

4.0 Policy Guidance

This section establishes policy guidance for preserving and improving the Vermont SHS. This policy guidance is general in nature and is not intended to replace the kinds of detailed technical analyses or public involvement processes required to support major investment planning. Its intent is to clearly identify the types of strategies to be pursued in order to meet established performance objectives in the most cost-effective manner.

Section 4.1 summarizes the key highway system policies. Section 4.2 provides guidance for implementation of specific strategies. Specific implementation steps for achieving these policies are presented in Section 5.0.

■ 4.1 Highway System Policies

Based on the goals and performance targets established in the previous section, six key policy areas have been established for the highway system:

- A. Investment Priorities;
- B. Keeping Highways Safe;
- C. Maintaining Primary Network Continuity;
- D. Preserving the Existing System;
- E. Improving the System; and
- F. Managing Access to Maintain Mobility and Safety.

Policies within each of these areas are presented below.

A. Investment Priorities

A-1

Highest priority shall be placed on investments in the highway system that improve safety, preserve its physical integrity, enhance existing operations, and foster economic development.

A-2

Under limited funding conditions, investments shall be focused on high-priority safety improvements and on preserving highways and bridges on the Interstate and Non-Interstate Primary Networks.

B. Keeping Highways Safe

B-1

The established Safety Management System (SMS) process will be used to identify and implement cost-effective actions for reducing the number of serious crashes and fatalities on the SHS. A wide spectrum of actions shall be considered to address highway and driver-related causes of crashes. Such actions include: highway system improvements (geometrics, sight distance improvement, improved lighting, striping, adding signals, uniform traffic control devices), design of safe facilities and crossings for pedestrians and bicyclists, and non-engineering solutions such as improved commercial motor vehicle enforcement and safety-related driver education.

B-2

VTrans shall strive to implement all spot safety improvements that address high-accident and high-risk locations in a cost-effective manner, as identified through the State's Highway Safety Improvement Program (HSIP), within a five-year period from their time of identification.

B-3

Safety considerations should be an integral part of the project identification processes for pavement, bridge and roadway projects through a well-defined work flow process and shared safety information across the Agency.

C. Maintaining Primary Network Continuity

C-1

VTrans will keep all Interstate bridges open and free of load restrictions.

C-2

VTrans will keep all other Primary Network bridges either free of load restrictions or provide a convenient detour.

D. Preserving the Existing System

D-1

Cost-effective investments in preservation projects will be made to keep the SHS infrastructure in safe, structurally sound condition, with a minimum of cost and discomfort to road users. Condition targets for different portions of the system will be periodically adjusted based on the best available understanding of highway user perceptions, as well as an analysis of what can be achieved on different systems given the likely levels of available resources.

D-2

Available analysis tools will be used to determine least life-cycle cost preservation strategies to maintain established target conditions. In particular, for non-engineered pavements on the Primary Network, analysis will be conducted to assess whether replacement of the pavement (full-depth reconstruction) would be more cost-effective over the long term than periodic resurfacing treatments.

D-3

When feasible, the timing of pavement, bridge and other asset preservation projects on higher-volume roadways (over 20,000 ADT) will be coordinated in order to minimize work zone and associated highway user costs.

D-4

When a preservation project is programmed for a highway segment, other high-priority preservation needs along this segment will be evaluated to determine if they can be addressed simultaneously in a cost-effective manner while avoiding significant scope creep. Other potential needs may include safety needs, as indicated by high crash rates; drainage systems, and guardrails.

E. Improving the System

E-1

Corridor management plans for primary network highways should be developed in order to build consensus on transportation solutions that reflect different stakeholder interests and involve coordinated actions on the part of multiple agencies and jurisdictions.

E-2

Major operational, safety and mobility improvements shall be pursued in a coordinated fashion in a given corridor or location so that all existing needs and issues are addressed at one time and the full range of alternatives examined.

E-3

The existing Level of Improvement (LOI) policy in the Vermont State Design Standards should be followed limiting roadway reconstruction to Interstates/freeways, other principal arterials and high-volume minor arterials.

E-4

The following priorities for improvements are established: 1) Prevent safety and capacity problems from developing through the use of access management and coordinated land use planning; 2) improved traffic operations and/or demand management strategies; 3) minor improvements to improve efficiency and capacity, such as widening shoulders, adding climbing lanes or truck pullouts; 4) major improvements such as new general purpose lanes or re-alignments; and finally 5) new facilities, including new interchanges and new bypasses.

E-5

General policy considerations for new facilities and major improvement projects may include the following: 1) the project's scope is appropriate given long-range projections of need; 2) the project is consistent with state, regional and corridor-level transportation and land use plans; 3) strategies are in place for protecting the improved facility's function in the future including intergovernmental agreements that require local jurisdictions to adopt actions supportive of access management in their local plans; 4) funding for the project (and any associated work to be undertaken by local governments) can reasonably be expected to be in place; and 5) the project was developed using established public involvement procedures.

F. Managing Access to Maintain Mobility and Safety

F-1

Access to the SHS will be managed according to the principles and approaches identified in the existing VTrans Access Management Guidelines. Consistent with these guidelines, each SHS segment will be identified with an access management category reflecting the balance between through and local traffic. These designations will be kept up-to-date, reflecting traffic patterns and land use plans. Ensure that the guidelines are effectively serving their intended purpose, through education and outreach, and if needed, through formal rulemaking.

F-2

Access management standards applicable to each category of highway will be used to ensure maintenance of safe and efficient traffic flow.

■ 4.2 Highway System Strategies

This section provides policy guidance for four types of strategies: preservation of the existing system, addition of capacity to the system, safety and operational improvements, and access management.

Preservation

System preservation investments serve the purpose of maintaining the physical integrity and the originally intended function of the existing system elements, including pavements, bridges and other highway system elements. Investments made for preservation of the system frequently also address safety concerns.

A useful shorthand way of describing the thrust of the preservation strategy (now used by several other DOTs) is to “do the right thing at the right time in the right place.” The “right thing” means identifying an appropriate and cost-effective solution to address a given set of deficiencies or needs – one that does not do too much or too little, and is an appropriate use of funds considering the full array of other needs on the system. The “right time” means planning ahead in a strategic fashion to prolong asset life and prevent problems from occurring that will require more costly solutions. The “right place” means focusing investments to achieve stated goals for different portions of the system, in a manner that yields the desired level of balance, and gets the most “bang for the buck.”

Preservation actions should be implemented with two key factors in mind:

1. Protection of existing infrastructure investment in a cost-effective manner; and
2. Providing acceptable levels of service to highway system users.

Condition targets discussed in Section 3.0 for the maximum percentage of poor pavements, and for the number of restricted and structurally deficient bridges reflect the level of service delivered to highway system users. The pavement and bridge management system tools in place at VTrans should be used to determine preservation strategies that are cost-effective from a life-cycle perspective.

Techniques

Pavement full-depth reconstruction – The VTrans Level of Improvement (LOI) policy establishes thresholds related to traffic volume and functional class that identify when full-depth reconstruction may be considered. Given its high-cost, full-depth reconstruction should be pursued primarily to address pavement structural needs when other major work such as widening or realignment is undertaken. However, in order to sustain desired condition levels over time in a cost-effective manner, reconstruction also

should be considered for non-engineered pavements¹ on higher-volume Primary Network roads, with a long-term goal of replacing all non-engineered pavements on the Primary Network. Such investments should be justified by a quantitative life-cycle cost analysis, and should be pursued when feasible within funding constraints.

Pavement resurfacing and major maintenance (crack sealing, rut filling) - These are preventive maintenance and safety strategies appropriate for state highways that are still in reasonably good condition. Resurfacing and major maintenance should be applied to preserve safe conditions on the highway system and achieve condition targets (see Section 3.4) by minimizing life-cycle costs. This may require that some segments in poor or very poor condition are not given immediate treatment, while others in fair or better condition are given immediate treatment to prevent their long-term deterioration.

Bridge maintenance and rehabilitation - Bridge maintenance and rehabilitation should be pursued to maximize bridge lifespan and minimize life-cycle costs. Appropriate bridge maintenance and rehabilitation strategies are determined based on inspection results and available information on the costs and effectiveness of different treatments. Preventive maintenance (including painting, deck repair, bearing replacement, drainage system restoration) should be pursued in order to prolong structure life in a cost-effective manner. As of January 2002, Federal Highway Bridge Replacement and Rehabilitation Program (HBRRP) funds can be used for this purpose, if it can be demonstrated that the proposed treatments are cost-effective and part of an overall infrastructure preservation strategy. Use of an approved bridge management system (such as the Pontis® system in use at VTrans) satisfies this requirement. Tradeoffs should be made between investing in relatively few costly bridge replacements versus a larger number of lower-cost preventive maintenance projects that would collectively provide more benefits and serve more travelers.

Bridge replacement - In general, preventive maintenance and rehabilitation investments should be made to keep existing bridges in service for as long as possible. Bridge replacement should be performed where rehabilitation is not a feasible or cost-effective option, or when there is a need for functional improvements to address safety concerns or weight restrictions. Where funding is limited, replacement of older structures with “temporary” structures should be considered where this is determined to be a more cost-effective way to ensure safety and maintain network continuity. (Due to restrictions on use of Federal funds for temporary bridges, this would require the use of state funds.)

Priorities for bridge work should be set based on a number of factors, including safety concerns, the ability of the structure to carry intended loadings, the condition of the structure, functional concerns (e.g., narrow widths, restricted clearances or poor alignment), the cost-effectiveness of the proposed project, the traffic level, and the importance of the structure to maintaining continuity on the transportation network (which is a function both of location and available detour routes). An overriding policy is that network continuity must be maintained, either through rehabilitation and

¹ See Section 2.1 for a definition of “non-engineered pavements.”

replacement or through establishment of adequate detours. This is consistent with the performance target set forth in Section 3.0 of minimizing the number of restricted bridges.

Drainage systems, guardrails, and other roadside repair and rehabilitation – Problems that create immediate safety hazards, structural problems or which have the potential to disrupt the flow of traffic should be addressed as soon as feasible. Otherwise, roadside and drainage improvements should be coordinated with other improvements to be undertaken along the same stretch of roadway.

New Capacity

New capacity projects include lane widenings, realignments, bypasses, new interchanges, and climbing or passing lanes. New capacity projects are pursued with the primary objective of improving mobility and safety, although they also contribute to meeting preservation objectives.

New capacity projects may be undertaken to address significant current or anticipated congestion and/or safety problems, or to meet economic development objectives where there is a high level of confidence that the project's cost is justified based on the estimated benefits. Significant congestion problems are identified by the mobility performance measures (V/C ratio) established in Section 3.0, while safety problems are identified through the Safety Management System. In recognition of the fact that resources are limited, the general policy of evaluating lower-cost strategies with low or no adverse impacts should be applied.

Techniques

Roadway realignment and widening – Widening or realignment may be needed for highway segments with capacity or safety problems. Locations with discontinuities in width judged to pose safety problems should be considered candidates for these treatments. Locations with narrow shoulder widths are also candidates, particularly where there are significant levels of bicycling or where primary bicycling routes have been identified by regional bicycle and pedestrian planning efforts. The LOI policy establishes thresholds related to traffic volume and functional class that identify when realignment or widening should or should not be considered. Within the LOI classifications, realignment and widening should be applied first to roads on the state Primary Network.

Climbing/passing lanes – These strategies are appropriate for improving traffic flow, reducing delays caused by trucks and/or improving safety on high-volume roads. As they are relatively capital-intensive, they should be considered first on the Primary Network. Under exceptional circumstances, they also may be appropriate for high-volume road segments that are not on the Primary Network.

New/expanded interchange – A new or expanded interchange may be appropriate for serving a high-volume arterial road or to relieve traffic congestion at another nearby interchange or road.

Bypass – Bypasses should be considered only on the Primary Network. They should be considered primarily in cases where the investment is needed to reach one of VTrans highway performance goals (Safety or Mobility). Bypasses may be appropriate in a small number of circumstances where there is a high percentage of through trips and the bypass would provide significant relief from traffic congestion without generating undue environmental impacts. Bypasses should be considered in cases where there are marked adverse effects on historic villages due to heavy truck traffic. They should be implemented only when strict access management controls can be implemented to support concentrated development patterns and maintain downtown vitality. Local agencies should be encouraged to implement supportive land use controls in conjunction with bypass projects.

Safety and Operational Improvements

Safety and operational improvements including roadway and intersection treatments that meet safety and mobility goals. Policies are primarily differentiated by area type, rather than by level of network.

Safety improvements should be implemented consistent with the VTrans Safety Management System. Safety improvements should be prioritized towards intersections or highway segments with a history of high crash rates or high crash risk, and for which crash risk can be related to specific design or operational features to be addressed. Within these high-priority locations, improvements should first be programmed that can be implemented in conjunction with other scheduled work, such as pavement maintenance or roadway rehabilitation. Safety improvements should be selected and implemented, to the extent possible, on a benefit/cost basis.

Operational improvements that address mobility should be implemented where significant congestion/delay is present. Different standards are provided for target mobility thresholds, depending upon area type, as discussed in Section 3.0.

Techniques

Roadway design features – Roadway design features such as high-visibility pavement markings, non-skid pavement surfaces, wider shoulders, drainage improvements, and signs can be used to improve the safety of high-risk highway segments. They can also be used to address identified needs for pedestrian and bicycle travelers. The first priority should be to implement safety-improving design features on identified segments in conjunction with preservation projects programmed for these segments. The second priority should be to implement these features on other segments. They do not need to be implemented on segments with little or no crash history (or identified non-motorized travel improvement needs), unless they have been adopted as standard design practices and can be implemented in conjunction with preservation projects at minimal additional cost. All roadway improvements on non limited-access highways should consider improvements to support safe and convenient pedestrian and bicycle travel, consistent with the Vermont Pedestrian and Bicycle Design Manual.

Signals and other traffic control devices – These are appropriate for any area type or network level – where warranted based on the Manual on Uniform Traffic Control Devices (MUTCD). Their installation and application should be consistent with standard VTrans policies and procedures.

Roundabouts – These are appropriate as alternative intersection designs for any area type and network level. They may be considered whenever major intersection work is contemplated to improve safety, improve mobility and reduce traffic delays.

Intersection improvements – Other intersection improvements, such as turn lanes or geometric realignments, are appropriate in rural corridors, small towns/villages as well as in larger cities and towns. They may be considered whenever major intersection work is contemplated to improve safety or reduce traffic delays.

Traffic calming – Traffic calming may be considered on roads in small towns/villages as well as in larger cities and towns, where speeding traffic has created safety or quality of life concerns. Traffic calming should be evaluated, prioritized and implemented consistent with the VTrans Traffic Calming Study and Approval Process for State Highways and companion Traffic Calming Standards.

Intelligent Transportation Systems (ITS) – ITS, including motorist information and incident response, could be used at all network levels and area types in accordance to VTrans policies and procedures.

Access Management

Access management strategies involve both roadway design features and land use, and meet the goals of improving mobility and safety.

Effective implementation of access management will require that VTrans coordinate with local jurisdictions. To focus its resources where they can be most effective, VTrans should first identify a set of “at risk” road segments where immediate work on access management would be beneficial. These are likely to include segments in locally designated “growth areas,” as well as other areas of current or potential high growth on the fringes of cities, towns, and villages. Segments on the Primary Network should be prioritized first for implementation of access management strategies. High-risk segments where municipalities are undertaking comprehensive or area plan updates also should be prioritized, so that VTrans ensures that these local plan updates address land use and access management along state highway corridors.

Techniques

Turning restrictions and access control – These strategies are appropriate for levels of the network and area types as discussed in the existing VTrans Access Management Guidelines. Proactive efforts to implement access management strategies should be targeted to “at-risk” corridors identified by VTrans. These corridors represent areas of

current or potential high growth, where access management efforts can have the most benefit in the near term.

Purchase of access rights - Purchase of access rights for access management purposes should be considered in major rural and suburban corridors, as well as near Interstate highway interchanges. Proactive efforts to purchase access rights should be targeted first to identified “at-risk” corridors.

Corridor management plans - Corridor management plans that address both transportation and land use issues should be considered for rural and suburban corridors that are experiencing high growth or have the potential for significant growth. These include designated growth areas. Corridor management plans should be developed in conjunction with municipalities. Priority for these corridor planning efforts should be given to the Primary Network, although in some cases it also may be desirable to undertake such efforts on other higher-volume state highways.

Summary

Table 4.1 summarizes the strategies described above for each investment category and identifies the network or area type to which each strategy applies. It also identifies other policies, such as those related to priority of application and coordination with existing policies.

Table 4.1 Methods, Level of Application, and Other Policies

Investment Category and Strategies	Level of Application	Policies
Preservation		
Pavement Full-Depth Reconstruction	Per LOI: Interstate, principal arterials, higher volume minor arterials	Primary Network first Coordinate with safety and operational improvements
Pavement Resurfacing	ALL	Identify and prioritize with Pavement Management System
Pavement Capital Maintenance	ALL	Identify and prioritize with Pavement Management System
Bridge Rehabilitation	ALL	Primary Network first
Bridge Replacement	ALL	Primary Network first
Drainage System Repair/Rehabilitation	ALL	Coordinate with other improvements
Guardrail/Other Roadside Repair/Rehabilitation	ALL	Coordinate with other improvements
Rest Area Rehabilitation	ALL	
New Capacity		
Roadway Reconstruction/Widening	Per LOI: Interstate, principal arterials, higher volume minor arterials	Consider lower-cost strategies first
Climbing/Passing Lane Only	Primary Network	
New/Expanded Interchange	Interstate	
Bypass	Primary Network	Associated strict access and community land use controls
New Roadway	N/A	
Safety/Operational Improvements		
Signalization/Traffic Control Devices	ALL	
Roundabouts	ALL	
Intersection Improvements	ALL	
Traffic Calming	Large city/town or small town/village	VTrans Traffic Calming Study and Approval Process
Other ITS (Incident Response, Motorist Information)	ALL	
Access Management		
Turning Restrictions	ALL	VTrans Access Management Guidelines
Access Control	ALL	VTrans Access Management Guidelines
Purchase of Access Rights	Rural/suburban corridors, Interstate interchanges	Consider for areas “at risk” – development likely to occur which would cause degraded travel speeds without significant new infrastructure investment
Corridor Plans (Land Use/Transportation)	Rural/suburban corridors and designated growth areas	

