

Chapter 5

Roadway/Roadside Maintenance

5.0 Introduction

Description

Roadway/Roadside Maintenance Program includes the following activities:

- Repairing, replacing, and cleaning drainage facilities.
- Maintaining roadway slopes as near as originally constructed as possible.
- Controlling vegetation growing within the right-of-way.
- Maintaining landscaped areas such as interchanges.
- Maintaining cattle guards, gates and fences.

Purpose

MDT's goal is to maintain roadways/roadside for safety, to protect the environment and to maintain a pleasing aesthetics in a functional manner.

Roadside/Roadway Work Planning

Conditions that should be considered when establishing maintenance work plans include the following:

- Plugged or partially plugged culverts and drop inlets that may result in flooding of the highway and abutting properties.
- Ditches filled with silt and debris that impact drainage and may cause flooding or erosion of MDT property or abutting property.
- Roadside vegetation that obscures highway appurtenances such as guardrails and signs, or may cause sight distance problems for motorists.
- Infestations of noxious weeds.
- Mowing and trimming trees in landscaped areas.
- Damaged fences and cattle guards.

Permits/Approvals

Before entering private property to perform work, the supervisor must obtain written consent from the property owner.

If working near or in water or drainage of a water system, a 124 and/or 404 Water Quality Permits may be required. **If the disturbed surface exceeds five (5) acres or disturbance of one acre or greater within 100 feet of a surface water body, a storm water runoff permit will be required. Wetland issues must be addressed.**

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Supervisors need to check Fish, Wildlife & Parks Guide to Stream Permitting to see if water quality or other permits are required.

In doing culvert replacement, a U.S., Army Corps of Engineer 404 permit may be required. In-stream activities such as beaver dam removals require securing a 124 permit from the Montana Department of Fish, Wildlife and Parks prior to beginning the activity. (Refer to MOU between MDT and MDFWP for procedures for securing a permit.)

If digging is required, Underground Service Alert must be contacted before digging at inlets and outlets of culverts. Phone 1-800-424-5555 at least two days before digging.

Safety and Training

Supervisors should review with employees all safety, training, and work zone requirements and ensure compliance with approved guidelines. The work should be reviewed with employees prior to starting so that everyone has an understanding of any safety concerns and the work plan.

Employees should review MSDS for products used to make themselves aware of safety and health precautions and required personal protective clothing and equipment.

Environmental Best Management Practices

Supervisors should be aware of environmental concerns. Special precautions must be taken to protect water quality near streams, lakes and wetlands. Dispose of waste materials at an appropriate site.

Documentation

Documentation of these activities should be in accordance with the activity reporting system outlined in the MMS Manual. If special documentation is required, it will be included under the applicable activity.

Resource

MMS Manual

Fish, Wildlife & Parks, A Guide to Stream Permitting

MDT Environmental Best Management Practices

Montana Safety Operations and Procedures

Vegetation Management Plan

MDT Mowing Guidelines

5.1 Cleaning Culverts, Culvert Openings, and Basin Inlets (MMS 3101)

Activity Description

This activity includes removing all types of obstructions from culvert ends and removing silt from inlets and catch basins. This activity will include cleaning mechanically or manually: culvert-catch basins and inlets, or the outfalls drain outlets and box culvert/multi-plate underpasses.

Purpose

The purpose of this activity is to remove accumulated dirt, debris and vegetation, which impedes the flow of water and to maintain proper drainage. This will prevent damage to the roadway and erosion or flood damage to nearby properties.

Timing of Maintenance

Inspections should be done twice yearly and after major storms to determine if cleaning or repairing damage to the structure is required.

Employees should be aware of environmental concerns before cleaning culverts. Call Underground Service Alert at 1-800-424-5555 at least two days before digging.

Specialized Equipment

- Backhoe
- Special culvert cleaning equipment

Safety and Training

Supervisors should review safety, training and work zone requirements with employees and ensure compliance with approved guidelines.

Environmental Best Management Practices

In sensitive areas, best management practices:

- Install erosion/sediment control during culvert cleaning, where erosion control devices can feasibly be installed.
- Dispose of materials above the bank line and not in any waterway or wetland.
- Perform work at low flow and may divert flow to minimize turbidity when and where possible.

For culvert and inlet cleaning, best management practice include:

- Any work performed in flowing water, will be completed during MFWP SPA 124 Permit in-water work period for that system or as otherwise negotiated with MFWP.
- MDT maintenance will closely coordinate with MDT Environmental Services District Biologist and MFWP on the removal of material from culverts when work performed in a MFWP identified stream reaches supporting fish species or significant, limiting habitat elements.

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- On culverts that convey live streams, MDT will remove ten (10) feet of brush on both sides of culvert on the upstream end and ten (10) feet of brush on both sides of the downstream end, unless the brush around the culvert is a noxious weed. If other brushing needs are identified, MDT will coordinate with the MDT Environmental Services Botanist and MFWP.

Procedures

1. Secure required permits.
2. Inspect and determine which culverts require cleaning.
3. Place appropriate traffic control devices.
4. Clean culvert ends and underground drains with appropriate equipment.
5. Clean debris and remove silt from each catch basin and inlet.
6. Clear debris and remove obstructions from under bridges.
7. Dispose of debris in an approved location.
8. Remove traffic control devices

5.2 Culvert Repair, Replacement and Fish Betterment (MMS 3102)

Activity Description

This activity includes repairing and replacing culverts that are damaged or deteriorated to the point of being structurally deficient. The activity also includes repairing and replacing catch basins, drop inlets, manholes, culverts, erosion control features, fish baffles and weirs, retaining walls, and mechanical or electrical defects at pump stations.

Purpose

The purpose of this activity is to ensure drainage, erosion control and restoration of structures.

Timing of Maintenance

When possible, inspection should be done twice a year. Repair when features or structures no longer function as originally designed.

Specialized Equipment

Supervisors should check availability of equipment prior to starting the project:

- Track hoes (rental may be required)
- Excavator (rental may be required)
- Compaction equipment
- Pavement saw
- Tools for cutting and removing section of damaged culvert.

Materials

- Concrete
- Appropriate back fill material aggregates
- Fabric fence for erosion control
- Pipe as required

Safety and Training

Supervisors should review safety, training and work zone requirements with employees to ensure compliance with approved guidelines. Supervisors should be aware of and enforce safety regarding employees working in trenches.

Because of possible utility installations within the right-of-way, Underground Service Alert must be contacted before excavating, call 1-800-424-5555 at least two days before scheduled work is begun.

Special Precautions

Employees should be aware of environmental concerns when repairing, replacing and extending culverts. Special precautions must be taken to protect water quality near streams, lakes, and water.

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Before entering private property to perform work, the supervisor must obtain written consent from the property owner.

Environmental Best Management Practices

In sensitive areas, best management practices:

- Install erosion/sediment control during culvert cleaning, where erosion control devices can feasibly be installed.
- Dispose of materials above the bank line and not in any waterway or wetland.
- Perform work at low flow and diverting flow to minimize turbidity when and where possible.

When repairing a drainage feature, every attempt (within the engineering solution) will be made to incorporate a fish passage. This will mean coordination with the MDT Environmental Services District Biologist, MDT Hydraulics Section and the MFWP Regional Fisheries Biologist.

- Any work, which must be performed in flowing water, will be completed during MFWP SPA 124 Permit in-water work period for that system or as otherwise negotiated with MFWP.
- MDT maintenance will closely coordinate with MDT Environmental Services District Biologist and MFWP when repairing culverts in an MFWP-identified stream supporting fish species or significantly limits habitat elements.
- Culvert replacement or extension will frequently require permits including the Army Corps of Engineers 404 permit, MFWP SPA 124 permit, tribal permit and possibly others. Any culvert replacement or extension may be required to meet provision for fish passage as required by MFWP. Culvert replacement for culverts identified as requiring fish passage will only occur following guideline and requirements approved by the MFWP Regional Biologist and in coordination and cooperation with the MDT Environmental Services District Biologist.
- On culverts that convey live streams, MDT will remove 10 feet of brush on both sides of culvert on the upstream end and 10 feet of brush on both sides of the downstream end, unless the brush around the culvert is a noxious weed. If other brushing needs are identified, MDT will coordinate with the MDT Environmental Services Botanist and MFWP.

Procedures

1. Set up traffic control devices.
2. Clean and repair structures.
3. Clean up area and dispose of debris appropriately.
4. Remove traffic control.

5.3 Cleaning, Shaping and Repairing Ditches (MMS 3106)

Activity Description

This activity includes cleaning and shaping roadside ditches including the removal, hauling and disposing of excess material, restoring proper grade line and side slope configurations to the conditions to which they were originally constructed to ensure adequate drainage. Paved and concrete ditches are included in this activity.

Purpose

The purpose of this activity is to allow unrestricted water flow, to prevent flooding or erosion and to keep moisture from the pavement sub grade.

Timing of Maintenance

Ditches should undergo regular periodic inspections and additional inspections after major storms to determine if cleaning and shaping is required.

Specialized Equipment

- Motor patrol
- Broom
- Loader

Materials

Ensure appropriate materials for the type of ditch repaired such as asphalt, concrete and erosion control such as silt fence, straw bales or other types of erosion control devices.

Safety and Training

Supervisors should review safety, training and work zone requirements with employees and ensure compliance with approved guidelines.

When specialized equipment is used, the supervisor should review operating procedures with the crew to ensure that everyone understands the safety precautions.

Special Precautions

Supervisors should be aware of environmental concerns when cleaning ditches. Special precautions must be taken to protect water quality near streams, lakes, and wetlands.

Because of possible utility installations within the right-of-way, Underground Service Alert must be contacted. Call 1-800-424-5555 at least two days before cleaning ditches is begun.

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Environmental Best Management Practices

Environmental best management practices include:

- Disposing removed material above the bank line and not in any waterway or wetland.
- Using erosion control devices such as check dams, silt fences and other acceptable techniques when the potential exists to have sediment or other materials enter waters of the state.
- Reseeding drainage ditches and steep slopes as appropriate. (Ditches functioning as rock fall areas as determined by the Maintenance Chief as opposed to drainage facilitates will not be reseeded.)
- Performing ditch work in optimum weather to minimize environmental impacts if possible and consulting with MFWP and the MDT District Project Biologist if silt devices are inadequate to filter water prior to draining to watercourse.
- Evaluating and modifying, where feasible and appropriate, existing ditch slopes to trap sediments and support development of vegetation.
- **Recycling excavated material when feasible. This activity may require a U.S. Army Corp 404 Permit.**

Procedures

1. Determine which ditches require cleaning.
2. Obtain any permit or approval needed for work.
3. Identify an approved disposal site for excess material.
4. Set up traffic control devices.
5. Excavate and shape work area.
6. Re-establish ditch flow line.
7. Clean any debris or silt off roadway. Broom if necessary.
8. Establish appropriate environmental and erosion control BMP. Reseed if necessary.
9. Remove traffic control devices.

5.4 Slope Repair (MMS 2206)

Activity Description

This activity is for repairing roadway fill slopes that have deteriorated from erosion or have been damaged by floods.

Purpose

Slope maintenance and repair are done to prevent further erosion that may cause damage to other drainage features and/or roadway failure.

Timing of Maintenance

Inspect fill slopes periodically to determine when repairs are required. Repair slopes before they become a safety hazard or affect the structural integrity of a road. Ensure work is accomplished during water-work periods.

Specialized Equipment

- Motor patrol
- Dozer
- Excavator
- Back hoe

Materials

Material used for fill slope repair should be free of matter such as leaves, grass, roots, brush or perishable substances. Soils that cause problems when subjected to a significant amount of moisture should not be used.

Storage

If materials are stockpiled on a job site prior to the project starting, they should be located in an area that permits good access for maintenance vehicles and maintains the 30-foot (9m) clear zone.

Safety and Training

Supervisors should review safety, training and work zone requirements with employees and ensure compliance with approved guidelines.

Special Precautions

Employees should be aware of environmental concerns when repairing fill slopes. Special precautions must be taken to protect water quality near streams, lakes and wetlands. In areas where right-of-way is limited, entering private property to repair fill slopes may be necessary. The supervisor must obtain written consent of property owner before entering private property.

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Underground Service Alert must be contacted if excavation is a necessary part of fill slope repair. Call 1-800-424-5555 at least two days before starting project.

Environmental Best Management Practices

To minimize or avoid environmental impacts, maintenance will consider the following:

- Any installation of material that exceeds the material removed by bank erosion (below bank full stage) may constitute a significant action under the ESA. Increases in the material profile may require additional coordination with regulating agencies such as the Army Corp of Engineers, MFWP and USFWS.
- Replacement of riprap will follow MFWP in-water work periods, in non-emergency situation. Situations that require expedited MDT Maintenance action, but which are not technically defined as “emergencies” (under the ESA or by other federal or state statute) will be addressed with the MDT Environmental Services Project Biologist with the MFWP and potentially the Army Corps of Engineers, US Fish and Wildlife Services and the tribes individually.
- Erosion repair work will consider use of bioengineering solutions where practicable. Practicable use areas include those where bridge elements don’t provide shade, which are outside of the two-year flood plain, where success is probable and where safety of the structural elements can be maintained.
- Any erosion repair activities (responses and cleanup of erosion problems, not the erosive action itself) which cause significant changes in the topography or vegetation within the riparian management area will be coordinated with the MDT Environmental Services District Biologist with MFWP and/or other regulating agencies.

Best management practices include:

- Dispose removed materials at appropriate stable sites so the material will not be washed into wetlands or waterways.
- Use erosion control methods in a timely manner including seeding and mulching specific areas with non-invasive species, installing silt fences and installing other devices as appropriate.
- Using precautionary measures on erosion areas (chicken wire, chain link, rock matting) where eroding areas are identified and where precautionary measures can be successfully and safely applied.
- Coordinating with the MDT Environmental Services District Biologist with DFWP and the wetland-permitting agency (Corps, USFWS, Tribes) when placing riprap that is an addition to existing conditions within the two-year flood plain of waters of the State. This activity may require an SPA 124 Permit and/or a **U.S. Army Corp 404 Permit**, consultation with USFWS and/or Tribal permits.

Procedures

1. Determine the source of material to be used for fill slope repair.
2. Secure required permits.
3. Set up appropriate traffic control.
4. Haul fill to the site and spread with appropriate equipment.
5. Wet material using water to aid compaction and reduce dust.
6. Place appropriate erosion control.
7. Sweep pavement as required
8. Clean the area.
9. Remove traffic control.

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5.5 Unpaved Road Surface (MMS 1108)

Activity Description

This activity includes blading unpaved surfaces and shoulders with a motor patrol.

Purpose

The purposes of this activity are to maintain riding quality on unpaved roadways, to provide drainage from the roadway and to minimize ruts and irregularities in the unpaved surfaces.

Timing of Maintenance

Gravel surfaces should be inspected routinely. Repairs should be made before the drivability and integrity of the surface is affected. Repairs should be made when the surface contains moisture to ensure proper compaction.

Specialized Equipment

- Motor Patrol
- Roller (pneumatic-rubber tire)
- Water truck
- Attenuator when appropriate.

Materials

- Appropriate aggregate materials mix for unpaved roadway surfaces.
- Magnesium Chloride or acceptable substitute for dust abatement and stabilization.

Safety and Training

Supervisors should review safety, training and work zone requirements with employees and ensure compliance with approved guidelines.

Environmental Best Management Practices

Best management practices include:

- Evaluating specific sites for alternatives to blading such as berming, curbing or paving.
- Evaluating the width of the blading activity when practical, and if appropriate, modify the width to minimize disturbance of vegetation.
- Performing surface work when possible in dry weather to minimize any runoff of hazardous material.
- Incorporating this activity into local vegetative management plans to consider and minimize impacts of this activity on streams.
- Stabilizing disturbed soils permanently using BMP (seeding, plants, etc.) where appropriate.

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Procedures

1. Set up appropriate traffic control.
2. Blade surfaces and pull material from shoulder area when enough moisture is present in the surface material.
3. Use water and/or roller when compacting.
4. Spray magnesium chloride for stability and dust control.
5. Sweep adjacent pavement as necessary.
6. Clean up the area.
7. Remove traffic control.

Vegetation Management

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Chapter 5 .6 Vegetation Management – Mechanical Mowing (MMS 2201)

Activity Description -

This activity is the mechanical mowing of vegetation along the roadside to ensure safe, functional, and healthy roadsides through proper planning and scheduling.

Purpose statement –

The ultimate goal of roadside vegetation management is to produce and maintain healthy, low-maintenance, self-sustaining roadsides by encouraging beneficial vegetation. Proper roadside vegetation management should be based not on a timetable, but on the current vegetation type and condition of the roadside community.

The roadside is comprised of an active zone, which is typically the area from the paved shoulder out 15 feet, and a passive zone, which is the remainder of the right-of-way width. The passive zone should not be mowed unless it is a component of a predetermined management issue, such as snow drifting areas, sight distance, aesthetic issues in urban areas, or a component of weed control plans.

Mechanical mowing may be used to:

- maintain safe sight distances,
- control noxious and nuisance weeds,
- reduce the potential for snow drifting,
- improve aesthetic values and improve the visibility of signs

Timing of Maintenance –

Traditionally, roadsides have been mowed based on aesthetics or a timetable rather than to meet specific management objectives. Mowing should be performed only when necessary, and as part of a roadside management plan. Mowing should be limited during the growing season if possible. Mowing after grasses reach dormancy (usually after July 15) will encourage the development of healthy, low maintenance, self-sustaining roadsides. Mowing should be timed to support and not conflict with County noxious weed control plans, and forage removal/haying operations.

Specialized Equipment

- Mowers or brush cutters
- Truck mounted attenuator (TMA)
- Hand operated mowers and weed trimmers

Safety and Training

Supervisors should discuss safety hazards of mowing and use appropriate equipment and protective clothing. Consult MDT Employee Safety Manual and MUTCD mobile work zone requirements. Questions regarding vegetation should be addressed to the Roadside Management Specialist in the Helena Service Center.

Environmental Best Management Practices

Best management practices include minimization and avoidance of the following:

- MDT vegetation management plans will identify mowing areas and timing in conjunction with the county 6-year noxious weed control plans and other considerations.
- Mowing widths in the active zone (15 feet from paved shoulder) may be limited to no more than 8 to 10 feet off the edge of pavement in significant resource areas defined by DEQ as state water quality impaired segments, unless needed to maintain proper functioning of highway features (e.g. drainage or snow drift control).
- If mowing is required during the growing season, reduce plant shock and root dieback by avoiding mowing shorter than 8 inches (8"). The following can occur if roadside vegetation is cut too short (scalping) during the growing season.
 - Soil temperatures and erosion increases
 - Desirable vegetation experiences reduced vigor, lowering tolerance to drought, and vulnerability to high-maintenance noxious and nuisance weed growth
 - Mowing during the growing season opens the shade canopy and encourages undesirable vegetation growth
- Clean equipment used in mowing and brush cutting activities on MDT R/W on a regular basis. A mower will spread weed seeds when mowing through an infested area. Each mower should be cleaned by power washing prior to transferring the mower between Sections, when moving between Counties, or when moving from one route segment to another if a route segment has known weed populations.

Procedures –

1. Evaluate traffic control needs and appropriate work zone requirements.
2. Refer to the Area vegetation management plans for timing, location, weed control, and vegetation development.
3. Inspect areas to be mowed for debris and other hazards or obstructions. Remove debris to prevent items from becoming projectiles. Hazards and obstructions should be marked and may include culverts, concrete head-walls, flared ends, drop inlets, splash basins and washouts.
4. Check condition of equipment and complete required pre-operational inspections and daily operational servicing. Check to make sure equipment is set for appropriate mowing heights. Minimum mowing height is six inches (6") for fall mowing. Always mow in the same direction as traffic, unless special permission is given by the Maintenance Chief.
5. Shadow vehicles should be considered to warn traffic in areas where mowing operations interfere with the normal flow of traffic in the driving lane. Consult the MUTCD for proper traffic control techniques for mobile operations.
6. Particular attention should be given to visibility concerns at roadway intersections and approaches.
7. Clean equipment used in mowing and brush cutting activities on MDT R/W's on a regular basis. A mower can cause weed seed distribution after mowing through an infested area and then going on to un-infested areas. Each mower should be cleaned by power washing prior to transferring the mower between Sections, when moving between Counties, or when moving from one route segment to another if a route segment has known weed populations.
8. Since mowing operations often require operators to work in isolated areas, operators should take portable radios during mowing operations, if available.

5.7 Chemical Vegetation Control–Chemical Spraying (MMS 2204)

Activity Description

This activity includes chemical treatments to control or prevent the growth of vegetation such as noxious weeds, brush or other vegetation. (See special instructions in Vegetation Management Plan.) Chemical spraying should be done by or under the supervision of a licensed chemical applicator. Chemical spraying may be a contracted service.

This activity should be considered in developing the six-year weed control agreements.

Purpose

The purpose of this activity includes the chemical control against the spread of noxious weeds, to inhibit the growth of vegetation around structures such as signs and guardrails, improve aesthetics, improve sight distance, reduce fire hazards, reduce snow drifting and to help with drainage problems in areas where mowing is not practical.

Timing of Maintenance

There are a number of chemical vegetation control options. Each situation will require planning for the specific application and specific product used:

1. Chemical mowing is conducted to retard the growth of roadside grasses to reduce the need for mowing. Application is typically conducted in the fall and/or early spring prior to germination based on the manufacturer's recommendations.
2. Chemical sterilants are primarily used around guardrails, signs, stockpiles and facilities. Chemicals are typically applied in the fall or early spring based on manufacturer's recommendations.
3. County weed control boards typically perform noxious weed control. Department noxious weed control must be done under the direction of a licensed applicator.
4. Appropriate chemicals are used to control brush.

Specialized Equipment

- Sprayer mounted on a truck.
- Hand sprayer
- Protective clothing including gloves, eye protection, coveralls.
- Attenuator may be required.

Materials

For a chemical vegetating control program to be successful, the proper product must be used. The product must be capable of obtaining the desired control and be economical when compared to other methods of control.

Documentation

A record of all chemical applications must be kept on the appropriate form acquired through the licensed applicator.

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Storage

Chemicals should be accessible only to authorized personnel and should be stored in accordance with MSDS standards and manufacturer's recommendations.

Safety and Training

All employees who work with chemicals should attend training established and approved for chemical applicators and be licensed as a pesticide applicator or work under the direct supervision of a licensed pesticide applicators.

The following guidelines should be observed:

- Employees must be trained prior to using a chemical product.
- Employees may only use products for which they are certified to use.
- Certification must be kept current for licensed applicators.
- Employees will follow special instruction for each chemical he/she uses including the use of protective clothing, proper disposal, use and handling.
- Employees must follow the manufacturer's directions for mixing, handling and use.
- Employees should be familiar with MSDS for specific chemicals they are using.
- Employees need to follow safety guidelines in the MDT Safety Manual.

Special Precautions

Care must be exercised in filling and washing the equipment to ensure that chemicals are not deposited in locations that will become hazardous to vegetation, water, ground water, human or animal life. Equipment should be checked before using and thoroughly cleaned after use.

Special precautions are required around water, crops, residences and areas designated as no spraying areas.

Environmental Best Management Practices

Best management practices include:

- Eliminating spray activities on structures located over streams or adjacent to wetlands.
- Using chemicals approved for use near aquatic resources whenever spraying.
- Using herbicides in accordance to EPA labels.
- Hand spray around structures over water or within riparian area that require chemical vegetation control.
- Within twenty-five (25) feet of riparian areas, boom spray no farther than eight (8) feet.
- Within twenty-five (25) feet of an active, flowing stream, stop all boom spraying.

Procedures

1. Coordinate and efforts with the county weed coordinator to develop an annual weed control plan.
2. Review project site to determine if any special application conditions exist.
3. Ensure that MSDS for the products being used are on the job site.
4. Check application equipment daily for safety and proper application.
5. Wear protective clothing and safety devices.
6. Mix chemical in accordance with manufacturer's recommendation.
7. Mix dye with chemicals so applicators can determine where spraying has occurred.
8. Provide necessary traffic control.
9. Apply chemicals in accordance with manufacturers' recommendations.
10. Use caution to minimize drift to adjoining properties. Use hand-held wind gauges to determine wind speed. Applicators should use extreme caution spraying materials when winds exceed 10 mph.
11. Spray with truck sprayer when practical, hand-held sprayer on inaccessible areas or spray as identified in the weed control plan.
12. Remove traffic control.
13. Clean and service spray unit.
14. Dispose of chemical containers according to MT Department of Agriculture's rules.

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5.8 Vegetation Management-Brush & Tree Removal (MMS 2202)

Activity Description

This activity includes removing unwanted brush, trees and other vegetation from the right-of-way and around roadside appurtenances such as signposts and guardrails where removal by chemicals is not advisable or practical. Larger, mature trees commonly are a sensitive issue and require consideration of the public, adjoining landowner and roadway safety.

Purpose

The purposes of this activity include:

- Maintaining sight distances on curves, around intersections and in front of signs,
- Reducing snow accumulation,
- Reducing fire hazards,
- Maintaining clear zones,
- Improving aesthetic value.

Timing of Maintenance

General clear-cutting of highway right-of-way without specific and clearly identified safety need is not allowed. Weeds, brush, trees or other unwanted vegetation should be removed when they begin to reduce sight distance, visibility of signs or other appurtenances or become a fire hazard or a nuisance. Trees and/or brush should be controlled before they become a hazard or subject of public comment. However, no tree cutting or clearing shall be performed without prior approval from the District Administrator.

Specialized Equipment

- Tractor with Brush Cutter
- Power Weed Cutter
- Chipper
- Chain saws

Safety and Training

Employees should be aware of hazards of this activity and use appropriate protective equipment and clothing. (Reference: MDT Safety Manual)

Environmental Best Management Practices

Best management practices include:

- MDT Maintenance will maintain shade trees along streams and rivers, unless those tree are danger trees (as determined by the MDT Botanist and/or appropriate resource agency), may potentially impact bridge structures, constitute a probable clear zone hazard or may impact line of sight. If trees provide shade or bank stabilization with 50 feet of streams and are determined to be danger trees that

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- must be removed, tree removal will be coordinated through the MDT Environmental Services Botanist with MFWP or other regulatory agency. Only brush necessary to alleviate the danger will be removed.
- Only brush within 20 feet on either side and under all bridge structures will be removed for access and repair to the structure. (In some instances, road access under or adjacent to the structure will be outside the 20-foot buffer.) All other brush not within MDT's clear zones will be left in its current condition, unless the brush interferes with sight distance, shades the structure, shades the highway, or the brush is a noxious weed. Sensitive resource areas such as DEQ listed, state-water-quality impaired water bodies may lead to additional areas not being brushed.
 - On culverts that convey live streams, maintenance will remove 10 feet of brush on both sides of the culvert on the upstream end of the culvert and 10 feet on both sides on the down steam end, unless the brush around the culvert is a noxious weed. If other brushing needs are identified, MDT will coordinate through the MDT Environmental Services Botanist with MFWP.
 - When removing mature trees (over 12-inches or 30 cm) diameter at breast height (dbh) in riparian areas, maintenance will coordinate with MDT Botanist or District Biologist to determine appropriateness of replanting two seedlings/cuttings for every tree removed. Maintenance will coordinate with MDT Environmental Services Botanist and the MFWP on species and location of trees to be replanted within the same watershed. MDT will ensure that the replanted trees will not pose a future threat to MDT structures.
 - Brush cut, in riparian areas, will be left in place where doing so does not interfere with sight distance, create safety issues, cause fire hazards, involve noxious weeds or interfere with the proper functioning of highway features.

Procedures

1. Set up traffic control if required.
2. Remove unwanted vegetation
3. Clean up cuttings and dispose appropriately.
4. Remove traffic control.

5.9 Maintenance of Landscaped Areas (MMS 2202)

Activity Description

This activity includes mowing, maintaining water systems, fertilizing, weeding, and replacing turf in landscaped areas such as around urban interchanges, pullouts and other landscaped areas. Activities associated with rest areas are coded to MMS 5202.

Purpose

The purpose of this activity is to maintain or improve aesthetics.

Timing of Maintenance

Lawn area should be mowed to provide aesthetically pleasing surroundings. Pruning shrubs and trees should be performed during their dormant stage. In areas that are highly visible, walks and curbs should be edged frequently. Irrigation systems shall be winterized at the close of the season.

Specialized Equipment

- Power Lawn Mower.
- Weed Eaters.
- Air Compressor for blowing water lines.

Materials

Materials for this activity commonly include fertilizers and herbicides, sprinkler supplies and other related materials.

Safety and Training

Employees should be aware of hazards and use appropriate protective equipment and clothing.

Environmental Best Management Practices

Empty herbicide bags and/or containers must be disposed of in accordance with manufacturer's recommendations.

Procedures

1. Set up traffic control, if appropriate.
2. Maintain lawn, shrubs, plants and trees.
3. Application of fertilizers and herbicides should be in accordance with the manufacturer's recommendations.
4. Maintain water and irrigation systems.
5. Remove traffic control when work is done.

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5.10 Inspection and Repair of Fences and Gates (MMS 2101)

Activity Description

This activity includes maintaining or replacing fence posts, top rails, and gates of department-owned fences. Interstate fencing is the responsibility of MDT. All other fences are the landowner's responsibility unless a right-of-way agreement states otherwise. Cleaning dirt and materials from state-owned fences is included in this activity.

Purpose

The purpose of this activity is to protect the safety of the public by keeping livestock off the highway and ensuring that controlled access is maintained.

Timing of Maintenance

Fences should be inspected twice a year and needed repairs and maintenance scheduled. Fence and gate damage should be scheduled for repair as soon as practical.

Specialized Equipment

- Post Pounder
- Fence Stretcher
- Post Hole Auger

Materials

- Fence Post
- Barbwire, chain link, and woven wire
- Staples
- Tie wires

Safety and Training

Supervisors should review safety, training and work zone requirement with employees and ensure compliance with approved guidelines.

Special Precautions

Before entering private property to perform work, the supervisor must obtain written consent from the property owner.

If digging is required, Underground Service Alert (1-800-424-5555) must be contacted before digging at least two days before digging.

Environmental Best Management Practices

Supervisors should be aware of environmental concerns. Special precautions must be taken to protect water quality near streams, lakes, and wetlands.

Section C
Chapter 5

Dispose waste materials at an appropriate site.

Procedures

1. Set up traffic control if appropriate.
2. Remove damaged portions of the fence.
3. Install new materials.
4. Clean up the area and dispose of unusable materials.
5. Remove traffic control.

5.11 Cattle Guard Repair (MMS 2104)

Activity Description

This activity includes repairing and installing cattle guards and cattle guard-associated structures and fence connections.

Purpose

The purpose of this activity is to provide safety for motorists and restrict animal movement.

Timing of Maintenance

Cattle guards should be inspected periodically. Signs of deterioration include loose, cracked or broken grates, damaged foundations and damaged wing walls. Cattle guards that are damaged should be repaired immediately. Cattle guards must be cleaned periodically.

Specialized Equipment

- Backhoe
- Welder
- Vacuum Truck

Materials

Materials used for repairing cattle guards include the following:

- Concrete products
- Steel grate
- Miscellaneous steel and bolts

Safety and Training

Supervisors should review safety, training and work zone requirements with employees and ensure compliance with approved guidelines.

Employees should review MSDS for products used to make themselves aware of safety and health precautions and the required personal protective clothing.

Section C
Chapter 5

Environmental Best Management Practices

Supervisors should be aware of environmental concerns when cleaning cattle guards. Special precautions must be taken to protect water quality near streams, lakes, and wetlands.

Dispose of waste materials at an appropriate site.

Procedure

1. Inspect the cattle guard and determine what repairs are needed prior to work.
2. Assign a certified welder to do welding.
3. Set up appropriate traffic control.
4. Perform the needed cattle guard maintenance and cleaning.
5. Clean up the area and dispose of debris at an appropriate disposal site.
6. Remove traffic control.