (Advanced)
Roadway is trenched: Yes
Grade shoulders: Yes
Reconstruct: Yes
Clear ditch: Yes



Sewall Road looking north, typical condition



Sewall Road looking north at Kingdom Road intersection, typical condition

South Trotting Park Road

Observed Conditions – 4-23-25

South Trotting Park Road is a primitive, single-lane drive in south Montville, extending north 0.09 miles from Choate Road to the dead end, and serves approximately 1 residence.

South Trotting Park Road is characterized by flat running slopes and a flat roadway cross-section, and minimal crown and ditching were observed at the time of inspection. The road sits at or below surrounding grade and minor potholes and moderate ruts were observed at the time of inspection. Ditching was generally absent, and where existing, shallow and vegetated, suggesting a saturated road base condition.

Recommendations

South Trotting Park Road should be resurfaced with 6-8" of suitable surface gravel to raise the roadway surface, superelevated to drain to the west, and roller compacted. If the Town and abutters are agreeable to a slightly narrower road condition, it may be possible to raise the road surface elevation slightly by salvaging gravel from the wider road profile to reduce material import. A ditch should be established along the west side of the road to drain the road base and outletted into a stabilized ditch runout/turnout north of the address #19 home driveway.

Inspection criteria:

PASER rating: 2 (Poor)

Establish Crown: Yes

Establish Ditch: Yes

Potholes: 2 (Minor)

Ruts: 3 (Moderate)

Roadway is trenched: Yes



South Trotting Park Road looking south, typical condition



South Trotting Park Road looking north, typical condition

Grade shoulders: Yes

Resurface: Yes

Clear ditch: Yes

Spring Hill Road

Observed Conditions – 4-22-25

Spring Hill Road lies in southwest Montville, extending east 0.4 miles from Route 220 to the dead end, and serves approximately 10 residences.

Spring Hill Road is characterized by flat to rolling running slopes and a flat roadway cross-section; minimal crown and ditching were observed at the time of inspection. Moderate potholes and minimal ruts were observed at the time of inspection, and the westernmost 0.2 miles of road were wide with poor surface drainage. Ditching was fair along the eastern 0.2 miles of road, although vegetated, and was generally well-drained. Shoulders were bermed in some areas, with evidence that surface material has been pushed to the shoulders over time.



Spring Hill Road looking west near dead end

Recommendations

The western 0.2 miles of Spring Hill Road should be resurfaced with 3-4" of suitable surface gravel, crown established, and the surface roller compacted. The existing road surface should be scarified to remove potholes prior to resurfacing. The western 0.2 miles of the road are wide and may be narrowed as deemed appropriate by the Town, and salvaging road material may reduce the need for material import along this western 0.2 mile length. Along the entire length of road, routine ditch maintenance should be conducted to reestablish, clear, and deepen ditches. Bermed material along the shoulders should be removed, and shoulders should be maintained to allow water to drain off the roadway surface and away from the road base.



Spring Hill Road looking west near Route 220 intersection

Inspection criteria:

PASER rating: 3 (Fair)

Establish Crown: Yes

Potholes: 3 (Moderate)

Ruts: 1 (Minimal)

Grade shoulders: Yes

Resurface: Yes

Clear ditch: Yes

Stewart Road – main section

Observed Conditions – 4-22-25

The main section of Stewart Road stretches approximately 0.31 miles southeast, from the intersection with Morse Road to a turnaround in the road east of address #48 where the road narrows.

The main section of Stewart Road is characterized by flat to rolling running slopes and a flat roadway cross-section; minimal crown and shallow ditching were observed at the time of inspection. Minor potholes and minimal ruts were observed at the time of inspection, and longitudinal erosion along the road surface was observed at the steepest climb, suggesting that snowmelt could not access the ditches during thaw. Shoulders were bermed in some areas, and the 0.15 miles closest to Morse Road were wide, with evidence that surface material has been pushed toward the shoulders over time.



Stewart Road looking east, typical longitudinal erosion



Stewart Road looking west toward Morse Road

Recommendations

Stewart Road should be regraded to reestablish a crowned roadway cross-section and improved drainage. At the 0.15 miles closest to Morse Road, material which has been pushed to the road shoulders and ditch may be salvaged to help create a strong crown, elevate the road surface above groundwater, and slightly reduce the width of the road. Bermed material along the shoulders should be removed, and shoulders should be graded to allow water to drain off the roadway surface and away from the road base. Establishing a ditch along the north side of the road beginning at address #48 frontage and extending west toward Morse Rd.

would reduce the likelihood of runoff eroding the road surface and shoulder in this area and would improve drainage of the road base and reduce rutting. Establishing a ditch in this area may require some ledge removal.

Inspection criteria:

PASER rating: 3 (Fair)
Establish Crown: Yes
Establish Ditch: Yes
Erosion in Road: 2(Minor)
Potholes: 2 (Minor)

Ruts: 1 (Minimal)
Grade shoulders: Yes
Clear ditch: Yes

Stewart Road – end section

Observed Conditions – 4-22-25

Stewart Road's end section extends east from the gravel turnaround on the main section of Stewart Road east approximately 0.14 miles to a cemetery on the south side of the road. It is Acorn's understanding that this section of road serves one residence abutting State of Maine land (Frye Mountain State Game Management Area), and it is unclear who is responsible for maintenance of the section of road east of the cemetery. This section of Stewart Road once connected to Walker Ridge Road in the SGMA.

In general, the end 0.14 miles of Stewart Road understood by the Town to be their maintenance responsibility is an unimproved, primitive single-lane road, and is not easily traversable by low-clearance vehicles. The road sits at or below surrounding grade, with ditches absent and surface drainage poor.



Stewart Road, end section, facing east

Recommendations

The Town's portion of the end of Stewart Road should be reconstructed along its length to bring the roadway surface above existing grade, provide a stable, well-drained gravel base, and provide positive surface drainage. The road surface should be superelevated toward the north. If limited investment is desired by the Town, the road may be resurfaced with 3-4" of suitable surface gravel, compacted, and superelevated to drain toward the north. Whether reconstruction or resurfacing is desired, the existing road surface should be scarified prior to reconstruction to remove potholes and prepare the subgrade for additional material.

Inspection criteria:

PASER rating: 1 (Failed)
Establish Ditch: Yes
Erosion in Road: 2(Minor)
Potholes: 5 (Excessive)
Ruts: 3 (Moderate)

Roadway is trenched: Yes
Grade shoulders: Yes
Reconstruct: Yes
Clear ditch: Yes

Thompson Road

Observed Conditions – 4-22-25

Thompson Road lies in south Montville, running east-west for 0.6 miles between Route 3 and Haystack Mountain Road.

Thompson Road is characterized by flat to rolling running slopes and a flat roadway cross-section, and minimal crown or superelevation was observed at the time of inspection, especially closest to the intersection Route 3, where numerous potholes were observed. In general, ditches were moderately vegetated and shallow, and it was evident that surface material had been pushed to the shoulders over time, possibly during winter plowing activities.

Recommendations

It is recommended that routine ditch maintenance be conducted on Thompson Road to remove vegetation, and that a strong crown be reestablished to improve surface drainage. Some ditching may require coordination with electrical and telecom utilities, as some utility poles lie within the existing run of the ditch. Additionally, Acorn recommends that approximately 100 LF roadway at the Route 3 intersection be resurfaced with 3-4" of suitable surface gravel, superelevated to drain northeast, and roller-compacted. Along the entire length of road, bermed material along the shoulders should be removed, and shoulders should be graded to allow water to drain off the roadway surface and away from the road base. It may be possible with a grader to salvage surfacing gravel which has been pushed into the shoulder to reduce material import.

Inspection criteria:

PASER rating: 4 (good)

Establish Crown: Yes

Erosion in Road: 2(Minor)

Potholes: 2 (Minor)

Ruts: 1 (Minimal)

Grade shoulders: Yes

Resurface: Yes

Clear ditch: Yes



Thompson Road looking west, typical ditch condition



Thompson Road looking east

Twitchell Hill Road – main section

Observed Conditions – 4-22-25

The main section of Twitchell Hill Road stretches approximately 0.62 miles north of the intersection with Peavey Town Road and serves approximately 6 residences.

In general, the main section of Twitchell Hill Road is characterized by flat to steep running slopes and a flat roadway cross-section, and minimal crown was observed at the time of inspection. Moderate potholes and minor ruts were observed along much of the road, and some longitudinal erosion was observed on the road surface. Much of the roadway was elevated above surrounding grade or ditched, but ditches were generally shallow with woody growth. Additionally, it was evident that surface material has been pushed to the shoulders, possibly during winter plowing activities.

Recommendations

The main portion of Twitchell Hill Road should be should be regraded to establish a strong crown, and roller compacted. Existing potholes along the southern 0.25 miles of road should be removed by scarification during grading, and addition of supplemental surface gravel in some areas may be required. Regular shoulder maintenance should be performed and regular ditch maintenance should be conducted to clear and reestablish the run of the ditch, remove woody vegetation, and increase snow storage capacity. At steeper sections, angular riprap may be installed to stabilize ditches >10% running slope and discourage erosion. Along both sides of Twitchell Hill Road, reestablishing a deep ditch may require ledge removal in some areas along the steep climb. In lieu of creating a deeper ditch, the driving surface could be narrowed as appropriate to low traffic volumes and raised above grade with 3-4" of suitable surface gravel.

Inspection criteria:

PASER rating: 3 (Fair)
Establish Ditch: Yes
Erosion in Road: 2(Minor)
Potholes: 3 (Moderate)

Ruts: 2 (Minor)
Grade shoulders: Yes
Clear ditch: Yes



Twitchell Hill Road, main section, looking south



Twitchell Hill Road, main section, looking north

Twitchell Hill Road – end section

Observed Conditions – 4-22-25

The end section of Twitchell Hill Road extends northeast approximately 0.51 miles from the height of land on the main portion of Twitchell Hill to the dead end. This section of road serves approximately 3 residences.

In general, the end 0.51 miles of Twitchell Hill Road is an unimproved, primitive single-lane road, and was not easily traversable by low-clearance vehicles at the time of inspection. The road sits at or below surrounding grade, with ditches absent, advanced ruts and potholes present, surface and base drainage poor, and native silty clays comprising the road base in some areas. Some recent gravel placement and light ditching were observed.



Twitchell Hill Road, end section, typical view at recent ditching

Recommendations

Per Town and resident discretion, the end of Twitchell Hill Road should be reconstructed along its length to bring the roadway surface above existing grade, provide a stable, well-drained gravel base, provide positive surface drainage, and improve emergency vehicle access. The road surface should be superelevated, primarily toward the southeast, and a ditch should be created along the east shoulder of the road, which may require ledge removal in some areas. If limited investment is desired by the Town, the road may be spot repaired by reconstructing approximately 0.1 miles of road in select low areas of poor native soil. In all other areas, the road should be resurfaced with 3-4" of suitable surface gravel, compacted, and superelevated to drain toward the north. In all low, soft areas, poorly-drained native soils should be removed prior to reconstruction.



Twitchell Hill Road, end section, typical view of road constructed on poor native soils.

Inspection criteria:

PASER rating: 1 (Failed)
Establish Crown: Yes
Establish Ditch: Yes
Potholes: 5 (Advanced)

Ruts: 3 (Moderate)
Roadway is trenched: Yes
Reconstruct: Yes
Clear ditch: Yes