Chapter 5

DEBRIS AND ROADSIDES

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5-1.0 INTRODUCTION

5-1.01 PURPOSE

MnDOT manages over 175,000 acres of roadside area. This large and diverse area is managed to reduce maintenance costs, to improve aesthetics for the highway user, to provide food and shelter for wildlife and to encourage the regeneration of natural vegetation.

Proper maintenance of roadsides can also contribute to improved water quality on the roadside and other areas receiving runoff from the roadsides. Roadside management requires integrated vegetative and pest management practices in order to achieve safe traveling conditions and aesthetically pleasing roadsides in economical and environmentally sensitive ways.

5-1.02 SCOPE

This chapter is not intended to provide a detailed and all inclusive “how to” procedure for accomplishing each and every roadside management task. It does discuss the intended outcome or result of the task or operation performed and for some tasks, such as mowing, it does provide “hands-on” guidance. Information on how to accomplish a specific operation or task can be accessed through the electronic “hyperlinks” and MnDOT office telephone numbers provided or through referenced publications from MnDOT or other state and federal agencies.

The reader can access guidance referenced in the linked sites by “clicking” on the highlighted word, which will bring the reader to the appropriate site. A list of referenced websites is also provided at the end of this chapter. The chapter Table of Contents is also electronically linked to the chapter text. A “click” on the selected table of contents item will take the reader to the desired text section.

5-2.0 GLOSSARY

ADT: Average Daily Traffic measured in vehicles per day. For more detail, refer to the MnDOT Traffic Engineering Manual.

Blending: Mowing practice that provides a gradual change in mowing heights from a mowed to an un-mowed area. This effect may also be achieved through mowing only selected areas to transition between a well groomed area to a more natural setting.

Forbs: Any herbaceous plant other than a grass; i.e., alfalfa, clover and all wildflowers.

Herbaceous: Any annual, biennial or perennial plant which does not develop woody tissues.

Integrated Roadside Vegetation Management Plan (IRVM): A decision-making and quality management process for maintaining roadside vegetation that integrates the following items with cultural, biological, mechanical, and chemical pest control methods to economically manage roadsides for safety plus environmental and visual quality:

- The needs of local communities and highway users
- The knowledge of plant ecology and natural processes
- Design, construction, and maintenance considerations
- Monitoring and evaluation procedures
- Government statutes and regulations
- Technology

Introduced or Exotic Species: Any plant that is not indigenous to the Midwest, meaning it would not naturally be found here. Most often the term applies to plants brought to this region by European settlers.

Native Species: Plants indigenous to a particular geographical region. For Minnesota, any plant of Midwestern/Minnesota origin. This generally applies to those plants present prior to European settlement of this region.

Roadside Clear Zone: "The Distance from the edge of the travel lane which should be free of any non-traversable hazard such as steep slopes or fixed objects," as defined in the MnDOT Road Design Manual. Clear Zone widths are targeted towards allowing approximately 80 to 85 percent of all run-off-the-road vehicles to recover or come to a safe stop. The width of the clear zone along a horizontal alignment is dependent on roadside geometry, design speed, radius of horizontal curvature and ADT.

P.I.: Point of inflection or point where slope has an abrupt change.

Prohibited-Control Noxious Weeds: These are weeds within the State of Minnesota that must be controlled if discovered. These species must be controlled, meaning efforts must be made to prevent the spread, maturation and dispersal of any propagating parts, thereby reducing established populations and preventing reproduction and spread as required by Minnesota Statutes, Section 18.78. No transportation, propagation, or sale of these plants is allowed. Additionally each County may have additional noxious Weeds and Specially Regulated Plants classifications.

Prohibited-Eradicate Noxious Weeds: These are weeds within the State of Minnesota that are to be eradicated if discovered. These species must be eradicated, meaning all of the above and below ground parts of the plant must be destroyed, as required by Minnesota Statutes, Section 18.78. No transportation, propagation, or sale of these plants is allowed.

Restricted Noxious Weed: These are weeds within the State of Minnesota that are deemed detrimental to the environment and the only assured method of control is to

prohibit the importation, sale, and transportation of their propagating parts in the state except as allowed by Minnesota Statutes, Section 18.82.

Rural Area: For purposes of the roadsides chapter, a rural area is defined as a ditch area outside of a home rule or statutory city as referred in Minnesota Statutes, Section 160.232 language text.

Top Cut: Mowing of the roadside adjacent to the roadway surfacing typically done by a single pass of a mower, also referred to as "first pass" or "first cut" in regards to mowing. Mowing to 8' in width is allowed at any time and additional width is acceptable for safety purposes including animal visibility and reduction of future snow drifting potential.

5-3.0 INTEGRATED ROADSIDE VEGETATION MANAGEMENT

The Department's goal is to preserve the natural beauty and environmental integrity of our right-of-way while providing a safe and efficient road system. Integrated Roadside Vegetation Management (IRVM) is operated within the MnDOT Office of Environmental Stewardship program to provide safer traveling conditions, improved water quality and aesthetically pleasing landscapes for the highway user along MnDOT roadsides and right of ways. Maintenance staff provides an essential role in providing field maintenance operations (See Section 5-4.0) as part of the management program.

MnDOT has established webpages that provide information regarding IRVM activities and overall Roadside Vegetation Management. These webpages provide essential roadside vegetation management information and list the programs and resources related to roadside operations. Also included in the webpage are essential laws, rules, guidelines, best management practices and standards that are applicable to roadside management.

Throughout this chapter, the roles and responsibilities regarding roadside maintenance will be referred to in the specific manual section.

5-3.01 TYPICAL IRVM PLAN COMPONENTS

Each district is responsible for creating and maintaining their own IRVM plan. The plans can vary, and are considered an active dynamic document. Elements of the District IRVM plan normally include:

- Standard accepted Field Maintenance Operations
- IRVM plan goals and objectives to ensure proper long-term roadside safety
- Mapping of areas including rest areas, key areas of maintenance, sensitive plant species, noxious weeds, etc.
- List of guidelines for proper plant and seed mix selection, pruning of trees and shrubs, methods to control weeds, chemicals, and burn procedures

- Contacts and references to other relevant manuals including seed manuals, erosion control manuals, etc.

5-3.02 ROADSIDE OPERATIONS SAFETY

Safe operations in all aspects of roadside maintenance must be first and foremost in every maintenance activity. Maintenance operations in increasingly heavy traffic, exposure to hazardous roadside litter and other potentially unsafe conditions require constant alertness and adherence to established safety procedures. Similarly, the traveling public must be protected against flying debris from roadside mowing, removal of hazardous trees, roadside spraying and the parking and movement of maintenance equipment near the traveled roadway.

5-4.0 FIELD MAINTENANCE OPERATIONS OVERVIEW

Field maintenance operations are the responsibility of area maintenance forces. The major components of field maintenance operations include the following:

- Mowing
- Maintenance of the Roadside Clear Zone
- Snow Drift Control
- Farmer mowing and harvesting
- Weed control
- Brush control
- Erosion prevention and control
- Care and preservation of trees and shrubs and vines
- Maintenance of wildflowers and native grasses
- Turf establishment, seeding, sodding, and fertilizing
- Maintenance of wayside rest areas
- Prescribed burns for vegetation management
- Historic preservation areas
- Culturally significant areas
- Rubbish and debris removal
- Other miscellaneous areas:
  - Retaining walls
  - Preservation of volunteer vegetation
  - Advertising signs and other encroachments
  - Removal of vegetation which affects a MnDOT approved outdoor advertising devices
  - Right-of-way fences
  - Locations of grass fires or wildfires (grass fire service calls)

Standard practice guidelines for each of the field maintenance operations will be described in the following sections.

5-4.01 MOWING

Vegetation mowing is an important aspect of roadside management. The primary purpose for planting and maintaining a vegetative cover on roadside areas is to prevent erosion of the soil. Proper mowing can manage vegetative growth in a manner that will maintain a healthy roadside ecosystem, create a safe and appealing roadside for the motorist and provide protection for nesting wildlife. Spot mowing of noxious weeds should be done as necessary to reduce propagation. The practice of spot mowing of noxious weeds is covered by the "Mowing Law" as found in Minnesota Statutes, Section 160.23. The practice of mowing ditches in rural areas is covered in Minnesota Statutes, Section 160.232.

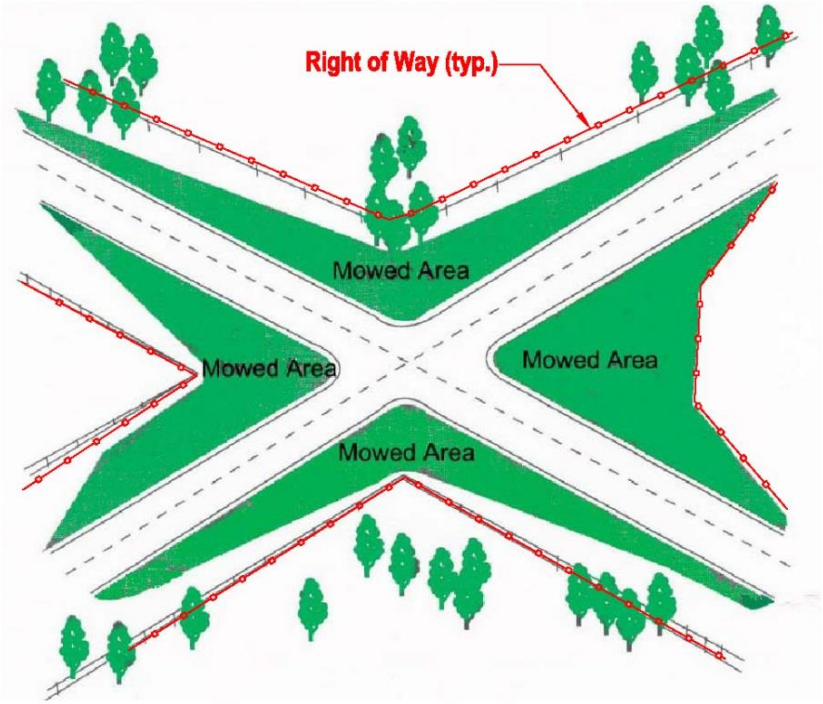
5-4.01.01 MOWING OF TYPICAL ROADWAY SECTIONS

Mowing of the entire right-of-way is discouraged unless fulfilling a district maintenance need such as brush control. Normal mowing typically consists of a single pass from the top of the shoulder to the inslope.

5-4.01.02 MOWING AN AT-GRADE INTERSECTION AREAS

At-grade intersections are mowed as necessary to maintain proper sight distance. The clear zone tables in the MnDOT Road Design Manual gives guidance for proper minimum sight distances at at-grade intersections. This mowing should be blended into the top cut as shown in Figure 1.

FIGURE 1: MOWING AN AT-GRADE INTERSECTION



5-4.01.03 MOWING AT INTERCHANGE AREAS

In many cases, desirable woody plants can blend with the surrounding area as long as clear zones and sight distances are maintained (see Figure 2 and Figure 3). Additional reference can be found in clear zone tables in Chapter 6 of the MnDOT Road Design Manual.

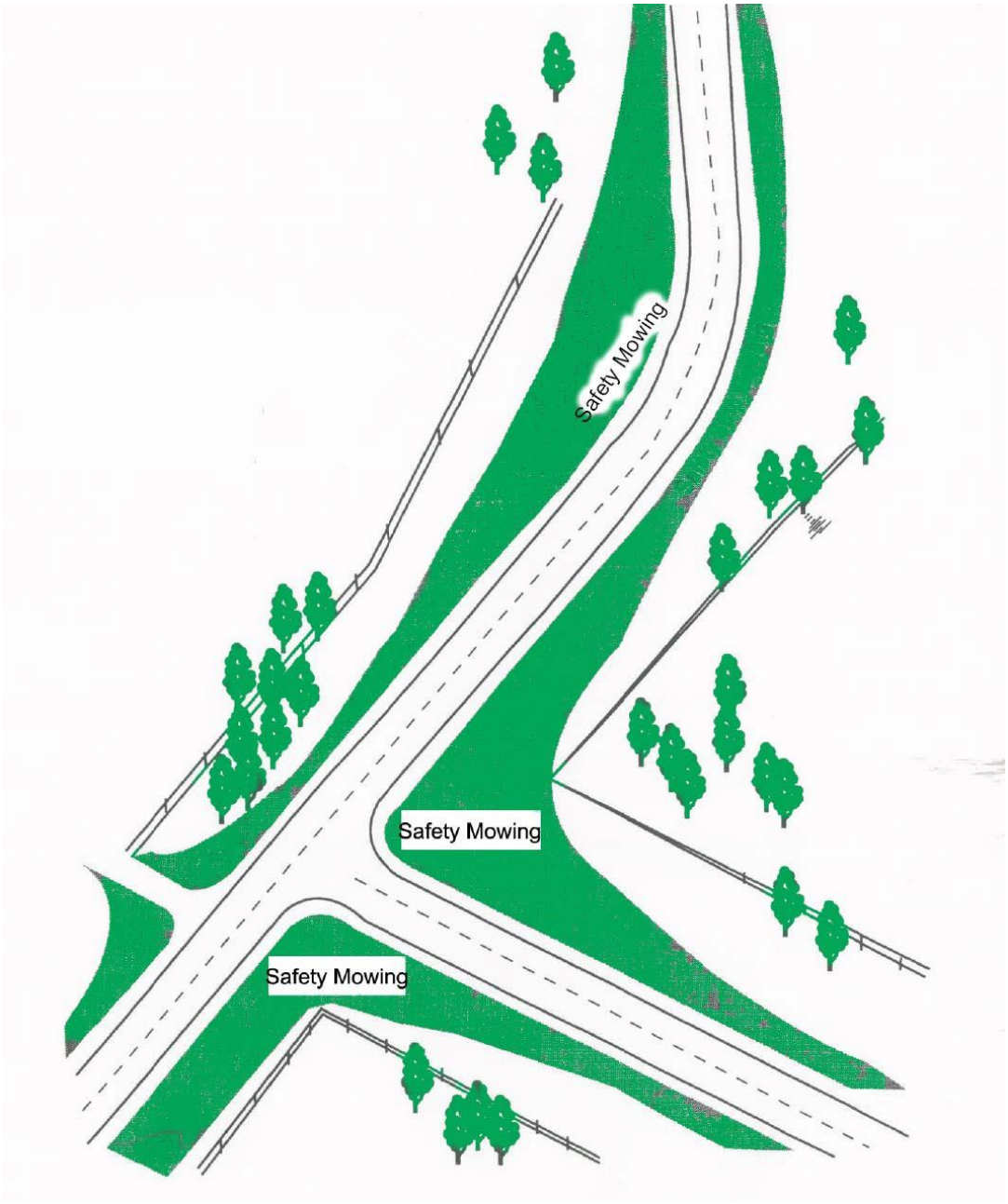
FIGURE 2: MAINTAINING SIGHT DISTANCE AT INTERCHANGES

FIGURE 3: MOWING AT INTERCHANGES

5-4.01.04 MOWING AT CURVE AREAS

Insides of curves are mowed as necessary to maintain sight distance. The diagram below (Figure 4) illustrates mowing on curves. Further information regarding mowing curves can be found in Chapter 3 of the MnDOT Road Design Manual. Maintenance staff members should also consult with MnDOT Traffic Engineering for more information.

FIGURE 4: MOWING AT CURVES



5-4.01.05 MOWING AT ROUNDABOUT AREAS

Mowing at Roundabout or Traffic Circle areas should be treated similarly to mowing of Curve Sections. The only exception is vegetation in the middle of the central untraveled area is kept at higher lengths as compared to the median, shoulder, or inslope grass heights. Maintenance staff should consult with Traffic Engineering to verify mowing requirements.

5-4.01.06 MOWING WIDTHS AT SHOULDERS AND MEDIANS

Vegetation should be controlled in the shoulder area for safety reasons (encroaching wildlife, etc.). The shoulder is defined as the area from the edge of the traveled roadway to the P.I. (Point where inslope starts at shoulder as shown on Figure 5).

FIGURE 5: INSLOPE (TYPICALLY BEGINS 2-4 FEET FROM EDGE OF SHOULDER)

The Shoulder Inslope area begins at the P.I. and continues to the ditch bottom. Normally, mowing of a single pass along this area is sufficient. Additional cuts may be needed to control unwanted vegetation or to maintain proper drainage and address blowing snow and safety considerations.

The entire median is to be mowed (unless maintained vegetation grows in the median) if the width is less than 55 feet between the inside shoulders. If the median width is greater than 55 feet the shoulder inslope mowing criteria should apply (see Figure 6 and Figure 7).

FIGURE 6: MOWING IN MEDIAN < 55 FEET EXAMPLE

FIGURE 7: MOWING IN MEDIAN > 55 FEET EXAMPLE

5-4.01.07 PERMISSIBLE HEIGHT OF GRASS

Maintenance area staff should refer to their Integrated Roadside Vegetation Management (IRVM) plan for mowing heights for specific roadside locations.

5-4.01.08 MOWING RESTRICTIONS

Prior to mowing, debris should be cleared from the area to be mowed. This will prevent possible damage to mowing equipment and eliminate the hazard to passing pedestrians and vehicles.

Tractor-driven mowers are unsafe on slopes steeper than 3:1 Horizontal to Vertical. These slopes require specialized slope mowing equipment. Slopes steeper than 3:1 should generally be left un-mowed.

Tractor mowers should not be used in wet areas or on unstable surfaces where roadside damage could result from wheels digging in or slipping.

Mower operators should avoid cutting or hitting desirable trees and shrubs. Operators should also be cognizant for placement of utility flags, including flags placed by Gopher State One Call personnel and avoid those areas whenever possible.

5-4.01.09 SAFE MOWING PRACTICES

Worker safety and safety of the traveling public is paramount in all mowing operations. Operators should abide by the following safety rules:

Be careful - if a slope is too steep, don't try to mow it. A hole, bump or quick turn on a steep slope can cause a tractor to overturn with possible injury to or even death of the operator.

Be alert - slow down for tall weeds or grass because a hidden log, culvert end, stump or a rock could be hidden there.

Avoid heavy traffic - high-speed traffic and slow-speed mowers don't mix. The Temporary Traffic Control Zone Layouts Field Manual should be used in all instances when mowing operations impede or interrupt traffic movement. At a minimum, slow moving vehicles should have proper signaling equipment such as rotating beacons or placards when in operation.

If the mower is equipped with a roll-over-protection-system (ROPS), seat belts shall be used at all times. Wear all approved safety equipment in accordance with safety policies.

Workers shall be careful in the inspection or replacement of cutting blades due to potential cuts from sharp edges or skin irritations from exposure to remnants of poison ivy, wild parsnip or other harmful weeds.

MnDOT Maintenance Staff should consult with Area Maintenance leadership and/or the District Traffic Engineer should be consulted to identify the acceptable grass heights that are to be maintained.

5-4.02 MAINTENANCE OF SIGHT LINES

Maintenance of the clear zone can be related to sight distance which provides that a vehicle operator must be able to see ahead a sufficient distance to perform a variety of vehicle maneuvers as may be needed. For field maintenance, a sufficiently wide roadside clear zone should be available in areas of known wildlife habitat. This includes zones where known deer to vehicle collisions are prominent to provide adequate stopping sight distance in the event an animal intrudes or is about to intrude onto the roadway. Similarly, the roadside clear zone should be maintained sufficiently wide where possible to provide adequate intersection sight distance at at-grade intersections or private driveways where vehicles may be entering or leaving the traveled roadway. MnDOT is restricted by statute on mowing width except in areas where sight distance, snow drift or safety reasons apply. Maintenance of sight lines is related to clear zones.

Design information for the determination of clear zone widths is contained in Section 4-6.04 of the MnDOT Road Design Manual.

Similar to mowing, MnDOT Maintenance Staff should also consult with Area Maintenance leadership and/or the District Traffic Engineer to identify the maximum practical clear zone to be maintained.

5-4.03 SNOW DRIFT CONTROL

5-4.03.01 BLOWING SNOW CONTROL

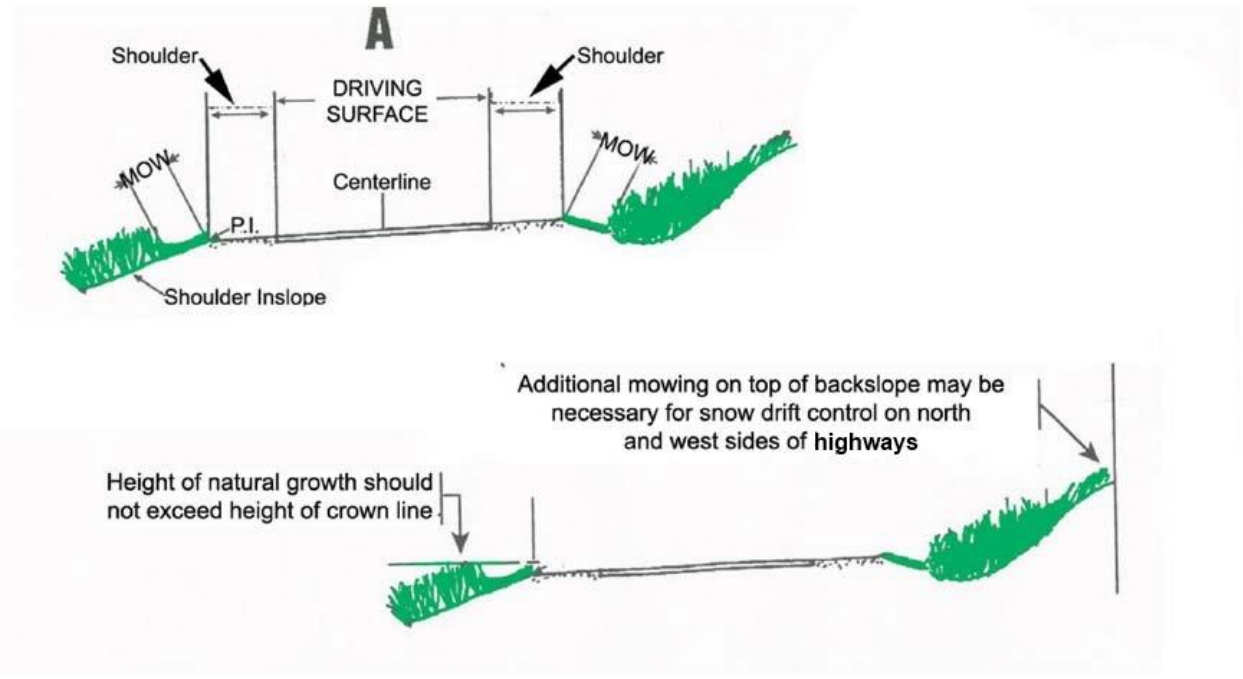
The primary objective of blowing snow and drift control is to minimize the amount of blowing snow across and on the highway to improve driver visibility and safety. Blowing snow control can be achieved through several means including**:**

- Identification of “snow trap” areas by experienced maintenance personnel
- Timely and proper inslope mowing to reduce snow accumulation on the shoulder inslope and P.I. area
- Agreements with local farmers to retain a selected number of standing corn rows to catch snow on adjacent farm fields before it reaches the roadway
- Planting of “living snow fences” of shrubs and/or trees to retain blowing snow
- Creation of “snow windrows” made by bull dozing snow into windrows generally parallel to and some distance from the roadway
- Construction of “structural snow fences” made of steel, aluminum or wood to retain snow at selected locations

Roadside maintenance activities for blowing snow/drift control are generally limited to proper mowing techniques, establishing corn row agreements with local farmers and maintaining living snow fences. Guidelines and assistance for implementing non-structural snow drift control are available from the Forestry Unit in the MnDOT Office of Environmental Stewardship.

Identification of persistent snow trap areas is best accomplished by snow plow operators intimately familiar with their respective routes. MnDOT currently has a "Snow Trap Map" and has those areas mapped which plow operators use on a frequent basis. Blowing snow control techniques utilizing snow windrows and the construction and maintenance of structural snow fences are covered in the Maintenance Manual Chapter on "Clear Roads". Road design considerations for snow drift control are covered in the MnDOT Road Design Manual. Figure 8 is an illustration of mowing for snow drift control.

FIGURE 8: MOWING FOR SNOW DRIFT CONTROL



5-4.03.02 LIVING SNOW FENCES

Living Snow Fences for blowing snow control on roadways are designed plantings of trees and/or shrubs and native grasses located a designed distance off the roadway. Properly designed and placed, these living barriers trap snow as it blows across open areas, piling it before it reaches the roadway. Landowners can participate in the program by enrolling in the CP 17A- Living Snow Fence Practice with the Continuous Conservation Reserve Program and entering into an agreement with MnDOT. Living snow fences have clearly demonstrated their effectiveness in controlling blowing snow and enhancing driver safety, particularly in western and southern Minnesota. A living snow fence is illustrated in Figure 9.

Under this program, landowners may receive compensation for up to 15 years for acreage enrolled in the program to offset the inconvenience to the landowner and his/her effort in growing and maintaining the living snow fence. Landowners are asked to assist MnDOT in the design and location of specific installations by providing a

history of past crop and herbicide use, soil information, equipment to be used, etc. Detailed information on program requirements and design options, species selection, maintenance etc. is found on the Living Snow Fences website. Additional information can also be obtained from the MnDOT Forestry Unit at 651-366-3600. The University of Minnesota offers a Design Module to assist with the design of Living Snow Fences.

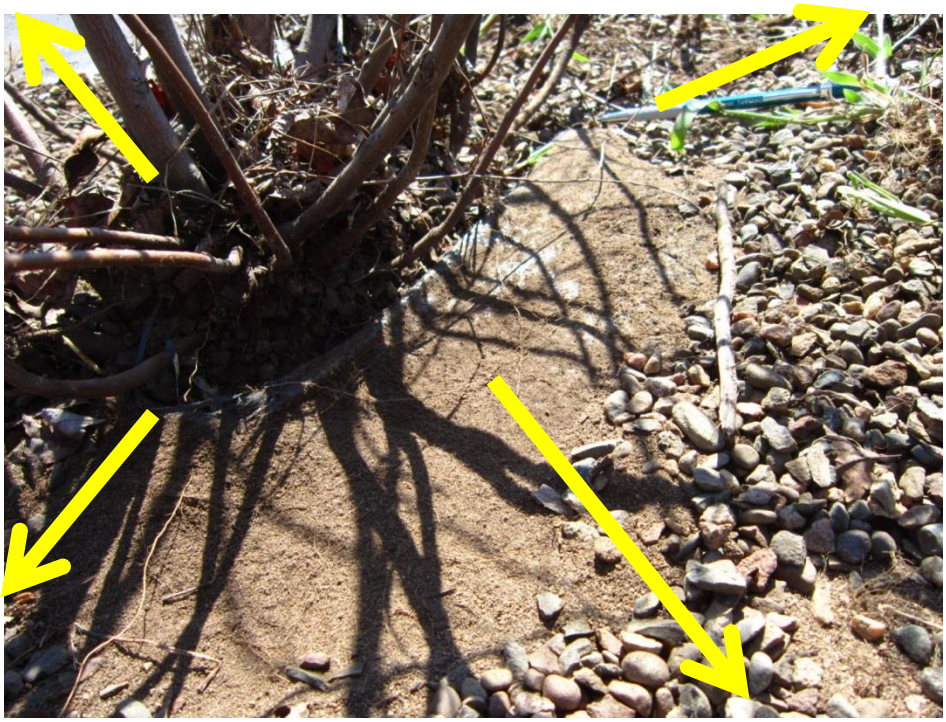
FIGURE 9: LIVING SNOW FENCE

Shrub beds should be rejuvenated during the dormant season by mowing the shrubs to ground level with a TimberAx or similar piece of equipment. This will remove dead wood and stimulate new growth. It could take 2 years or more for the shrubs to regain their mature height.

FIGURE 10: SHRUBS BEING MOWED TO GROUND LEVEL

FIGURE 11: SHRUB MOWING PROCESS

FIGURE 12: X-SHAPED SLIT IN GEOFABRIC FOR WEED BARRIER



When geotextile weed barrier is used, monitor it to make sure the stems are not being restrained or constricted by the material as is happening in Figure 12 above. If the weed barrier is restricting the plant growth, cut an X-shaped slit in the fabric next to the plant to give it an opportunity to expand in size.

5-4.03.03 STANDING CORN ROWS

Effective blowing snow control can also be achieved through partnerships with farmers growing corn next to the highway right-of-way. The farmer is asked to leave in place at least six rows of standing corn to act as a windbreak. As each partnership will depend on local site conditions, payments to farmers and maintenance responsibilities are determined for each specific site. MnDOT annually purchases standing corn rows, to serve as snow fences, from area farmers adjacent to sections of highways that have a history associated with blowing and drifting snow.

Corn needs to be planted parallel to the road to serve as a fence. A typical standing corn row snow fence is one-quarter-mile long and 16 rows wide covering an average of 1.2 acres. The fence is set back 120 to 240 feet from the highway right-of-way.

Based upon the field's estimated corn yield per acre, MnDOT pays an additional amount per bushel above the local elevator price for corn to help compensate the farmer for the inconvenience of leaving standing corn rows. Figure 13 is an illustration of Standing Corn Rows for Blowing Snow Control.

FIGURE 13: STANDING CORN ROWS FOR BLOWING SNOW CONTROL

5-4.03.04 SNOW WINDROWS

Still another effective means of blowing snow control is the creation of snow windrows on lands adjacent to the right-of-way. These windrows are also created through partnerships with affected land owners.

5-4.03.05 MAINTENANCE OF STRUCTURAL SNOW FENCES

MnDOT also employs snow fences constructed of wood, metal, plastic or combinations thereof to achieve blowing snow control. As with the living snow fences, these installations are of a height and distance to trap the blowing snow before it reaches the roadway. A bottom gap equal to approximately 10% of the fence height is necessary to improve the fence's snow trapping efficiency. A bottom gap allows the wind to blow some of the snow under the bottom of the fence, which keeps the snow drift from pulling the fence down. Weed control under the bottom gap can be achieved by weed whipping and/or careful use of appropriate herbicides for the site. Design criteria and specifications for constructing these units can be obtained from the MnDOT Design Services Section at 651-366-4682.

An example of a wooden structural snow fence is shown in Figure 14. Wooden fences require frequent maintenance the first 2 years after installation to adjust bolt tightness due to the lumber shrinking and drying.

FIGURE 14: STRUCTURAL SNOW FENCES
(PHOTO COURTESY OF DR. RON TABLER OF TABLER & ASSOCIATES)

Flexible Composite Polymer Fences are composed of approximately 6 inch wide straps of high tensile strength polymer materials embedded with 3 to 4 rows of stranded wire to give strength and durability. This style of fencing was originally developed for use in the horse industry to guard against horses getting cut from running into wire fences.

FIGURE 15: PLASTIC SLATE SNOW FENCE

Four foot tall snow fencing either wood slate or plastic is considered to be temporary or seasonal in nature.

FIGURE 16: FOUR FOOT TALL PLASTIC SNOW FENCING

FIGURE 17: A FOUR FOOT TALL PLASTIC ORANGE SNOW FENCE USED TO REDUCE BLOWING AND DRIFTING SNOW ON THE HIGHWAY

FIGURE 18: CAB FIGURE 19: A HAY BALE ON THE ROADSIDE,

An effective method to immobilize the fencing material to prevent sagging and abrasion is to sandwich the fencing material between the fence post and a 4 foot tall survey lathe with a cable tie or zip tie wrapped to secure them (Figure 18).

As illustrated in Figure 19, fence posts should be spaced 8 feet apart and the fence material sufficiently tensioned so that it is firmly taut to minimize sagging and future failure.

The plastic rails should be periodically tightened at the in-line winch tensioner to keep the rails from moving up and down during wind events. Control the weeds beneath the fence to maintain the fence bottom gap necessary to keep the fence from being pulled down by the snow bank.

5-4.04 FARMER MOWING AND HARVESTING

Farmers must obtain a permit from the District Permits Office before harvesting hay on a highway right of way. Haying without a permit is a misdemeanor under Minnesota Statutes, Section 160.2715(a)(2).

The guidelines for issuing haying permits are detailed in the MnDOT Right of Way Manual, Section 5-491.510. Among the criteria for issuing a haying permit are the following:

- Mowing full width of right of way can only be done from August 1 through August 31.
- Mowing/haying will not be allowed on any freeway, and will not be allowed in the center median of any expressway.
- Hay bales must be removed from the right of way as soon as possible and no later than 5 days. Any bales left on the right of way pending removal must be moved out of the clear zone and sight corners.
- The permittee must keep all equipment off the traveled roadway. No equipment may be left on the right of way overnight.
- MnDOT reserves the right to remove and/or dispose of bales left in the clear zone or on the right of way longer than 5 days. No compensation will be made for disposed bales, and the permittee may be charged the cost of removal and disposal.
- The permittee must not damage signs or infrastructure, rut up a ditch, or cause damage to plantings.
- The permittee must provide insurance coverage and may be required to provide a deposit to cover cost of disposal of abandoned bales or repair of rutting or any other damage to the right of way or infrastructure.
- No mowing/haying may be done from sunset to sunrise, and appropriate safety clothing and equipment must be used.

FIGURE 20: A HAY BALE ON THE ROADSIDE,

IMPROPERLY LEFT IN THE CLEAR ZONE

~~FIGURE 20: A HAY BALE ON THE ROADSIDE,~~

~~IMPROPERLY LEFT IN THE CLEAR ZONE~~

5-4.05 WEED AND BRUSH CONTROL

5-4.05.01 WEED CONTROL

Invasive species cost up to $20 billion a year in the US because of their detrimental effect on livestock (sickness), natural resources (degrading native ecosystems), public/private park/lands, and their potential harm to humans.

Transportation facilities inadvertently become conduits for transporting invasive plants/noxious weeds. Plant seeds and roots can be carried on construction and mowing equipment that has not been cleaned before and after working at a job site. They can come in with fill, gravel, or mulch material brought to the job site and/or travel along the roadside ditches in run-off water from the road. Gravel pits owned by MnDOT should be kept noxious weed and invasive plant free to inhibit the spread of weeds onto highway rights-of-way. Maintenance activities may unintentionally contribute to spreading invasive plants if mowing is not timed to maximize control of seed dispersal. To minimize the inadvertent spread of weeds by mowing the following practices should be implemented:

- Mow weed patches before they go to seed
- Skip mowing heavily infested weed areas when seed is mature or will ripen even when cut
- Safely clean off mower decks and other areas where seeds could collect on equipment within the previously mowed infested area

Maintenance staff should also be on the lookout for private carriers transporting hay turf or other grass species which are not covered. If loose hay, turf or grass is exiting the vehicle, then staff should consider contacting the authorities.

Aquatic invasive species control could fall under normal Maintenance operations when working in wet ditches or ponds. Staff should review district procedures when encountering areas that have invasive species.

The current list of Prohibited-Eradicate, Prohibited-Control and Restricted Noxious Weeds are maintained and updated periodically by the Minnesota Department of Agriculture (MDA). The MDA is the source for current information, which contains detailed plant and photo data, eradication and control options, and county contact information for county noxious weed lists.

The Minnesota DNR website contains the current list of Aquatic Invasive Species and Infested Waters. Included on the website are methods to control the plants and animals, applicable training, and laws and regulations with respect to invasive species. Chapter 9 of the Maintenance Manual contains more information regarding work in wet areas.

5-4.05.02 OBJECTIVES

- Conform to Minnesota Statutes, Section 160.23 (mowing law)
- Control spread of noxious and invasive weeds
- Protect the original turf and roadway investment
- Maintain drainage areas and reduce erosion
- Reduce the number of mowings and the amount of area mowed
- Improve sight distance
- Follow District IRVM Plan guidance
- Improve the roadside appearance
- Cooperate with adjacent landowners and other agencies in weed control

5-4.05.03 GUIDELINES

In order to obtain uniform weed control on MnDOT owned properties throughout the state the following guidelines should be observed:

- Noxious weeds should be controlled, destroyed or eradicated as soon as practicable through physical, chemical, or biological means.
- Vegetative growth which will restrict safe sight distance should be cut and/or treated.
- Vegetative growth which impairs designed drainage should be cut and/or treated.

These guidelines do not cover additional weed control which may be done to improve aesthetics or to reduce maintenance. Some examples of weed control done for these purposes are the following:

- Apply a general herbicide or growth retardant along guardrails, fences and other barriers to eliminate or reduce the need for mowing.
- Chemically treat or hand weed a landscape planting bed to improve its appearance.

Since there are numerous weed control situations which fall into the reduced maintenance or improving aesthetics categories, each situation may have to be evaluated in the field.

5-4.05.04 PHYSICAL WEED CONTROL

The physical method of weed control includes such practices as hand pulling, hoeing, mowing, smothering with non-living material (mulch), prescribed burns, and machine tillage.

Of the available weed control practices, mowing is the most adaptable for use over large areas. Effective mowing may be used to prevent the ripening or scattering of seed and other propagation parts of noxious weeds, particularly annual and biennial weeds. Since annual and biennial weeds reproduce only by seed and only live one or two

years, preventing seed production will provide control. However, such a prevention program may require numerous mowings.

Mowing is less effective on perennial weeds and only has a very limited ability to control them. Mowing may prevent production of seeds, but it does not prevent propagation by stolons, rhizomes, budding roots, etc. Therefore, when trying to control perennial weeds, use mowing only in the following cases:

- To prevent production of seed
- To identify the infestation
- In combination with chemical weed control

Hand trimming around signposts, light poles and shrub beds in urban areas, intersections and interchanges produces a pleasing appearance and may be done if resources permit and as directed by Area supervisory staff.

5-4.05.05 Cultural Weed Control

Cultural weed control is any technique that involves maintaining field conditions such that weeds are less likely to become established and/or increase in number. Overseeding, liming and fertilizing are all cultural practices maintenance forces can use to control weeds. Fertilization is especially effective against annual grassy and broadleaf weeds. Guidance/instructions for applying these treatments can best be obtained from the product vendor or material container.

5-4.05.06 Biological Weed Control

Biological weed control (Biocontrol) involves the utilization of natural enemies for the control of certain weeds. The objectives of biological control are not eradication, but, rather, the reduction and regulation of the weed population. This is a host-predator relationship between a plant and either insects, bacteria or fungi. The biological control agent to be used is researched extensively within the original range of the plant before it comes to the United States. Call the MnDOT Office of Environmental Stewardship at 651-366-3600 for more information to make sure that there are no off-target impacts.

Currently MnDOT has a Biocontrol Program for insect control of Leafy Spurge, Purple Loosestrife and Spotted Knapweed. Figure 21 is a three part diagram showing insects controlling these plant species.

FIGURE 21: INSECTS CONTROLLING LEAFY SPURGE (LEFT), SPOTTED KNAPWEED (CENTER), PURPLE LOOSESTRIFE (RIGHT)

5-4.05.07 CHEMICAL WEED CONTROL

Chemical control is performed by application of pesticides, which include herbicides. There are two types of herbicides utilized by MnDOT, selective and non-selective. Each District has trained maintenance personnel responsible for applying pesticides. Field maintenance staff are strongly encouraged to adhere to the MN Department of Agriculture Voluntary Pesticides Best Management Practices, District IRVM Plan, and MnDOT's Best Practices Handbook for Roadside Vegetation Management. Guidance on rare plants and habitats and herbicide use within Tribal boundaries can be obtained from the MnDOT Office of Environmental Stewardship at 651-366-3600.

5-4.05.08 HERBICIDE AND PESTICIDE USE AND POLICY

Because of their effectiveness, cost and ease of application, herbicides play an important role in the control of weeds along roadsides. The use of herbicides is governed by state, federal and sometimes local laws and regulations. It is important that certain herbicides be used only by trained personnel in accordance with the laws, regulations and label instructions. Herbicides are considered a pesticide. More information can be found at MnDOT's Herbicide Use and Policy webpage.

Items covered on the webpage include the following:

- Safety, storage and handling
- Policy statements and guidelines
- Spill response
- Loading and Disposal
- Application and selection

Additionally, the reader can refer to Minnesota Statutes Chapter 18B, Minnesota Statutes, Chapter 18B, Pesticide Control, and any related rules. Pesticide applicators must record applications in MnDOT's Pesticide Applicator Log System (PALS) within 2 weeks of application to aid in reporting for public concerns and monitoring the need for the MPCA's NPDES permit for herbicide application over water. In order to be compliant, MnDOT provides annual training for all applicators in a program designed for MnDOT employees. Responsibility for coordinating and conducting the training is with the MnDOT Office of Environmental Stewardship.

5-4.06 BRUSH CONTROL

Brush is defined as shrubs, bushes and small trees with trunks less than 4 inches in diameter. MnDOT standard brush control practices are based on the following objectives:

- Maintain adequate sight distance
- Prevent trees from becoming established, which may eventually become roadside obstacles
- Prevent snow drifting problems caused by brush
- Remove brush from obstructing drainage feature areas
- Control undesirable brush in areas managed for native grasses and forbs

5-4.06.01 BRUSH CONTROL GUIDELINES

Woody vegetation should be removed from the clear zone if its presence constitutes a hazard or obstructs the view essential for safe vehicle operation. Woody species that are aesthetically pleasing and do not constitute hazards of sight or drainage obstructions should be encouraged. If not a clear zone obstruction, some or all existing vegetation should be left in the present state, except when otherwise directed by a District IRVM plan. The Best Practices Handbook for Roadside Vegetation Management should also be considered a good source in establishing control guidelines and methods.

5-4.06.02 BRUSH CONTROL METHODS

The two main control methods MnDOT uses to control undesirable brush are physical and chemical. Prior to choosing a method of control, the problem area should be located and the detrimental plants identified. This knowledge will dictate whether physical, chemical or a combination of the methods should be used to attain long term

benefits. If brush control is occurring on right-of-way adjacent or within a reservation land boundary, contact the MnDOT Office of Environmental Stewardship prior to any work.

5-4.06.03 PHYSICAL

Physical methods of brush control include cutting with hand tools, burning and removal with mechanical equipment. For mowing to be effective, 3 to 5 year cycles are recommended. Stumps should not be left any higher than 3 inches; ideally they are ground to 6 inches below grade when possible.

Hand cutting of woody vegetation by itself generally provides only temporary benefits. Longer term benefits are achieved by following hand cutting with a herbicide treatment or stump grinding, both of which will control against brush re-growth. Hand cutting is well suited for removal of small quantities of vegetation in sensitive areas. Mowing is used to control undesirable brush on large areas and for most species must be done annually to be effective. Brush mowers are used if brush diameter is too large to be handled by conventional mowers. Mowing, if not done on a routine basis, is not a permanent solution.

Periodic prescribed burning is useful and will control undesirable brush in a prairie grass and wildflower area. Burning should be used only in selected areas and as specified in the Prescribed Burning Policy available as an internal document.

5-4.06.04 CHEMICAL

Prior to applying chemicals, review the chemical section of Weed and Brush Control as outlined in Sections 5-4.05.07 and 5-4.05.08 of this manual. This portion of the manual gives the general and legal requirements and the normal precautions required of chemical applicators.

Guidelines for stump, basal, foliar and soil treatment with chemicals for brush control appear in the Best Practices Handbook for Roadside Vegetation Management.

5-4.07 EROSION PREVENTION AND CONTROL

Erosion control during and after field maintenance activities can be accomplished using a variety of techniques including temporary structural measures such as silt fences, filter log bales, riprap dikes and storm drainage ponds. Permanent erosion control measures of interest to field maintenance staff typically include grading and seeding or sodding of disturbed areas. Resources for selection and application of erosion control measures include the following:

- Erosion Control Handbook II
- MnDOT Erosion Control webpage

Detailed guidance for erosion control measures in conformance with the National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater (MPCA) permit requirements is contained in the MnDOT Technical Memorandum No. 09-06-ENV-02.

Area maintenance staff should also become familiar with the MS4 Permit Program of the MPCA. The goal of the MS4 (Municipal Separate Storm Sewer Systems) program is to reduce the amount of sediment and pollution that enters surface and ground water from storm sewer systems to the maximum practical extent. MnDOT Districts should review the current MS4 Service Area boundaries using the MPCA Mapping Tool. Additional guidance on this program can be obtained from the MPCA and the MnDOT Office of Environmental Stewardship.

5-4.08 Care and Preservation of Trees, Shrubs and Vines

The main objectives of highway landscaping are to provide a visual and sound buffer for adjacent properties, screen unsightly areas from the highway, control drifting and blowing snow, serve as traffic delineation, reduce headlight glare, remove steep areas from mowing, control erosion, mitigate construction impacts, provide habitats, provide community enhancement and help blend the highway with the environment. For any questions about landscape design intent, contact the Landscape Architecture Unit for advice at (651) 366-4617.

Guidance on placement practices for shrubs and trees can be found in the MnDOT Typical Landscape Treatments webpage. The success or effectiveness of highway plantings is dependent largely on the care given during the first three years after planting. As most installed highway landscapes are designed to mature in a naturalized manner, when plants become successfully established, the maintenance requirements are greatly reduced.

The MnDOT Plant Selector is an effective tool for use in plant, tree and shrub selection along roadways. The MnDOT Office of Environmental Stewardship should be contacted for further assistance in plant, tree and shrub selection.

Consult the Best Practices Handbook for Roadside Vegetation Management regarding proper care, pruning, fertilizing, spraying, and insect control regarding trees, shrubs, and vines including practices regarding safe tree shrub and vine removal.

The Office of Environmental Stewardship Roadside Vegetation Management Unit will give Maintenance staff guidance on the following practices:

- Insect and disease control including Dutch Elm, Gypsy Moth, Emerald Ash Borer and Oak Wilt
- Trimming and pruning of vines, shrubs and trees.

5-4.08.01 Weed Control near Trees and Shrubs

Young trees and shrubs are poor competitors against weeds and usually lose out, especially when moisture is limited. Weeds and grasses adjacent to and among plantings should be kept under control so that they do not compete with the desirable plants for moisture, nutrients and sunlight, or become unsightly or present a fire hazard. Maintenance of tree and shrub areas should be regular and started early in the growing season. The most commonly used methods of weed control in planting areas are: hand pulling, the addition of more mulch in the planting areas, applying fertilizers to speed crown closure of desirable plants and the use of chemical weed controls. Weed control by cultivation should be done only on plantings that were not mulched or which might be sensitive to chemical weed control. Herbicides should only be applied by trained applicators.

The use of "weed whips" should be avoided near bases of trees and shrubs. The whip action can girdle the tree which may be fatal to the tree or shrub. Staff should also use caution when spraying herbicides near the tree or shrub because the plant can absorb the herbicide even if not directly sprayed on the plant.

5-4.08.02 Rodent Control

Rodents are usually controlled by elimination of their natural hiding places (i.e. tall grasses and densely vegetated areas), applying pesticides, trapping, installing hardware cloth or, mulching and applying repellents.

5-4.08.03 Removal of Trees and Shrubs

Tree removal is the selective removal of trees or shrubs that lack sufficient quality to be considered for preservation. Existing trees should be removed or pruned when they exhibit the following problems:

- Hazardous to motorists, pedestrians or interfere with maintenance operations
- Infected by serious diseases such as Dutch elm disease, oak wilt or insects such as pine bark beetles or emerald ash borers
- Interfere with traffic clearance
- Interfere with vertical or horizontal sight distance
- Interfere with more desirable trees
- Interfere with desirable views from the roadway

Tree removal shall be considered only as a last resort to maintenance procedures. Tree trimming should be given preference over tree removal. Snag (dead) trees should be left in place in areas where they do not pose a safety hazard or a serious eyesore problem. Snag trees are valuable for wildlife (nesting cavities, food source, etc.) in addition to creating diversity in the landscape. Trees on historic properties may be part of the historic integrity of the site. MnDOT's Cultural Resource Unit (651-366-3633)

should be contacted prior to tree removal to determine if the tree is located on historical or tribal sites except when the tree has fallen naturally.

5-4.08.04 HAZARD TREE MANAGEMENT

Hazard tree management, within the constraints of the MnDOT resources, is a necessary part of providing a complete road system.

A tree must pass two tests to be considered a hazard tree: it must have a significant risk of failure, and it must have a target (see definition below). Many types of structural defects and damage can weaken a tree. Storm damage from ice, lightning strikes, snow and high winds can cause immediate problems that weaken trees. Long term problems caused by human activities (mower blight, poor pruning, topping, etc.) or tree growth habits that causes a high likelihood of problems (ash fork, aspen are highly susceptible to canker) can weaken trees.

A target is any area that has a high risk of injury to people or damage to property if a tree falls within striking distance of the site. A prime example would be parking stalls in a rest area next to trees that were poorly pruned 10 years ago and where people may be taking shelter in a car during a storm.

There are limits in the capability to detect, interpret and manage hazardous trees and there will be unpredictable tree failures. All of the hazards in wooded rest areas and along forest roadways cannot be detected, corrected, or eliminated, but significant risks can be reduced with systematic inspections.

The responsibility of identifying and reporting hazard trees lies within the Districts, however, the Roadside Vegetation Management Unit also has a responsibility to report to District Maintenance staff any hazardous situations they encounter while performing their statewide tasks. Notice of a hazard tree from the Roadside Vegetation Management Unit should be e-mailed to the appropriate District Supervisor or direct contact made if there is imminent danger to the public.

If the tree is located on a known historic, archeological, or tribal site, MnDOT's Cultural Resources Unit should be contacted prior to removal if the tree is not hindering traffic. The hazard tree or branch should be removed as soon as possible.

The document, "Urban Tree Risk Management" by USDA Forest Service establishes procedures to use in detection and correction of hazard trees.

5-4.09 MAINTENANCE OF WILDFLOWERS AND NATIVE GRASSES

Mowing of wildflowers and native grasses is discouraged except for shoulder mowing, spot mowing of noxious weeds, and site corners. Any other mowing should be based on site-specific vegetation management objectives. Contact the MnDOT

Office of Environmental Stewardship or their Roadside Vegetation Management Unit for site specific recommendations.

5-4.10 TURF ESTABLISHMENT, SEEDING, SODDING AND FERTILIZING

Where applicable, MnDOT has established and maintained a healthy herbaceous vegetative cover on its roadsides to protect against erosion, to prevent the encroachment and spread of noxious weeds and to provide an environmentally pleasing roadside.

The MnDOT Seeding Manual is the primary source for seed mix selection, establishment, fertilization, and grass plant maintenance. For turf establishment, the Seed Mix and Turf Establishment webpage should be referenced when performing turf establishment operations. The webpage also contains specific district turf establishment recommendations.

The re-establishment of native grasses and forbs is recommended whenever and wherever possible, especially on roadsides where minimum maintenance and cover for wildlife is desired. The Standard Specifications for Construction lists all of the grasses and mixtures for use on MnDOT construction projects. Special seed mixtures can also be developed for a variety of purposes. The Erosion Control Engineering Unit can provide assistance on the establishment and maintenance of all of the above seed mixtures.

5-4.11 MAINTENANCE OF WAYSIDE REST AREAS

Mow developed and used public use portions of rest areas, wayside parks and over-looks as necessary. Refer to Chapter 10 of the Maintenance Manual for additional details on the maintenance of rest area facilities and grounds.

5-4.12 PRESCRIBED BURNS FOR VEGETATION MANAGEMENT

MnDOT's use of prescribed or controlled burns is contained in an internal MnDOT Policy #OP001 document. The purpose of prescribed burns is to primarily control noxious weeds and to reestablish healthy vegetation. If a prescribed burn is planned, MnDOT will designate a Prescribed Fire Program Coordinator to carry out the operation.

The MnDOT policy contains essential information on applicable permits and laws that apply to prescribed fires that staff should follow before, during and after the prescribed fire takes place. Additional information regarding prescribed fires is found on the MnDOT Prescribed Fire webpage.

5-4.13 HISTORICALLY SIGNIFICANT AREAS

Maintenance of historical or other monuments, including historical walls, is substantially the same as the maintenance of retaining walls and other permanent roadway fixtures. Historical monuments should be repaired to the Secretary of Interior Standards. All work should be coordinated with MnDOT's Historian in the Cultural Resources Unit of the MnDOT Office of Environmental Stewardship.

5-4.14 CULTURALLY SIGNIFICANT AREAS

MnDOT field maintenance staff must be particularly aware of the special attention which needs to be given to maintenance of historic walls and monuments and maintenance in designated historic areas or areas known for archaeological interest. Field supervisory staff must contact MnDOT's Cultural Resources Unit for guidance prior to initiating any maintenance activities on historic structures or culturally significant areas.

5-4.15 REMOVAL OF DEBRIS AND RUBBISH

Trash and rubbish discarded along the highway should be picked up and properly disposed of at a sanitary landfill site or a recycling center. Trash is usually more prevalent near municipalities, commercial establishments, parks and recreational areas and along routes leading to sanitary landfill sites.

Public dumps are not permitted upon the highway right-of-way. Sanitary landfill sites, which are licensed and which normally assess a disposal charge, should be used exclusively by MnDOT forces for non- recyclable items.

Trash receptacles may be placed in roadside parks, rest areas and waysides. If the receptacle is frequently overflowing, due to placement of household garbage therein, the receptacle may be removed, and depending upon the criticality of the facility, the wayside may be closed. It is often advantageous to contract for garbage pickup at these sites rather than to do it with MnDOT forces. Refer to Chapter 10 of the Maintenance Manual for additional information regarding trash receptacle use.

The remains of animals killed by motor vehicles, which are found on highway surfaces and roadsides, should be removed and disposed of properly. A guidance document is in preparation by the MnDOT Office of Environmental Stewardship. The guidance is contained in Section 11 of the MnDOT Regulated Materials Management, under the Management and Handling of Road-kill Carcasses heading (page 7).

Debris such as tree branches, large tire fragments and materials that have spilled from trucks, rocks or earth slides should be promptly removed from highway surfaces, shoulders and ditches as may be necessary for the preservation of safety and convenience of the traveling public.

Abandoned containers and tanks can hold a wide range of materials, some of which can be a hazard to MnDOT employees and the public. Abandoned containers, equipment and materials must be handled in a safe, efficient and cost effective matter in order to protect human health and to ensure proper disposal. Maintenance personnel can refer to The Abandoned Container MnDOT Technical Memorandum No. 13-16-ENV-03 and consult the District Triage Team.

Adopt-a-Highway is a public service program for volunteers to pick up litter along Minnesota's highways. Community groups, churches or businesses adopt a highway by picking up litter on both sides for at least two years. For further details please refer to the MnDOT Adopt-A-Highway website.

5-4.16 MISCELLANEOUS AREAS

5-4.16.01 RETAINING WALLS AND NOISE WALLS

Some retaining walls are historic and should be repaired to Secretary of Interior standards. Please see Historic Roadside Development Structures on Minnesota Trunk Highways for listings. All work should be coordinated with MnDOT's Historian in the Cultural Resource Unit. General guidance for the maintenance and repair of walls and monuments is as follows:

- Retaining walls may be constructed of plain or reinforced concrete, rubble, masonry, timber or metal. Walls may be built to prevent bank erosion and at the same time protect the roadsides. Their prime purpose is to preserve an embankment or slope in a cut section and only incidentally to serve drainage facilities.
- There is a requirement to seal the surfaces as part of construction/manufacture of the masonry units to prevent structural deterioration of the masonry units from chloride and other contaminants. It is uncertain whether resealing will be required, if deterioration of the masonry is noted the surface of the wall may require resealing. Evaluation of the condition and appropriate action or sealant should be coordinated with District Bridge Crews and Office of Materials and Research Geotechnical Unit.
- Noise walls are normally constructed of pre-cast concrete panels, concrete blocks or treated timber. Maintenance of these walls has generally been limited to repairing traffic damage. As noise walls are of relatively recent age, little is known about their long term maintenance requirements.
- Maintenance of right-of-way behind the noise barriers has the potential of being a very costly operation for MnDOT. Adjacent land owners should be encouraged to maintain this area to their own satisfaction. Maintenance Engineers should work with Right-of-Way Sections to release excess land.
- For the purpose of maintaining the noise walls, MnDOT should either own or have a permanent easement on 10 to 16 feet of land behind the wall, depending on the terrain, and have reasonable access to it. Offensive graffiti should be removed promptly.

FIGURE 22: RETAINING WALL

5-4.16.02 Preservation of Volunteer Vegetation

The re-growth of native vegetation outside of the clear zone should be encouraged since it enhances the beauty of the roadway by providing a natural merging of the maintained roadside and the adjoining native growth.

Vegetation should be preserved where it does not interfere with sight distance, safety standards or otherwise pose a hazard to traffic. Existing trees that provide shade, frame views or have other value should be saved on outer roadside borders and in the medians where there is adequate clearance from the edges of the pavements meeting clear zone requirements.

5-4.16.03 Advertising Signs and Other Encroachments

The placement of advertising signs within the highway right-of-way is prohibited by state law. Minnesota Statutes, Section 160.2715 provides that it is unlawful to place or maintain any advertisement within the limits of any highway or paint, print, place or affix any advertisement on any object within the limits of any highway. The detection and removal of all encroachments from highway right-of-way is an important responsibility of highway maintenance personnel.

In many instances, advertising signs or other encroachments are placed on the right-of-way by people who are not familiar with the law. When such encroachments that are permanent in nature are detected, the maintenance employee will report it to an appropriate supervisor who will investigate the encroachment. The violator will be notified that the encroachment is in conflict with state law and must be removed by a predetermined date. If the person responsible for the encroachment is uncooperative, written notification should be issued describing the violation and the action to be taken. This written notification can be in the style of a district prepared form letter or a personal letter. If the encroachment is not removed by the date specified in the notification, it should be removed by maintenance personnel in accordance with Minnesota Statutes, Section 160.27, Subdivision 6.

Temporary signs such as realty, garage sale and political campaign signs appearing on the right-of-way should be removed promptly. When temporary signs are found on the right-of-way, an attempt should be made to advise the owner or political candidate that their sign was in violation of the law. Temporary signs removed from the right-of-way should not be destroyed immediately but stored at the closest maintenance truck station so that the owner may retrieve them.

Encroachments such as fences, buildings, vehicles, gas pumps, illegal entrances through legally closed access, evidence of entering and leaving the highway where entrances have not been provided, etc., are treated similarly to permanent advertising signs.

5-4.16.04 Removal of Vegetation which Affects a MnDOT Approved Advertising Display

Minnesota Statutes, Chapter 173 defines the responsibility of MnDOT to allow removal of vegetation which screens advertising displays.

MnDOT's policy for the removal of vegetation which obstructs the view of an advertising display provides a formal means for:

- Any billboard owner or operator to apply for removal of vegetation screening the view to the billboard
- Listing criteria to be considered by MnDOT in evaluating the application request
- Providing guidelines to be used in approval or denial of the request to remove vegetation from Trunk Highway right-of-way

The policy is intended to provide relief to the applicant whenever possible and, at the same time, preserve and protect trees and shrubs which are "irreplaceable" for aesthetic, safety, environmental, historical or legal reasons.

A copy of the MnDOT policy and the form for the application for removal of vegetation can be obtained at any MnDOT Maintenance Area Headquarters (see MnDOT Technical Bulletin No.11-17-ENV-03).

5-4.16.05 Right-of-Way Fences

Most Interstate Highways and some expressways are fenced for the purpose of delineating MnDOT right-of-way. Generally, fences are placed inside the ROW limits, however, the location of the fence may vary at ramps or frontage roads. These fences are not designed specifically for or meant to be used by adjacent property owners to prevent their livestock, pets, or other animals from leaving private property, nor are they maintained for that purpose.

Basically two types of fence designs are used. In rural areas a 2.5-foot woven wire is used together with a single strand barbed wire on the bottom and two strands of barbed wire on top. Contact the area truck station supervisor for fence placement or repair needs.

In urban or more populated areas, fences with heights of 5.0-foot are generally used. Details of standard fence types may be found on Standard Plates 9320, 9321, and 9322.

5-4.16.06 Signs, Signals and Roadmarkers

Highway directional and warning signs, traffic signals and other road markers must be kept clearly visible to highway users at all times. Vegetation should not be allowed to grow so high as to obstruct a clear view of them. Approaches to signs should be mowed for approximately 500 feet if necessary for visibility. This mowing should be blended into the regular shoulder mowing. Guidelines for vegetation management adjacent to businesses and off-premise advertising devices (signs, etc.) are contained in MnDOT Technical Memorandum No. 11-17-ENV-03.

5-4.16.07 Guardrails and Barriers

Vegetation should be controlled as necessary on either side of the guardrail. This is done to reduce the trapping effect this vegetation has on sand, dirt and snow. Sterilants, bituminous mixtures and road oils are some of the most common treatments for controlling vegetation around guardrails. Mowing with hand mowers/ weed whips is costly but may be necessary. When sterilants and bituminous mixtures are used, they must be placed in accordance with label instructions.

5-4.16.08 Grass Fires within MnDOT Right-of-Way

Reimbursement for expenses that occurred for grass fires (fire services) within MnDOT right-of-way is governed by Minnesota Statutes, Section 161.465.

Upon receiving notification from the proper official regarding a grass fire in the MNDOT right-of-way, the district shall investigate the scene and document the following information on the MnDOT Fire Service Call Investigation Form:

- Date office received notification of the incident
- Date, time and location of the fire
- Verify that the fire was a grass fire and/or make an attempt to determine if there was a third party involved for purposes of establishing responsibility for the fire
- Verify that the grass fire is on MnDOT right-of-way and indicate whether the fire spread to areas outside of MnDOT right-of-way
- Assess damage to MnDOT infrastructure and assess necessary repairs that will be needed to the infrastructure

The following steps should be taken when processing a request for reimbursement from a fire department or municipality for a grass fire on MnDOT right-of-way:

- The fire department or municipality should fill out MnDOT Reimbursement Form No. 17300-02, revised 3/2/09, if the fire department or municipality has not already done so. The form must be completed to the extent information is known and must be signed by the proper officials.
- MnDOT staff should verify that the information received from the fire department or municipality on the form is consistent with the MnDOT internal investigation of the fire scene.
- Upon verification and approval by the maintenance engineer that this reimbursement meets the criteria of the statute for reimbursement, the office manager is directed to make payment to the fire department or municipality.
- Payment to fire departments or municipalities throughout the year must be made from each maintenance area’s trunk highway operating budget.
- On the MnDOT Purchase Order, code the reimbursement payment to Commodity Code 00602 and include in the “Order Title” field the words “grass fire” so that financial reports can be accurately generated.
- All valid claims from fire departments which comply with the law shall be paid within 60 days after receipt of the invoice.

3/2/2009

Minnesota Department of Transportation
Fire Service Call Investigation Form

Date Notified of Fire:	Date and Time of Incident:

Location of Fire: Address/Mile Point/Trunk Highway No.

Grass Fire: □ Yes □ No If no, please explain.

Was there any indication of third party involvement in the fire, i.e. vehicle, railroad?
□ Yes □ No If yes, please explain:

Was fire located on MnDOT R/W? □ Yes □ No

Did fire spread outside of MnDOT R/W? □ Yes □ No

Damage to any MnDOT infrastructure? □ Yes □ No
If yes, please explain:

Sketch/photo of fire location showing MnDOT R/W property lines.

Investigation conducted by:
(name/title)_____
Date of investigation: _____

MINNESOTA DEPARTMENT OF TRANSPORTATION

REIMBURSEMENT CERTIFICATION FOR:
GRASS FIRE SERVICE CALLS ON TRUNK HIGHWAY
RIGHT OF WAY PURSUANT TO MINNESOTA STATUTES
161.465

FIRE DEPARTMENT INFORMATION	
Fire Department Name:	Address:
REPORTING INFORMATION	
Date of Incident: Date MnDOT Notified:	Time of Incident: □ A.M. □ P.M.
Name & Address of Person Reporting Fire:	Method Used to Report Fire:
FIRE LOCATION	
Exact Location of Fire: Address/Mile Point/Trunk Highway No.	
Distance in Feet From Any Adjacent Railroad Track:	Did Fire Extend beyond MnDOT R/W line? □ Yes. If yes please fill out information on Form 17300-02 □ No
FIRE INFORMATION	
Cause of Fire:	
Name & Address of Property Owner(s) Involved:	Person/Object Responsible for Fire: (Name & address if applicable)
ACTION TAKEN BY FIRE DEPARTMENT	
Specify Action Taken by Fire Department to Extinguish Fire:	
Specify Equipment Used to Put Out Fire, No. of Hours & Cost Per Hour: (Attach itemized statement)	
Certification of Claim by Municipality or Fire Department	
Authorized signature from Municipality/Fire Dept. Title: Date:	Total Amount of Claim (Attach itemized statement)
MnDOT Approval (Area Maintenance Engineer Signature)	

LOCAL FIRE DEPARTMENT: Keep a copy. Send original, with itemized statement of expenditures, to the Minnesota Department of Transportation Area Maintenance Engineer in your locality.

Minnesota Department of Transportation
Additional Approval for Grass Fires Service
Outside MnDOT Right-of-Way

Pursuant to Minn. Stat. § 161.465 to seek reimbursement for ordinary expenses incurred by a municipal or volunteer fire department in extinguishing a fire outside the right-of-way of any trunk highway if the fire originated within the right-of-way, in addition to certification by a municipality or fire department **approval must also be obtained from a police officer or an officer or employee of the Department of Public Safety**.

Authorized Signature:

Name: _____

Title: _____

Check one:

□ Police officer

□ Officer of the Department of Public Safety

□ Employee of the Department of Public Safety

Date: _____

17300-02 Revised 3/2/09

SAMPLE

[date]

[address of fire department/municipality]

RE: Fire Service Call Reimbursement

Dear _____:

Enclosed please find a copy of an invoice dated _____ requesting reimbursement for fire call services that occurred on _____, your invoice number _____. Pursuant to Minnesota State Statutes, section 161.465, the Minnesota Department of Transportation (MnDOT) will only reimburse for “grass fires” originating within MnDOT right-of-way.

Upon review of the enclosed invoices, the incident is not eligible for reimbursement because [state specific reason for denial such as: the fire was not a grass fire or did not occur on MnDOT right-of-way, etc.]

If you have further questions regarding this matter, please contact _____ [area maintenance superintendent or maintenance engineer] at _____.

Thank you,

[Name/title of area maintenance superintendent or maintenance engineer]

INDEX OF LINKS

Best Practices Handbook for Roadside Vegetation Management
http://www.lrrb.org/media/reports/200820.pdf

Burning
http://www.dot.state.mn.us/roadsides/vegetation/fire.html

Design Module
http://climate.umn.edu/snow_fence/Components/Design/introduction.htm

Erosion Control Handbook II
http://www.dot.state.mn.us/environment/erosion/pdf/2006mndotecfieldhandbook.pdf

Historic Roadside Development Structures on Minnesota Trunk Highways
http://www.dot.state.mn.us/roadsides/historic/index.html

IRVM
http://www.dot.state.mn.us/roadsides/vegetation/irvm.html

Living Snow Fences
http://www.dot.state.mn.us/environment/livingsnowfence/

Minnesota Department of Agriculture (MDA)
http://www.mda.state.mn.us/plants/badplants/noxiouslist.aspx

Minnesota DNR
http://www.dnr.state.mn.us/invasives/index_aquatic.html

Minnesota Statutes, Chapter 173
https://www.revisor.leg.state.mn.us/statutes/?id=173

Minnesota Statutes, Chapter 18B, Pesticide Control
http://www.revisor.leg.state.mn.us/stats/18B/

Minnesota Statutes, Section 160.23
https://www.revisor.leg.state.mn.us/statutes/?id=160.23

Minnesota Statutes, Section 160.232
https://www.revisor.leg.state.mn.us/statutes/?id=160.232

Minnesota Statutes, Section 160.27, Subd. 6
https://www.revisor.leg.state.mn.us/statutes/?id=160.27#stat.160.27.6

Minnesota Statutes, Section 160.2715
https://www.revisor.mn.gov/statutes/?id=160.2715

Minnesota Statutes, Section 161.465
https://www.revisor.leg.state.mn.us/statutes/?id=161.465

Minnesota Statutes, Section 18.78
https://www.revisor.mn.gov/statutes/?id=18.78

Minnesota Statutes, Section 18.82
https://www.revisor.leg.state.mn.us/statutes/?id=18.82

MnDOT Adopt-A-Highway
http://www.dot.state.mn.us/adopt/

MnDOT Cultural Resources Unit
http://www.dot.state.mn.us/culturalresources/index.html
http://www.dot.state.mn.us/culturalresources/contact.html (Contact link)

MnDOT Erosion Control
http://www.dot.state.mn.us/environment/erosion/index.html

MnDOT Landscape Architecture Unit
http://www.dot.state.mn.us/roadsides/vegetation/landscaping.html

MnDOT Office of Environmental Stewardship
http://www.dot.state.mn.us/environment/

MnDOT Plant Selector
http://dotapp7.dot.state.mn.us/plant/

MnDOT Prescribed Fire
http://www.dot.state.mn.us/roadsides/vegetation/fire.html

MnDOT Road Design Manual
http://roaddesign.dot.state.mn.us/roaddesign.aspx

MnDOT Seeding Manual
http://www.dot.state.mn.us/environment/erosion/pdf/seedingmanual.pdf

MnDOT Technical Memorandum No. 09-06-ENV-02
http://dotapp7.dot.state.mn.us/edms/download?docId=865570

MnDOT Technical Bulletin No.11-17-ENV-03
http://dotapp7.dot.state.mn.us/edms/download?docId=1134190

MnDOT Technical Memorandum No. 13-16-ENV-03
http://dotapp7.dot.state.mn.us/edms/download?docId=1341934

MnDOT's Cultural Resources Unit
http://www.dot.state.mn.us/culturalresources/

MnDOT's Herbicide Use and Policy
http://www.dot.state.mn.us/roadsides/vegetation/herbicide.html

MPCA (Minnesota Pollution Control Agency)
http://www.pca.state.mn.us/

MPCA Mapping Tool
http://pca-gis02.pca.state.mn.us/ms4/index.html

MS4 (Municipal Separate Storm Sewer Systems)
http://www.dot.state.mn.us/metro/waterresources/

Roadside Vegetation Management Unit
http://www.dot.state.mn.us/roadsides/vegetation/

Section 11 of the MnDOT Regulated Materials Management
http://www.dot.state.mn.us/environment/regulatedmaterials/pdf/section-11.pdf

Seed Mix and Turf Establishment
http://www.dot.state.mn.us/environment/erosion/seedmixes.html

Standard Plates
http://standardplates.dot.state.mn.us/

Temporary Traffic Control Zone Layouts Field Manual
http://www.dot.state.mn.us/trafficeng/publ/fieldmanual/index.html

Traffic Engineering Manual
http://www.dot.state.mn.us/trafficeng/publ/tem/

Typical Landscape Treatments
http://www.dot.state.mn.us/design/landscape-treatments/index.html

Urban Tree Risk Management by USDA Forest Service
http://www.na.fs.fed.us/spfo/pubs/uf/utrmm/