Report and Recommendations of the 2012 Westford Road Committee

December 7, 2012

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APPENDICES

I. 2012 ROAD COMMITTEE INTRODUCTION

The Westford Road Committee reconvened in 2012 after an unusually bad mud season that included the closure of several roads and significant changes to the school bus routes during the closures. The Committee approached the Selectboard with their concerns and the Selectboard agreed to appoint the 2012 Westford Road Committee. This Committee had a much different focus than the last 3 Road Committees. There was a lot of communication with the Selectboard about what items the Committee would focus on and during the process, the Committee agreed to address specific requests that the Selectboard brought up. These issues included:

- Road standards
- Winter sand analysis
- Mud season policy
- Heavy truck traffic
- Review of road maintenance practices by Vermont Local Roads
- Paving analysis
- Road foreman hiring assistance

All of these issues were researched and discussed by the Committee and are summarized in this report. This report concludes the Committee's work for 2012, although the Committee will continue to serve at the request of the Selectboard and be a community resource for road related issues.

This report is not intended to replace either the 1999, 2004 or 2010 Westford Road Plans. Rather, it is intended to build upon the work and road improvements that have been implemented as a result of the three previous plans. As a result of the implementation of many of the recommendations from the previous plans, the overall condition of Westford's roads has improved, and continues to improve.

II. HISTORY

In 1998, following a very rainy and prolonged mud season, the Westford Selectboard appointed the first road committee. The task of that road committee was "…to identify existing road maintenance policies and procedures and to make recommendations to the Selectboard for improving the Westford road maintenance program…." (1999 Westford Road Plan, pg 2). The 1998 Road Committee developed a plan and presented it to the Westford Selectboard in February 1999. The plan identified road maintenance and repair areas to be completed within five (5) years. The Selectboard adopted the 1999 Westford Road Plan on April 12, 1999.

In March 2003, the Westford Selectboard appointed the second road committee. Its focus was to: 1) review and update the Westford Road Plan adopted on April 12, 1999; 2) identify highway problems and new construction projects to be completed during the next five years; 3) make recommendations for budget items to be considered by the Selectboard for inclusion in the town budget; 4) make recommendations regarding road repair/maintenance standards as well as other general road related policies. The 2003 Road Committee developed a plan and presented it to the Westford Selectboard in February 2004 (2004 Westford Road Plan). That plan evaluated the work that was completed on the priority areas identified in the 1999 Westford Road Plan, identified maintenance and repair areas to be completed within five (5) years, evaluated budget items, and made recommendations regarding vehicular speed and safety. The Selectboard adopted the plan on April 27, 2004.

In the spring of 2010, the Westford Selectboard appointed the 2010 Westford Road Committee. Much like the directives to the previous road committees, the Westford Selectboard's directive to the 2010 Road Committee was again to 1) review and update the Westford Road Plans adopted on April 12, 1999 and April 27, 2004; 2) identify highway problems and new construction projects to be completed during the next five years; 3) make recommendations for budget items to be considered by the Selectboard for inclusion in the town budget; 4) make recommendations regarding road repair/maintenance standards as well as other general road related policies. The 2010 Road Committee discussed and considered these issues. The Selectboard discussed the plan on April 14, 2011 but it appears that it was never formally adopted.

II. ROAD STANDARDS

A. Vermont Road and Bridge Standards

The State of Vermont has produced *Town Road and Bridge Standards* in an effort to provide local municipalities with minimum standards for the construction, maintenance and repair of local roads, both public and private. In 2001, the Westford Selectboard adopted the then existing *Town Road and Bridge Standards*. Those standards were modified and expanded during the 2009-2010 legislative session. A copy of the new standards is attached as **Appendix A**. The first two pages contain a summary of the history and benefits of the standards, and the third page contains frequently asked questions. The last three pages are the actual standards and certification.

The standards recommend a minimum level of maintenance and repair for local roads which are the responsibility of small municipal governments. This helps insure consistency on local roads throughout the state. The ultimate goal of the standards is to improve safety, reduce life cycle costs including the need for repeated grading and calcium chloride application, and address environmental concerns.

As explained on the first two pages of **Appendix A**, a municipality must adopt the new standards, or stronger standards, in order to be eligible for certain State and FEMA benefits. The Road Committee recommends that the Selectboard adopt the current *Town Road and Bridge Standards* attached hereto as **Appendix A**. In addition to those standards, the Road Committee also recommends that Westford include as a standard the installation of appropriate road fabric for all new roads and major reconstruction of existing roads. We also recommend a standard that calcium chloride be applied to all newly graded roads.

Adoption of the Town Road and Bridge Standards will make funding opportunities available to Westford. However, the Selectboard must also plan for implementation of the standards annually and the cost of implementing those standards must be accounted for in each budget. Otherwise, we risk adopting standards that we do not, or cannot, implement.

B. Winter Sanding Standard

Recently, the Road Committee submitted a *Road Sand Report* to the Selectboard, which compared the winter sand Westford currently uses, with winter sand available from other suppliers. The Road Sand Report is attached as **Appendix B**. The report shows that the winter sand Westford previously used contained too many fines and dirt. The report also shows that supplies of coarser winter sand, which is better suited to Westford roads and winter conditions, are available locally. In addition, as the attached report shows, Westford spreads more winter sand per mile on its roads than most other municipalities that have dirt roads. This is not necessary and is a waste of material and money.

After comparing the availability and cost of other local supplies of winter sand, the Road Committee recommends that the Selectboard begin purchasing winter sand from A. Nadeau & Company in Johnson. The cost of the sand is about $1.00/ton more than what Westford has used in the past. The Road Committee finds the additional cost reasonable for better product. In addition, the road crew should reduce the amount of sand applied to the roads, when and where appropriate. In order to more accurately monitor the amount of sand being spread, the sanding trucks should be outfitted with gauges that inform the driver how much sand is being applied at any given time. If the road crew reduces the amount of sand spread on the roads in winter, it will minimize, or possibly eliminate, any increase due to buying slightly more expensive sand.

C. Mud Season Policy

Frequently during mud season, several dirt roads in Westford are impassable. This can prevent school buses from transporting students to school. More importantly, it can also significantly impact the ability of fire and rescue vehicles to respond to emergency situations.

The impassable roads during mud season are typically the result of improper road construction and/or substandard base materials. Fixing these roads so that they are passable year-round, will require significant base improvement at multiple locations. This will require capital expenditures over a period of several years.

The Road Committee recommends that the Selectboard set a goal, and establish annual budgets, such that within three years all major through roads (Cambridge, Woods Hollow, Brookside and Old Stage) will be passable, year-round, by standard passenger vehicles, school buses and emergency vehicles. Once these roads have been sufficiently repaired, the focus should shift to repairing other roads that that are significantly affected during mud season, such as Osgood Hill.

D. Heavy Trucks on Dirt Roads

Residents living on Cambridge Road have complained to the Road Committee that when the Town receives a delivery of gravel from its previous supplier (Tatro) the large dump trucks travel to the Westford garage via Cambridge Road from Route 104. There are usually many trucks comprising a delivery. Each of these trucks is over the weight limit allowed on Westford's roads. It also results in massive amounts of dirt, dust and air-borne particulate blowing onto homes and property along Cambridge Road. Heavy trucks also use other through roads as shortcuts, such as Woods Hollow, Old Stage and Brookside.

In order to keep these roads from being further damaged due to overweight trucks, the Road Committee recommends that the Selectboard take two actions: First, instruct all of the Town's suppliers and vendors to stay on only paved roads when making their deliveries. The additional time it may take is insignificant and will greatly help delay deterioration of the roads. Moreover, the Town is paying for the material and delivery, so it should be able to direct how those deliveries occur. Second, place very visible and clearly marked signs at each end of each dirt road identifying the weight limit of the road AND prohibiting through trucks. We believe this will greatly assist in the maintenance of the roads and will reduce the amount of dust and dirt blown onto properties along the roadways.

IV. SUMMARY OF DAVID ANTONE'S REPORT ON WESTFORD ROAD MANAGEMENT

The following observations and recommendations are those of David Antone, Executive Director of Vermont Local Roads Program. David Antone has served seven years as a Public Works Supervisor in charge of the Milton Highway Department and has over 25 years of supervisory experience in road construction and related fields. In addition to the technical advice he offered, his background as a practiced manager allowed him to offer account administrative concerns and review budgetary pressures.

General research and discussion:

Andrew Legg of the Westford Road Committee gave David Antoine an overview of concerns of the road committee and provided budgets and maps. On September 5, David, Andy and Selectboard member Ira Allen did a joint tour of some roads and stopped at the highway department to inspect the road gravel that

is in current use by the Town of Westford. They also viewed a road project where other crushed gravel [1] had been used.

David's observations are based on his research and discussion to date.

1 Crushed gravel is defined as gravel that has been processed thru a crusher. The stone typically has sharp edges.

Technical Concerns:

Gravel Materials -being used in the Town of Westford are in the mid-range of what are considered suitable. If Westford is satisfied with a material that will accommodate grading and hold up only during moderate adverse weather conditions, this would be an acceptable material. However, this is not good material to use when trying to overcome adverse road conditions and extend the life of the road grading. David offered to supply the Road Committee with dozens of written technical resources that will explain why processed crushed gravel produces the best results; he can't find any report that will tell us that Screened Pit Gravel is going to in any way perform as well. In fact, most resources will show that Screened Pit Gravel with round stones has only half the structural performance of a processed crushed gravel with the proper fines added. David identified the gravel as is the biggest obstacle to improving road conditions in Westford.

> David Antone's Recommendation : Westford should switch to a properly processed crushed gravel

Grading Techniques-On the roads that David observed, the grading techniques were inconsistent and left room for some improvement. He suggested that the Westford Highway department take advantage of the specific training on grading techniques offered by Vermont Local Roads. As a part of continuing assistance from Vermont Local Roads, David offered to provide suggestions on how to improve grader operator techniques going forward.

> David Antone's Recommendation: Send staff to Vermont Local Roads course on grading techniques and develop a formal Westford road plan.

Reconstruction Projects/Road Plan-The details that David gathered about Road Construction projects in Westford led him to conclude that while some good measures were applied at the road sub-base they were then compromised by using top gravel which is causing surface breakdowns. In addition, David feels that the Highway Department, Selectboard, and citizens would benefit from a Road Plan that prioritizes roads, defines the maintenance standard, and sets reconstruction goals. It is best to provide the planning with expected outcomes and then spend the reconstruction money.

> David Antone's Recommendation: A formal Westford road plan would solve many issues, save money, create shared expectations, and allow results to be evaluated.

Administrative Issues:

Budget- David reviewed Westford's regular road maintenance gravel and reconstruction budget, and concluded that this is one of the most generous budgets that he has seen to date. With information presented to him, he felt that this budget seemed more than adequate to have produced marked improvement in the roads each year.

> David Antone's Recommendation: For the near future David is confident that roads could be greatly improved without additional budget increases.

Highway Department Policy-
One of the critical decisions by the Highway department involves the use of substandard gravel materials when better material is so readily available at our location.

In addition to road maintenance, David noticed during his road tour and visit to the Highway Garage, that Westford highway department is engaging in a wholesale replacement of plastic road culverts in favor of steel. This is not a practice he would endorse as problems with these culverts are caused by improper installation practices that are easily corrected. The use of steel exclusively is going against current industry trends as major suppliers continue to reduce their on hand inventory of steel culverts. Plastic culverts are significantly cheaper to purchase, last much longer (if properly installed) and reduce the town's culvert budget.

> David Antone's Recommendation: Westford should refrain from future purchases of substandard gravel and should discontinue the practice of using steel road culverts.

Conclusion:

The Westford road system is not reflecting the investment we have been making. Westford Highway Department policies need to be more flexible and cognizant of industry practices and standards. Westford needs to adopt a formal Road Plan with priorities and measurable expectations.

V. SHOULD WE PAVE ROADS IN WESTFORD?

The decision to pave is a matter of trade-offs. Paving helps to seal the surface from rainfall, and thus protects the base and subgrade material. It eliminates dust problems, has high user acceptance because of increased smoothness, and can accommodate many types of vehicles such as tractor-trailers that do not operate as effectively on surfaced roads.

In spite of the benefits of paved roads, well-maintained gravel roads are an effective alternative. Gravel roads have the advantage of lower construction and sometimes lower maintenance costs. They may be easier to maintain, requiring less equipment and possibly lower operator skill levels. Potholes can be patched more effectively. Gravel roads generate lower speeds than paved surfaces. Another advantage of the unpaved road is its forgiveness of external forces. These would include vehicles with gross weights of 100,000 pounds or more. Such vehicles would damage a lightly paved road so as to require resealing, or even reconstruction. The damage on a gravel road would be much easier and less expensive to correct. There is nothing wrong with a good gravel road. Properly maintained, a gravel road can serve general traffic adequately for many years.

In Westford case more research and a few questions need to be answered before we decide to pave any road in the town. Before we pave the following steps will need to happen.

1. Inventory the roads with high traffic volumes.
2. Assess the condition of the roads.
3. Select a road management plan.
4. Determine overall needs.
5. Establish priorities.

Another important item we need to consider is the average daily traffic volumes (ADT) used to justify paving generally range from a low of 50 vehicles per day to 400 or 500.When traffic volumes reach this range, serious consideration should be given to some kind of paving. Cambridge road has a 2010 ADT of

500 this count was taken just south of plains road. Near Huntley road it jumps to 1200. Brookside Road 2010 ADT is at 460 near the school. Woods Hollow just north of Chapin road has a 2011 ADT of 880. Old stage road just before Rollin Irish road has an ADT 2006 of 950. Most of these counts are out of date and will be higher if the counts were done today.

Traffic volumes alone are merely guides. Types of traffic should also be considered. Different types of traffic (and drivers) make different demands on roads. The functional importance of the highway should also be considered. Generally speaking, if the road is a major road, it probably should be paved before residential or side roads are paved. On the other hand, a residential street may be economically sealed or paved while a road with heavy truck usage may best be surfaced with gravel and left unpaved until sufficient funds are available to place a thick load-bearing pavement on the road. Plains Road may be candidate here with a 2012 ADT of 287.

Besides the items mentioned above, we may also want to consider proper town standards, drainage improvements, costs of road preparation, comparing pavement costs, pavement life, maintenance costs, comparing vehicle operation costs and finally safety.

Another alternative to asphalt pavement is chip sealing. Chip sealing is a process where a single layer of asphalt binder is sprayed down on the road followed by evenly spread aggregate to create a layer approximately one stone thick (10 millimeters). Chip sealing is a cost effective surfacing option for roads carrying less than a 1,000 vehicles a day, making it a good choice for many rural local roads. As of 2011, a three-layer chip seal costs about $150,000 per mile, while a hot mix asphalt surface costs about $240,000 per mile.

Some advantages to chip sealing is the road can remain open during all phases of the work; however, speeds may be reduced and traffic delays may occur. Little prep is needed before starting a chip seal project. A few things that need to be done would be to trim vegetation, clean or establish roadside ditches and add a base rock to ensure that the new chip seal surface has a minimum of six inches of 3/4”-0 rock foundation.

During the chip seal process, two or three separate layers of rock and emulsified asphalt are placed on the road to create a hard driving surface. The process of chip sealing is listed below.

1. While the oil is still hot, a chip spreader follows immediately behind the applicator truck and applies the chips to the road.

2. The road is swept to remove the loose rock.

3. The final shot may be applied weeks after the first shot.

4. The road is then usually swept twice more, but a small amount of loose rock may still be present for some time after that.

Initially, the road looks light gray. As motorists drive on the rock and the road is exposed to normal weather conditions, it becomes more firm. After a few months the surface takes on a darker appearance, looking very similar to a hot mix asphalt surface. A few towns in our area (Milton) have used chip sealing and this process is not new Vermont.

In conclusion before we pave or chip seal any road in town we will need to look at and discuss many of the items listed here then offer up our findings to the general public for their opinion.

Appendix A

Town Road & Bridge Standards

As a result of various legislative actions relating to the Town Highway grant programs, an incentive program was created providing additional funding to municipalities meeting two requirements:

1. adopt minimum codes and standards, (see page 8-4) and;
2. conduct a network infrastructure study (see page 8-6: *Town Highway Infrastructure Study - Guidelines).*

Town Road and Bridge Standards – Adopt Codes and Standards

History: In the spring of 1999, the Federal Emergency Management Agency adopted a new policy which required the adoption of codes and standards before a Public Assistance disaster declaration, in order to be eligible for certain FEMA benefits related to facility upgrades. As a result of that policy change, the Vermont Agency of Transportation and Vermont Emergency Management began working with FEMA, regional planning commissions, the Vermont Local Roads program, the Vermont League of Cities and Towns, and the Vermont Agency of Natural Resources on the development of a standard template of minimum codes and standards. By the summer of 1999, towns began adopting road and bridge codes and standards based on the template developed by this group.

Act 64 of the 2001-2002 Legislative session modified 19 V.S.A. § 309b to include an incentive program which allowed for providing increased State share of funding to municipalities receiving grants under the Town Highway Class 2 Roadway and Town Highway Structures grants programs. In order to receive an additional 10% of State funding under each of these grants programs, municipalities need to meet two requirements. The first requirement was to adopt roadway and bridge codes and standards and the second requirement was to conduct and update a network infrastructure study.

Up until 2011, the only changes related to codes and standards since the development of the original template include a language modification that essentially prohibited a municipality from using a fiscal reason as a basis for modifying the standards for a particular project and the recent requirement to submit an annual certification of compliance. The certification of compliance was implemented following the series of FEMA declarations in 2008, when a number of municipalities that had adopted codes and standards could not produce a copy of their adoption documents when asked by FEMA.

Act 110 of the 2009-2010 Legislative session required that the Vermont Agency of Transportation work with municipal representatives to “revise the Agency’s current recommended town road and bridge standards to include a suite of practical and cost-effective Best Management Practices (BMPs) for the construction, maintenance, and repair of all existing and future town highways in order to address pollution caused by transportation-related stormwater runoff.” Additionally, Act 110 amended 19 V.S.A. § 309b(a) & (b) requiring

that municipalities must also submit the annual certification of compliance for town road and

bridge standards in order to be eligible for receiving the additional 10% of State funding under the town highway structures and Class 2 roadway grants programs.

Benefits: Besides the benefit of receiving an additional 10% of State funding under these two town highway grants programs and the benefits realized under the FEMA Public Assistance program in a federally declared disaster, the main reasons to adopt the latest approved *codes and standards* template (page 8-4) are to improve safety, reduce life cycle costs, and address environmental concerns.

Adoption and Certification: In order for municipalities to receive the additional 10% State funding (80% for Class 2 Roadway grants and 90% for Structures grants) starting with State fiscal year 2012, municipalities will need to either adopt new codes and standards which meet or exceed the minimum requirements of the January 4, 2011 template (page 8-4) and/or submit a certification (page 8-5) that their adopted codes and standards meet or exceed these minimum requirements. Municipalities who adopt or have adopted codes and standards which meet or exceed the minimums of the January 4, 2011 template will be required to submit the annual certification (page 8-5) to the Agency of Transportation in order to be eligible for the additional 10% in State funding.

FEMA Public Assistance Program: The requirements of Act 110 related to town road and bridge standards have no bearing on how FEMA treats these standards in the event of a federal Public Assistance declaration. This means that FEMA is only interested in whether or not a municipality has adopted codes and standards and that the municipality follows those codes and standards. Municipalities who have adopted codes and standards which do not meet the new minimum standards of the January 4, 2011 template will still derive the same benefits from the FEMA Public Assistance Program as before (see Section 7).

Town Highway Emergency Fund Grants: The adoption of codes and standards has no effect on the State/municipal funding split for this grant program. However, for towns that have adopted road and bridge standards (regardless of which version), eligibility for reimbursement for repair or replacement of infrastructure shall be to those standards. For towns that have not adopted any form of codes and standards, eligibility for reimbursement for repair or replacement of infrastructure shall be limited to the specifications of the infrastructure that pre-existed the emergency event.

Frequently Asked Questions

1. Does adoption mean that the municipality has to bring all of its existing facilities up to the codes and standards within a certain time frame?

No. The requirements of the codes and standards come into play as the municipality takes some form of action on their highway infrastructure related to that particular standard. For example, if a municipality has adopted the January 4, 2011 template and is only grading a town highway, they must adhere to the crowning and grading requirements, but need not perform any of the requirements related to ditching, guardrail, culverts, or bridges.

2. What if the municipality does not follow its adopted codes and standards?

If it is determined that a town is not following its *codes and standards,* the town is ineligible for *codes and standards* upgrades under FEMA Public Assistance. Also, it may be grounds to default to the lower percentage state share under the state-administered grant programs, if the town had adopted codes and standards which meet or exceed those of the January 4, 2011 template.

3. Can the municipality use the 50% rule similar to FEMA for projects it funds on its own? In other words, if a damaged culvert is dragged back into place by the municipality following a non-declared event because the municipality used the 50% rule to justify the lower cost repair, will FEMA be okay with this?

Yes, as long as the municipality used a 50% rule similar to that of FEMA, the municipality would remain in compliance with its adopted “codes and standards.”

TOWN ROAD AND BRIDGE STANDARDS
TOWN OF _____, VERMONT

The Town of _____ hereby adopts the following Town Road and Bridge Standards which shall apply to the construction, maintenance and repair of all town roads and bridges.

The standards listed here are considered minimum and are presented for purposes of guiding construction and maintenance personnel. The standards listed here include three types of management practices and are designed to: ensure the safety of the traveling public, minimize damage to road infrastructure during flood events, and enhance water quality protections by minimizing sediment delivery to surface waters and/or wetlands. The select board reserves the right to modify the standards for a particular project, where, because of unique physical circumstances or conditions, there is no possibility that the project can be completed in strict conformance with these provisions. Any modifications to the standards must be done in a manner that protects the underlying intent of the management practice, be it public safety, flood hazard avoidance, or water quality protection. Fiscal reasons are not a basis for modification of the standards. Questions about modifications to the standards should be directed to the VTrans District Office.

Any new road, whether or not that road is proposed to be conveyed to the town, shall be constructed according to the minimums of these standards. If any federal and/or state funding is involved in a project, the VTrans district office will be notified prior to any field changes taking place that would alter the original scope of work.

Roadways

- All new or substantially reconstructed roads will have at least a 15-inch thick processed gravel subbase, with gravel roads having the top 3 inches (minimum) as crushed gravel.
- All roadways will be graded so water does not remain on the road surface. For roadways that are not superelevated, this generally means a 2-4% ($^1/_4$" - $^1/_2$" per ft) crown for gravel roads and a 1-2% ($^1/_8$" - $^1/_4$" per ft) crown for paved roads to promote sheeting of water.
- Proper grading techniques for gravel roadways will be used to avoid creating a ridge or berm between the crown and the ditch.
- Any berm along the roadway shoulder that prevents the proper sheeting of water will be removed.

Ditches and Slopes

Soil exposed during ditch and slope construction or maintenance will be treated immediately following the operation. Priority should be given to areas vulnerable to erosion immediately adjacent to or discharging to surface waters and/or roadway drainage facilities. The following are minimum erosion control measures:

- Seed and mulch ditches with grades less than 2%. Use biodegradable, non-welded matting and seed on ditches with grades between 2% and 5%. Stone line all ditches with grades greater than 5%; alternatively, install stone check dams. Dams should be comprised of a well graded stone matrix 2 to 9 inches in size. Dams should not exceed 2 feet in height and check dam crest should be at least 6" below the top of the ditch.

- Create parabolic (wide “U” shaped) ditches when constructing new or substantially reconstructing ditches, rather than narrow “V” shaped ditches. Ditches with gradual side slopes (maximum 2H: 1V ratio) and a wide bottom (at least 2 feet) are preferred.
- Use biodegradable, non-welded matting to stabilize side-slopes where slopes are greater than 1:1; apply seed and mulch to any raw or exposed side-slope if slopes are less than or equal to 1:1.
- Ditches should be turned out to avoid direct outlet into surface waters. There must be adequate outlet protection at the end of the turnout, either a structural (rock) or vegetative filtering area.

Culverts and Bridges

- All new driveway culverts will have a minimum diameter of 15 inches.
- All new roadway culverts will have a minimum diameter of 18 inches.
- Any culvert with a drainage area greater than 0.25 sq mi will require a hydraulic engineering study. Culverts will be designed to convey the Q25 design storm with minimal surcharge.
- All bridges (structures with spans greater than 6 feet) and open bottom structures will require a hydraulic engineering study. Structures will be designed to convey the Q25 design storm and allow for passage of ice and debris.
- When installing or replacing culverts, use appropriate techniques such as headwalls and wingwalls, where there is erosion or undermining or where it may occur.
- Install a splash pad or plunge pool at the outlet of drainage culverts where there is erosion or where erosion may occur. Splash pads and plunge pools are not appropriate for use in streams supporting aquatic life.

Guardrail

When roadway, culvert, bridge, or retaining wall construction or reconstruction projects result in hazards such as foreslopes, drop offs, or fixed obstacles within the designated clear-zone, a roadside barrier such as guardrail shall be installed. The most current version of the AASHTO Roadside Design Guide will govern the analysis of the hazard and the subsequent treatment of that hazard.

Access Management

The town will have a process in place, formal or informal, to review all new drive accesses and development roads where they intersect Town roads, as authorized under 19 V.S.A. Section 1111. Towns may reference VTrans A-76 Standards for Town & Development Roads and B-71 Standards for Residential and Commercial Drives.

Training

Town highway maintenance crews will collectively attend a minimum total of 6 hours of training per year on best road management practices. The town will keep documentation of their attendance.

Passed and adopted by the Selectboard of the Town of _____, State of Vermont on
_____, 20 .

Select Board: _____ _____

_____ _____

_____ _____

Codes & Standards Certification of Compliance
for
Town Road and Bridge Standards

We, the Legislative Body of the Municipality of _____ certify that we have reviewed, understand and comply with the Town Road and Bridge Standards passed and adopted by the Selectboard on _____, 20____.

We further certify that our adopted Town Road and Bridge Standards [ ] do [ ] do not meet or exceed the minimum requirements included in the January 4, 2011 VTrans template.

_____ Date:_____

_____

_____

_____

_____
(Duly Authorized Administrator)

Appendix B

Town of Westford Road Sand Report
Prepared by Matt Wamsganz (Westford Road Committee)
For The Westford Selectboard

September 5, 2012

	Required % Passing By Weight								
Publication	**3/8"**	**#4**	**#100**						
State of VT Specification & Vermont Local Roads	100	90-100	2-10						
	Actual % Passing By Weight				**Material**	**Delivery**	**Total**	**Washed?**	**Towns Purchasing Road Sand From This Source**
Sample Location	**3/8"**	**#4**	**#100**	**#200**	**Price/Ton**	**Price/Ton**	**Price/Ton**		
G.W. Tatro (Current Supplier)	93	80	7	5	$6.40	$4.10	$10.50	No	Westford
Hinesburg Sand and Gravel (Hinesburg)	100	85	2	1	$8.65	$7.50	$16.15	Yes	Burlington, Jericho, Milton, Richmond, UVM, Williston
A. Nadeau & Company (Johnson)	97	79	5	2	$7.35	$4.10 *	$11.45	Yes	Cambridge, Essex, Johnson, Underhill
Kullman Sand & Gravel (Johnson)	100	85	7	4	$6.00	$6.00	$12.00	Yes	Fletcher, Milton, Waterville
Reggie Smith (Milton)	Not enough sand to supply Westford							No	Fairfax

*Assumed Delivery Price Per Ton (still need more info on this)

Town of Westford Winter Sand Application Rate Study
Prepared by Matt Wamsganz (Westford Road Committee)
For The Westford Selectboard
September 13, 2012

Town Name	Miles of Gravel Road	Avg. Tons of Gravel Purchased	Tons Applied per Mile
Brandon	30	2400	80.0
Colchester	13	2100	161.5
Cornwall	20	2250	112.5
Enosburg	63	7500	119.0
Essex	23	3500	152.2
Ferrisburg	31	3000	96.8
Georgia	20	2667	133.4
Monkton	33	3750	113.6
Wallingford	51	3000	58.8
Waterbury	35	4500	128.6
Westford	37	6667	180.2
		Average Tons/Mile =	121.5

Summary: Westford uses 58.7 tons/mile more than the average of the 11 towns sampled. If Westford were to use the average sand application, our cost would drop from $70,000 to $47,320.