Maintenance Operations Manual

Prepared by

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
BISMARCK, NORTH DAKOTA

http://www.dot.nd.gov/

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DISCLAIMER

NOTE: This manual provides a written account of how certain activities are performed and is designed to guide and assist staff in performing their functions. When appropriate, there may be deviations from these written procedures due to changes in personnel, policies, interpretation, law, experimentation with different systems, or simply evolution of the process itself. This manual may be changed at any time. Staff members are encouraged to review this manual periodically and suggest changes in the manual to keep the manual current and to minimize differences between the manual and actual practices.

TABLE OF CONTENTS
The North Dakota Department of Transportation (NDDOT) here forth known as the Department

Chapter 1 – ADMINISTRATIVE
MAINTENANCE DIVISION

This manual provides guidance for maintenance operations throughout the state.

Major duties and responsibilities of the Maintenance Division are listed below:

- Maintenance management
- Equipment management
- Facility management
- Travel Information
- ITS
- Safety
- Signing
- Non-Project Right-of-Way
- Equipment Specifications
- Emergency Operations
- Transportation Technician Training Academy and Master Series Program

Access the Department organizational chart.

Access the Maintenance Division organizational chart.

Other Department manuals that provide guidance are State Fleet Services Policy Manual, Purchasing Manuals, Accounting Manual, Utilities Manual, and the Safety Manual.

District Maintenance Function

The state is divided geographically into eight Districts. The major responsibilities of the Districts are maintenance operations, highway construction activities, motor vehicle and equipment maintenance, roadway and right-of-way management, and road condition reporting.

District management is the responsibility of each District Engineer. District maintenance functions are managed by the District Engineer's Maintenance Coordinator or Superintendent. Each District is further divided geographically into sections for maintenance operations. These geographical sections are outlined on the current district and section boundary maps.

Maintenance Operations Account Codes

The following chart is organized into categories that correspond to account codes used for maintenance activity accounting. The District number is combined with the three-digit number for the activity to create a four digit cost center code.

Maintenance Operations Account Codes			
001	Bituminous Seal Coats	018	Rest Areas
004	Concrete Repair	019	Access Control
005	Polymer and Rubberized Crack Pouring	020	Bituminous Roadway Milling

Maintenance Operations Account Codes			
006	Roadway Operations	021	District Shop
007	Shoulders	022	Buildings and Grounds
008	Chemical Vegetation Control	023	Miscellaneous
010	Roadside Operations	024	Highway Equipment Maintenance
011	Drainage	028	Flood Related Emergency Maintenance
012	Structures	200	Crack Pouring
013	Snow and Ice Control	300	Hand Patching
014	Signals and Lighting	400	Scotch Patching
015	Striping	500	Blade Patching
016	Signs	900	Mowing
017	Safety Appurtenances		

Insurance Coverage

The Department carries insurance to cover the following items:

- **Vehicle and Mobile Equipment Liability Insurance**: Coverage third party claims against the Department. Only self-propelled major equipment is insured.
  - CONTACT RISK MANAGEMENT
- **All Risk Insurance**: Covers all equipment, except light vehicles from catastrophic loss, including vandalism.
  - CONTACT STATE FLEET
- **Aircraft Insurance**: Covers aircraft plus liability to third party (if aircraft crashes and causes property damage or injury to people on the ground).
  - CONTACT STATE FLEET
- **Boiler Insurance**: Required by Law – covers all boilers owned by the Department.
  - CONTACT MAINTENANCE DIVISION
- **U.S. Customs**: Permits the Department to cross the border for maintenance operations without being detained by customs.
  - CONTACT STATE FLEET
- **Fire and Tornado Fund Insurance**: Covers buildings and contents against loss of fire, tornado, lightning, windstorm, hail, vandalism, etc.
  - CONTACT MAINTENANCE DIVISION

REPORTING INCIDENTS AND VEHICLE ACCIDENTS

Districts and Divisions are requested to notify and submit reports on certain incidents and vehicle accidents. These procedures are detailed in a variety of manuals or memorandums. It is intended in this section to make this process more manageable. However, the reporting requirements may be listed under more than one category in this chapter, depending if it is an incident or an accident. Reporting or follow-up reports may need to be submitted to the Maintenance Division, the Safety Officer, Deputy Director for Engineering, or the Risk Management Division or their representative.

1. Response and Investigation of Highway – Related Disasters and Specified Incidents. (Executive Policy Manual – IV 2-1). There is a FHWA link, in this policy that defines the

types of disasters and major incidents involving highways, covered by this policy. This FHWA link describes the current reporting guidelines.
2. Reporting Extensive Damage to Vehicles or Equipment, Snowplow Accidents, Lost-Time Injuries. (Safety Manual – Reporting, Pages 11-12)
3. Reporting Incidents and Vehicle Accidents Involving the Public. (Risk Management Manual – Loss Reporting Process, 3.1-1, 3.1-2, 3.1-3, 3.2-1)
4. Notification of Traffic Fatalities. (Memorandum – Deputy Director for Engineering)

PROTECTIVE CLOTHING, DEVICES, EQUIPMENT, AND FOOTWEAR

Per the September 19, 2018 Decision Document regarding the OSHA Standards and Safety Equipment Requirements. State Agencies are required to use the OSHA regulations as the minimum standard for employee safety and accident prevention.

Districts will follow the Human Resources policy 14.7 for guidance in PPE requirements for employees. The policy applies to probationary, temporary and regular employees.

DOT will furnish PPE required in the approved Personal Protection Equipment (PPE) list. Districts will follow account coding per the PPE list.

SAFETY VEST REQUIREMENTS

High visibility garments are addressed in 23 CFR 634. ANSI/ISEA 107 Class 2 high visibility garments are considered the minimum level of protection for workers exposed to roadway rights-of-way and temporary traffic control zones. However, as per the September 19, 2018, Decision Document, all Department workers within the right-of-way of a Federal-aid highway must wear florescent lime-yellow colored high visibility garments meeting ANSI/ISEA 107 Class 3 performance requirements. The Department is phasing in ANSI/ISEA Class 3 high visibility garments for all employees. ANSI/ISEA 107 Class 2 high visibility garments that meet current road safety standard requirements may be worn until existing inventory is gone but shall be replaced with ANSI/ISEA Class 3 high visibility garments. Contractors are still allowed to use ANSI/ISEA 107 Class 2 high visibility garments.

Workers mean people on foot whose duties place them within the right-of-way of a Federal-aid highway, such as highway construction and maintenance forces, survey crews, utility crews, responders to incidents within the highway right-of-way, and law enforcement personnel when directing traffic, investigating crashes, and handling lane closures, obstructed roadways, and disasters within the right-of-way of a Federal-aid highway.

DISTRICT BOUNDARY CHANGES

Changes in district boundaries or district maintenance section boundaries may be proposed by the District Engineer or the Maintenance Engineer. Any boundary changes must be in writing and accompanied by the following:

- An inventory signed by all affected District Engineers listing all equipment, stockpiles, section shops, and other items to be transferred.
- Notify the Department Telecommunications Supervisor as to how the radio coverage may be affected.
- A list of personnel to be transferred.
- Where necessary, budget considerations.
- Reference Points of the highway or highways transferred.
- A map showing the proposed changes.

Recommendations will be forwarded through the Maintenance Engineer to the Operations Engineer. If approved by the Operations Engineer, Maintenance Division will notify the appropriate divisions at the earliest possible date in order to provide for all necessary record changes and an orderly transfer.

OPERATOR STAFFING LANE MILE INVENTORY TABLE

http://mydot.nd.gov/divdist/maintenance/snowice/transtechstaffing.pdf

LOAD RESTRICTIONS

Implementation of Spring Load Restrictions on the State Highway System

The Department utilizes load restrictions to reduce damage to roadways caused by heavy loads at a time of year when highway pavements are most vulnerable. Load restrictions are set as weather and roadbed conditions require and remove these restrictions when roadbeds are stable enough to carry legal weight traffic without damage.

The Department's procedure for initiation of spring load restrictions on the State Highway System is based on the following primary factors:

Temperature probes in the base layers of pavement sections. As these temperatures approach 32 degrees Fahrenheit, the Department starts planning the posting of highways with pavement sections which do not have sufficient strength to sustain the transport of heavy loads during periods when pavement base structures are weak.

Long range temperature forecast. When long range temperature forecasts indicate that low temperatures are approaching the freezing point, with daily highs in the upper 30's or 40's, load restrictions are planned.

Falling Weight Deflectometer (FWD). This equipment measures the strength of roadway bases, as well as the asphalt pavement surface. The Department utilizes the FWD to evaluate pavement strengths for purposes of forecasting when load restrictions may be initiated and removed. The data, generated by the FWD, in combination with long range weather forecasts and area wide moisture conditions, provides the basis for lifting load restrictions.

It has been the Department's experience that the most significant pavement damage occurs during the

first four weeks after the onset of spring thaw. This aspect has moved the Department towards close monitoring of weather forecasts and sub-base temperatures to allow posting of load restrictions on short notice with the overall objective of limiting damage to the highway system.

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LIVING SNOW FENCE

The Department is involved with the strategic planting of specialized windbreaks consisting of trees and shrubs to reduce snow drifting and accumulating on highways. It is a partnership effort between the Department, ND Forest Service, and Natural Resources Conservation Service (NRCS).

When a segment of highway is identified as a continual snow problem area, the above named agencies work with the adjacent landowner to install a living snow fence. The living snow fence is funded by a grant program to the adjacent landowner for the cost of trees, weed barriers, and fence (if needed), along with ten year land rental payments and a maintenance allowance. The Department has prioritized sites that have been identified.

If you know of snow problem areas where a living snow fence could help and/or have an adjacent landowner interested in such a program, contact your District Engineer or the Maintenance Division Engineer.

HIGHWAY PATROL TRUCK TURNOUTS (HP TURNOUTS)

HP turnouts are installed by the Department along state highways based on a plan developed by the Highway Patrol (HP). The installation of the turnouts is to assist the HP with truck size and weight enforcement.

Stopping large tractor trailer combinations along the highway can be a safety concern for the truckers, the HP, and the traveling public. HP turnouts installed by the Department provide a safe area for the HP to conduct their enforcement efforts.

MASTER SERIES

The Master Equipment Operator (MEO) program allows Transportation Technicians to advance skills, knowledge and classification. Candidates may be eligible to receive a 1% salary increase.

Requirements to become a Master Equipment Operator:

1. Must complete three years' work experience in DOT or other related work experience. Related work experience is to be reviewed and approved by the District Engineer and confirmed by the Maintenance Engineer.
2. Must attend both the spring and fall academies. MEO candidates will be given preference in attendance. MEO candidates must wait until after completion of their probationary period

before attending. Completion of the academies is good for the length of service of the employee. Attendance will be tracked using the Department's Enterprise Learning Management system (ELM).

3. Must successfully complete a written test with a passing score of 76 or better. The written test is made up of 50 questions that consist of multiple choice, true/false, and some fill in the blank. Test questions are taken from the following sources:

   - Safety Manual
   - Maintenance Manual
   - Personnel Policies on MyDOT
   - Daily PM checklist for all trucks
   - Commercial Drivers License Guide
   - Traffic Control Requirements for NDDOT Operation on Highways and Streets

   MEO candidates will be eligible to take the written test after completion of their probationary period. Successful completion of the written test is good for two years. Test results will be tracked by Human Resources. The written test will be offered the week of the 24th of each January and October. Districts must notify Human Resources at least 2 weeks prior to the test dates as to who will be taking the test. The test is to be reviewed periodically to update questions. Computer usage type questions are to be added in the future. The test should be converted to a computer based format in the future.

4. Continuing education such as Tractor Mower Operator Safety Training (TMOST), Intro to Highway Construction, AI/RWIS CBT and various other training events at the district level are required to maintain MEO status.

TRANSPORTATION TECHNICIAN ACADEMY

The Department offers two training sessions per year for District personnel to obtain technical training for summer and winter highway maintenance activities. The training is necessary as part of professional development for Transportation Technicians to move up in classification status. The training sessions are held each year, one session in the Spring and one session in the Fall. Each training session is 5 days long consisting of 40 hours of a combination of both classroom and hands on training. Districts are assigned the number of attendees they can send. If a District does not fill its designated number of attendees, the open positions can be offered to other Districts. Attendees should wait until after completion of their probationary period before attending. Master Equipment Operator candidates should be given preference in attendance. District Maintenance Coordinators will determine attendees and ensure attendees are registered in the Department's Electronic Learning Management system (ELM) to track attendance. Maintenance Division will confirm attendance with Human Resources Division. Districts are encouraged to have all district personnel attend the training sessions ex: Transportation Technicians, Shop and Sign Shop employees.

Spring Academy (usually held in early May)

1. Traffic Control
2. Pavement and bridge preservation and maintenance
3. Pavement micro surfacing, pothole patching, and crack sealing

4. Tractors and mowers operations, safety and maintenance

Fall Academy (usually held in early October)
1. Snow and Ice Control/MDSS Technologies & T.I.M. (Traffic Incident Management)
2. Plow Truck operations, hydraulic spreader controls, TowPlow, and snow wing
3. Equipment operations and safety (loaders, dozers, motor graders)
4. Truck maintenance, loading, securing and safety

District Assigned Number of Attendees

Bismarck District	– 5
Valley City District	– 4
Devils Lake District	– 4
Minot District	– 4
Dickinson District	– 4
Grand Forks District	– 4
Williston District	– 4
Fargo District	– 4

TRAINING DAYS

Districts are required to have a training day. The training day should be classroom type training on pertinent topics. Training days should be scheduled in the fall with executive office being invited to attend.

If the districts desire to go back to the district and state roadeo format, the Department would have to discuss how this would be implemented.

Chapter 2 - SNOW AND ICE CONTROL

STATEWIDE SNOW AND ICE CONTROL MANUAL

Chapter 3 - ROADSIDE OPERATIONS

MOWING

Purpose

The purpose of mowing the highway right-of-way is to provide safety for the traveling public while allowing areas for livestock producers to take the hay.

Mowing of the highway right-of-way has multiple benefits as described below:

- Provides a clearer line of sight for the traveling public.
- Improves visibility of wildlife near the roadway.
- Improves winter road maintenance for snow and ice control.
- Helps to control noxious weeds in accordance with laws and ordinances.
- Removes trees close to the roadway.
- Beautification purposes in urban communities and promote a positive state image.
- Shortens vegetation to assist with Photogrammetry Survey

Scope

The NDDOT vegetation management program consists of controlling or eliminating vegetation through a variety of strategies including mowing, contract haying on interstate, adjacent landowner haying on US and State highways, brush cutting, and use of herbicides.

General

The department shall accomplish its mowing operations with a Spring cut starting the week of June 15 and a Fall cut starting the first week of September. Exceptions for additional mowing will be in urban areas where more mowing may be necessary because of residential or commercial development. Another exception will be at intersections where sight distance is a concern.

The state's livestock producers use highway right-of-way for hay. Haying of the state's right-of-way can be more important in certain parts of the state than others. Efforts should be made to provide the state's right-of-way for haying (contract haying on interstate, adjacent landowner haying on US and State highways).

Communications

The department will issue a press release the first week of June and the first week of September each year informing the public about the start of the Spring and Fall mowing operation.

Districts should attempt to communicate with adjacent local landowners 2 weeks prior to the start of the Spring mowing operation to inform the landowners and allow time to take the hay. Placing flyers on local business bulletin boards and posting on DOT social media site is encouraged to help spread the word.

Safety

Mowing in the Vicinity of Railroads

Mowing is not allowed within 25 feet of the closest rail at a railroad. Work within 25 feet of the closest rail at a railroad is considered trespassing as this is understood to be railroad property right-of-way.

Mowing Parallel to Railroad Tracks

No mowing is to be conducted within 25 feet of the closest rail along parallel railroad tracks. Mowing operations according to this section require mowing only 25 – 30 feet out from the paved shoulder so there is no reason to be close to railroad tracks that run parallel with the roadway. Mowing operations should never cross approach road railroad crossings.

Mowing at Railroad Crossings

No mowing is to be conducted within 25 feet of the closest rail on either side of an at grade railroad crossing. When crossing at grade railroad crossings, always stop the mowing operation no closer than 25 feet of the closest rail at the railroad crossing. Disengage the PTO power to the mower attachment and raise the mower deck before approaching the railroad crossing. When coming out of the ditch, pay full attention to any cross traffic, waiting for a gap in traffic before entering the roadway. Look both ways when approaching the railroad crossing paying full attention to any oncoming trains. After making sure there are no trains, proceed across the tracks and reenter the ditch. Never stop on the tracks. Never cross the tracks and back up.

Mowing on Steep Slopes

Do NOT mow steep slopes such as embankments at overhead highway crossings and areas where there are 3:1 or greater inslopes and backslopes where a risk of rolling the tractor is present.

Mowing With Rotary Mowers

Rotary mowers may throw objects in any direction. This may include throwing objects at vehicles traveling on the highway. Districts should take all feasible steps to minimize the problem through careful operation of the mower. Guidelines to minimize damage from object discharge are listed below:

- If possible, mow in a direction so that objects thrown by the blade nearest the shoulder would move in the same direction that traffic is moving. As an example, mow against traffic if the blade nearest the shoulder rotates clockwise.

- Keep mowing height to a minimum of five inches when feasible.

- Keep guards and chains in proper working order and maintain the cables through the chain curtains. Rotary mowers should be equipped with a double chain curtain. A cable should be run through the bottom link of both chain curtains. A second cable should be run through the third from the bottom link of both chain curtains.

See also Safety Manual Chapter IX – Safe Operating Procedures; Page 106 Tractors and Mowers

section for more information.

Rural Mowing

Spring Cut

The Spring cut of roadside mowing, also referred to as the top cut, shall start the week of June 15. Once the mowing operation has started, it shall progress expeditiously in priority order until complete.

Mowing width shall be from 7 to 10 feet and follow the priority order below.

- Priority 1: 2-Lane: 2 feet or less shoulder width roadways
  4-Lane: Mow out median**
- Priority 2: 2-Lane: Greater than 2 feet and up to 5 feet shoulder width roadways
  4-Lane: Outside shoulder top cut and interchange ramps
- Priority 3: 2-Lane: Greater than 5 feet shoulder width roadways

Fall Cut

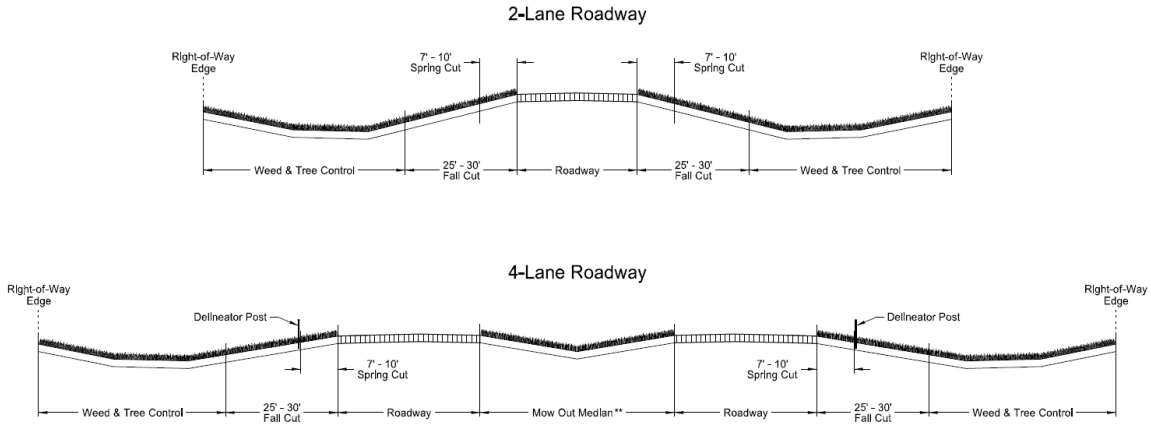
The Fall cut shall start the first week of September and progress expeditiously until complete.

2-Lane: Mow 25 - 30 feet out from the paved shoulders*, mow areas of ditches not hayed (if needed)

4-Lane: Mow the outside shoulder and interchange ramps 25 - 30 feet out from the paved shoulder*, mow out median**, mow areas of ditches not hayed (if needed)

* - In-slopes with large fill sections should be mowed to the same width as the rest of the roadway.

** - Where the median is extremely wide, mow 25 - 30 feet out from the paved shoulder. The entire median should not be mowed.



Urban Mowing

- Spring cut for urban areas shall be completed before July 4.
- Mowing shall be limited to city limits to ½ mile outside the city limits.
- For larger urban centers (14 largest cities) mow out the right-of-way and median.
- For smaller cities, the mowing width shall be a minimum of 30 feet up to mowing out the right-of-way.
- Repeated mowing may be required during the growing season.
- Special attention may be needed where residential or commercial development exists, especially along right-of-way, and should be mowed at the discretion of the District Engineer.

Intersections

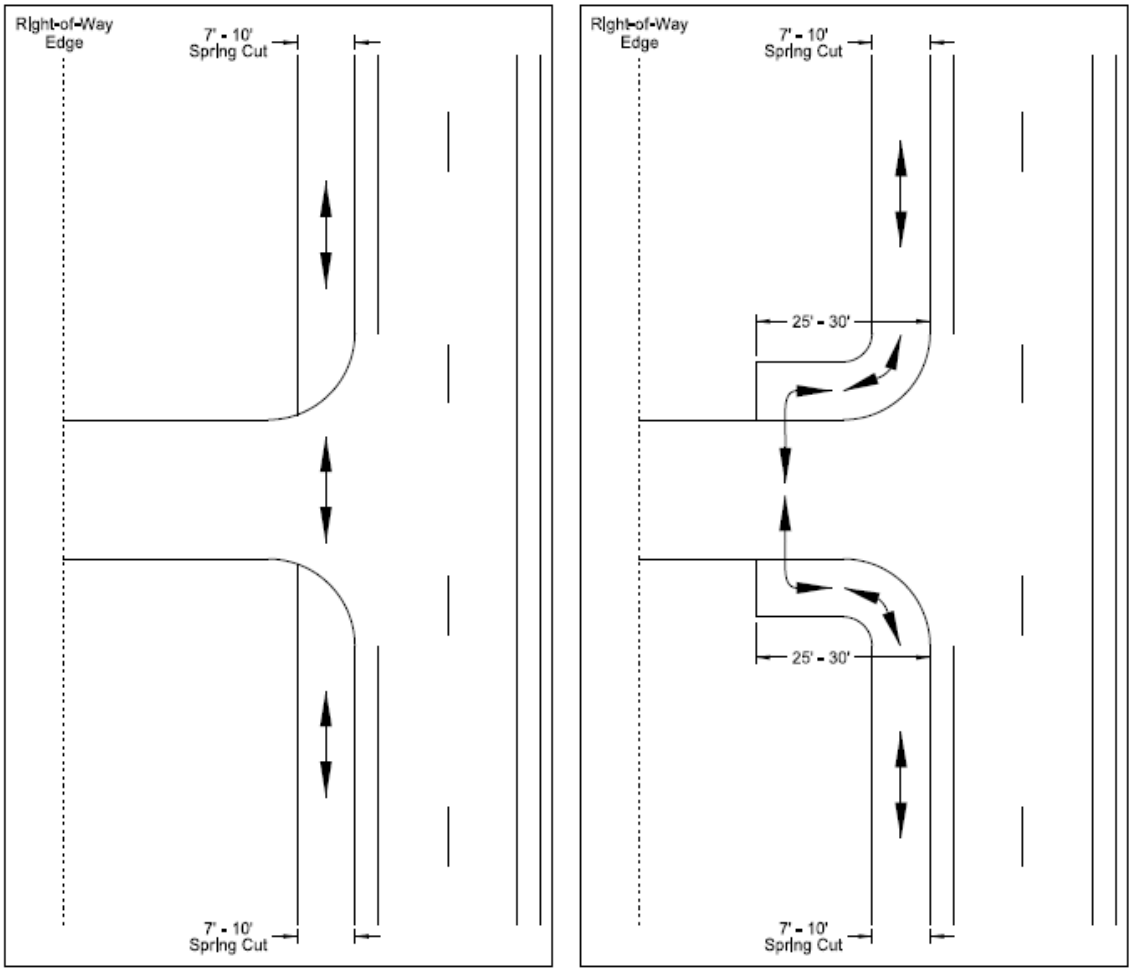
Intersections of state-maintained highways shall be mowed to maintain adequate sight distance as per the respective sight triangle for the class of roadways. See Tree Control section for sight triangle information. Higher frequencies of mowing at intersections to maintain sight distance should be at the discretion of the District Engineer.

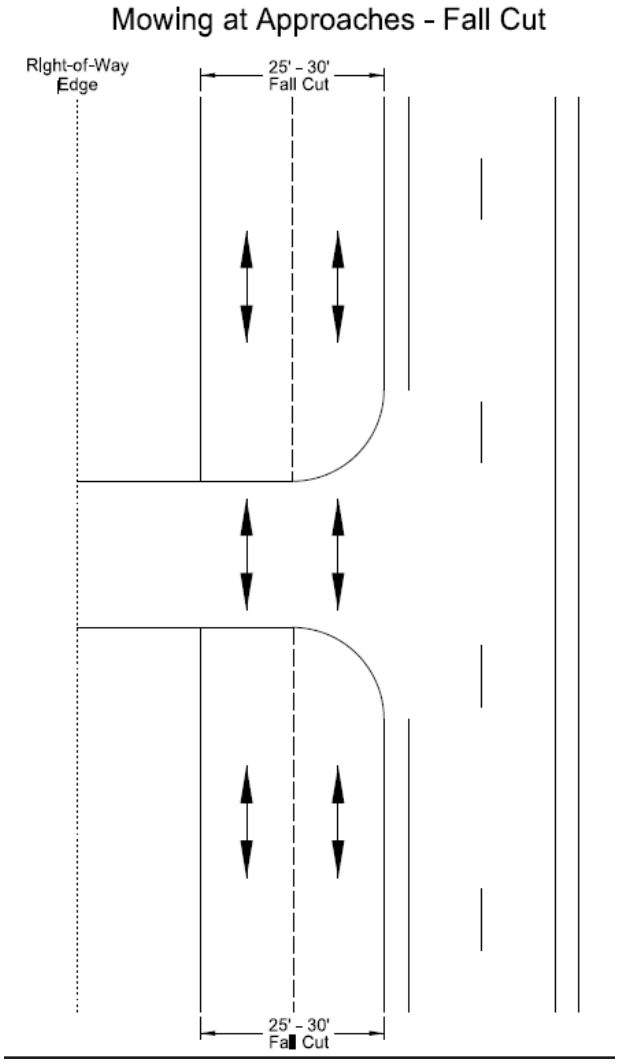
Approach Roads and Approaches

It is preferred to mow straight over an approach during the Spring cut. However, it is allowed to mow the radius of an approach 25 – 30 feet from the paved shoulder (if needed).

Mow 25 – 30 feet out from the paved shoulder for the Fall cut.

Mowing at Approaches – Spring Cut





Mowing Restriction Areas

Dakota Skipper Butterfly

The Dakota Skipper butterfly has been listed as a threatened species under the Endangered Species Act and therefore must designate critical habitat areas to protect the species. There are identified areas along state highways where the Dakota Skipper butterfly is known to inhabit. Modified mowing practices must be observed in these areas.

The areas identified as critical habitat for the Dakota Skipper butterfly are:

Critical Habitat Unit	District	Roadway	ROW	Reference Points
5	Minot	ND 14	Both sides	97 - 104
6	Minot	ND 14	Both sides	121.5 – 123.5
7	Minot	US 2	Both sides	179.5 – 181.5
9	Devils Lake	US 281	Both sides	248.5 - 251

- Mow 7 – 10 feet Spring Cut (top cut) only prior to July 15
- Delay all other mowing until after July 15
- Avoid broadcast applications of herbicides that may be harmful to the Dakota Skipper butterfly or their nectar plants (i.e. perform spot spraying)

Western Prairie Fringed Orchid

The Western Prairie Fringed Orchid has been listed as a threatened species under the Endangered Species Act and therefore must be protected. There are identified areas along state highways where the Western Prairie Fringed Orchid is known to exist. Modified mowing practices must be observed in these areas. Modified mowing practices must also be observed adjacent to US Forest Service land through the Sheyenne National Grasslands.

The areas identified where the Western Prairie Fringed Orchid exists are:

District	Roadway	ROW	Reference Points
Fargo	ND 27	Both sides	29 - 41
Fargo	ND 18	Both sides	29 – 33.5 39 - 50

- Mow 7 – 10 feet Spring Cut (top cut) only prior to September 15
- Delay all other mowing until after September 15
- Avoid broadcast applications of herbicides that may be harmful to the Western Prairie Fringed Orchid (i.e. perform spot spraying)

Monarch Butterfly

The Monarch butterfly has been listed as a potential threatened species. Mitigation strategies can be observed now to help minimize the future threat of it being added to the endangered species list. The Monarch butterfly can inhabit all areas of North Dakota with the primary reproduction area being in the southeast area of the state. Leaving grass along fence lines, at interchanges, on steep slopes are all good mitigation efforts.

- Mow 7 – 10 feet Spring Cut (top cut) only prior to September 20
- Delay all other mowing until after September 20 in the high reproduction area (southeast area of the state), if possible
- If mowing is necessary, the best period to mow is June 30 – July 5
- Avoid broadcast applications of herbicides that may be harmful to the Monarch butterfly or their nectar plants (i.e. perform spot spraying)

No-Mow Areas

No-mow areas, throughout the state, have been eliminated effective April 6, 2006. See the Department's Memorandum of Agreement for Management of Real Property which includes the tracts of land that were eliminated. Also reference the Amendment to Implementation Plan of October 29, 2003.

Mowing Noxious Weeds and Small Trees

The right-of-way should be spot mowed, as necessary, to control the growth of trees and noxious weeds. Districts should coordinate with the respective County Weed Control officer to contract with the county for control of noxious weeds. Where this cannot be accomplished, the district office will contract with weed control companies. See Tree Control and Noxious Weed Control sections for more information.

Trimming

The Spring cut will be made as close as possible to the top side of the delineator post without hitting it to remove as much vegetation as possible. If vegetation remains 30 inches tall around delineator posts, the delineator posts will be trimmed around.

Trimming around delineator posts, signs and guardrail will be done during the Fall cut on all roadways. Spraying to kill vegetation is not an option in leu of trimming.

Garbage Pickup

At a minimum, garbage cleanup will happen prior to the mowing operations in all urban areas. See Litter Collection for more information.

Contract Haying in Interstate Right-of-Way

Solicitation of bids for contract mowing will be offered to the public on a yearly basis for Interstate right-of-way. District Engineers will determine the sections that will be bid. Bids will be advertised statewide through Maintenance Division and bids will be opened and awarded by each District. Bidders must take all sections where they were high bidder and enter into a Hay Harvesting Contract CLA 17834 with each district. Failure to take all sections voids the entire proposal and the next highest bidder shall be considered.

A haying contractor must indemnify the Department for all damages from its haying operation and provide the Department with proof of a $1,000,000 general liability insurance policy.

Each tractor used in the hay harvesting operation must be equipped with a flashing, amber light. Loading hay bales from the shoulder of the roadway is prohibited. No contract mowing is allowed in the median.

Haying State Highway Right-of-Way

The adjacent landowner has the first opportunity for harvesting hay from the right-of-way of state highways. Should the adjacent owner elect not to harvest the hay, the Department's policy is that any party interested in harvesting the hay must contact the adjacent landowner to obtain permission to harvest a specific segment of right-of-way.

The District Engineer may elect to restrict mowing of a specific segment of right-of-way based on construction schedules or maintenance repairs. Should the District Engineer elect to enforce the restriction, he will provide advanced notification to the adjacent landowner.

Haying of medians is not allowed except for wide areas approved by the District Engineer.

Hay Bales in the Right-of-Way

North Dakota Century Code 24-01-12.1 prohibits hay from being placed in the right-of-way except on the outer edge and all hay stored on the right-of-way must be removed by November 1st of each year. Large round bales must not be placed on inslopes or within 60 feet from the outside edge of the driving lane. When bales are observed in a prohibited area, a District Engineer may request that the hay be removed, if the owner can be determined. Any bales not removed promptly may be disposed of or destroyed. Hay bales remaining on the right-of-way after November 1 should be removed as directed by the District Engineer.

ROADSIDES

Mailbox Supports

The Department is not responsible for replacing lost or damaged mailbox supports or supports knocked down by plowed snow. The Department should replace any mailbox post that is hit by our equipment. In the interest of public relations, a support may be replaced when there is some doubt as to the circumstances.

Only Federal Highway Administration (FHWA) approved mailbox supports that have passed the crash test required of NCHRP Report 350 are acceptable on projects that have had a replacement program. If other supports are found on the right-of-way, it is the responsibility of the landowner to replace the mailbox support. District Engineers may attempt to contact the landowner to inform the owner of the violation. If the landowner is not found, the mailbox support can be removed within 21 days of placing written notice on the mailbox itself.

Litter Collection

The Department has the authority to collect any litter that accumulates along the highway right-of-way. There are programs that allow volunteer groups to collect the litter in the right-of-way. The Department supports these efforts and will cooperate, whenever possible, by providing plastic garbage bags, ANSI/ISEA 107-2004 Class II high visibility vests, and collect the filled litter bags.

The most common program is the Adopt-A-Highway which is a national program in which the Department participates when a request to do so is made by a responsible group. Any group of citizens may be found eligible except one determined by the District Engineer to advocate or promote illegal enterprises, or one that is determined to exist primarily to promote a political party or candidate, or one that would have a negative impact upon the program.

Requests for participation will be made to the appropriate District Engineer. An Adopt-A-Highway Agreement SFN 17165, must be executed with the participating group. Signs should be erected at each end of the segment of highway being adopted.

Adopt-A-Highway agreements should be limited to segments in close proximity to municipalities. The number of segments allowed will be at the discretion of the District Engineer. Sections more than 10 miles outside of a city should be a minimum of five miles in length.

Agreements can be renewed as long as the group wishes to continue, and their performance is satisfactory. Other groups wishing a particular location will be put on a waiting list until that site is

available.

No group is permitted to pick up litter in the medians of divided highways.

Disposal of Animal Carcasses within Highway Right-of-Way

The disposal of animal carcasses within highway right-of-way, will be done by moving the carcasses to an inconspicuous location within the right-of-way as close to where they were found as practical and allowing them to decompose naturally.

Exceptions will be made at locations where this procedure will have an adverse effect on nearby residents, such as near urban areas, small cities, and farmsteads. At these locations, animals will be disposed of either within the right-of-way, a reasonable distance from residences and businesses, or at a landfill as directed by the District Engineer.

Gloves, both leather and disposable latex/nitrile, as well as hog catcher snares are provided to crews to facilitate carcass removals.

The North Dakota Game & Fish Department Main Office will be notified at 701-328-6300 of both the approximate mile point of the kill site as well as the disposal site of the roadkill if it is found to be that of a bear, bighorn sheep, elk, fisher, moose, mountain lion, otter, wolf, or wolverine. The Department will provide assistance with the recovery of the carcass if requested by the NDG&F.

Tree Control

Tree control on rural highway right-of-way is required for a safe roadside, adequate sight distances, and disease control, and to reduce snow removal costs and billboard obstruction. District Engineers have final authority on tree control.

The following definitions apply to tree control on rural highways:

- Safe roadside is a clear zone of approximately 40 or more feet beyond the edge of the driving lane regardless of traffic volumes. Zones of more than 40 feet are highly desirable and trees are normally limited to the outer edge of the right-of-way.
- Safe sight distance is a 500 ft. x 500 ft. sight distance triangle at the intersection of two state highways and safe sight distance is a 500 ft. X 300 ft. sight distance triangle at the intersection of a state highway and a major county road, respectively. Sight distance should be to the right-of-way line for private driveways. Railroad crossing sight distance will be based on AASHTO guidelines as published in *A Policy on Geometric Design of Highways and Streets.*
- Any trees allowed to grow on highway right-of-way should be in areas where they do not cause snow drifts that increase snow removal problems. Also, trees cannot obstruct the view of billboards. Damaged or diseased trees should be removed.
- Trees should normally be removed to the ground line and disposed of off the right-of-way. No stumps should remain which are over 4 ft. high. Good tree control requires continual tree management and should include the removal of trees while in the sapling stage.

Tree Removal Restriction Areas

Northern Long Eared Bat

The Northern Long Eared Bat has been listed as a threatened species under the Endangered Species Act and therefore must be protected. The Northern Long Eared Bat can inhabit all areas of North Dakota. The Northern Long Eared Bat prefers forested/wooded areas and seldom crosses open areas so not all areas are critical habitat. If a patch of trees in the right-of-way is isolated and there are no other forested/wooded areas within approximately 1,000 feet, then it is very unlikely those trees would be inhabited by bats.

Trees 3 inches in diameter and over, and have peeling bark, crevices, cavities, etc are potential habitat areas and should be removed outside of the active season for bats which is April 1 to September 30. In most instances, trees that would meet this criteria would be larger trees, 8+ inches in diameter that have started to decay. If the active season can not be avoided and trees meeting the above criteria must be taken down, the dates between June 1 to July 31 should be avoided. An inspection should be done to check if any bats are present prior to the taking of trees during the active season.

Brush and trees not meeting the above criteria (trees less than 3 inches and trees over 3 inches but not showing any sign of peeling bark, crevices, cavities, etc) should have no concern of being taken down at any time.

Plantings on Highway Right-of-Way

All plantings on highway right-of-way will be installed and maintained by the Department except as provided below:

- A written request through the District Office with a sketch of proposed plantings and a list of the species to be planted.
- District reviews and approved plans as to the suitability.
- Written agreement with the involved parties as to continued maintenance of the plantings, procedures for maintenance and restoration of the area if the plantings are abandoned.

The District Engineer is responsible for all plantings on highway right-of-way. Refer to Contract Management for License for Planting on Highway Right-of-Way CLA 5479 contract.

Landscaping/Billboards

Landscaping and plantings within the right-of-way should not obstruct the view or interfere with the effectiveness of any sign legally in place under the provisions of NDCC 24-17 and the rules adopted by the Director.

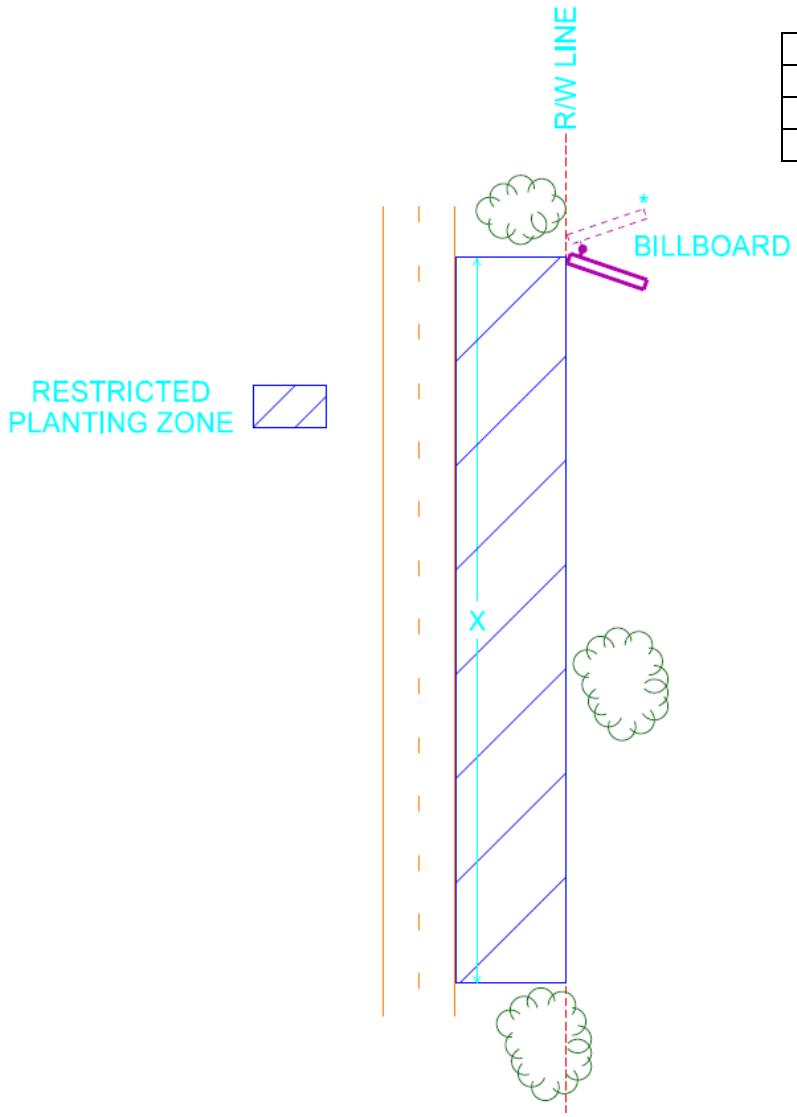
Restricted Planting Zones will be used within the right of way to ensure that lawfully permitted, erected billboards (and those recently permitted but installation is still pending) can be seen from the main traveled highway even after the plantings are fully mature. To locate lawfully permitted billboards, contact the Maintenance Division. An outdoor advertising permit holder has one year from the date of issue to install the sign.

The Restricted Planting Zone applies only to the roadway in the vicinity of the billboard's location.

For multi-directional billboards, the Restricted Planting Zone applies to both directions *.

The width of the Restricted Planting Zone extends from the shoulder of the roadway to the right of way line, the length is based upon the posted speed limit as shown in the table below:

Posted Speed limit	Distance (X)
Below 45	250 ft
46 – 65	350 ft
Above 65	450 ft



Drainage into Highway Right-of-Way

Federal regulations prohibit the drainage of private wetlands onto highway right-of-way where highways were constructed with federal highway funds. It is the NDDOT's policy to comply with this regulation and not to facilitate wetland drainage within its highway system.

NDDOT district offices will cooperate with the Water Resource Districts in reviewing landowners' and Water Resource Districts' requests to clean ditches, reestablish or create new drainage ditches, install culverts, ditch blocks, berms, etc., which potentially impact the state highway or its right-of-way. NDDOT district offices will ensure that the request will not adversely impact the state highway or its right-of-way prior to approving the drainage request.

When drainage modifications or ditch cleaning is requested by a landowner or Water Resource District, they will be directed to complete SFN 50909, Request for Drainage on Highway Right-of-Way. The following are three methods for completing SFN 50909:

Method 1: Drainage areas less than or greater than 80 acres when only ditch cleaning applies:

Requests for cleaning the ditch to its original design elevation will not require a wetlands review. If the cleaning is less than 80 acres the Water Resource District must sign the "Received by WRD" block of SFN 50909. If the cleaning is greater than 80 acres the Water Resource District must sign the "Approved by WRD" block of SFN 50909. The District Engineer will approve or deny the application.

Drainage areas less than or greater than 80 acres that modify the drainage from its original design, such as changing grades, lowering culverts etc. The applicant shall provide the information as requested on the back of SFN 50909 to the NDDOT for review.

Method 2: Drainage area less than 80 acres when modifications are proposed:

- The applicant is required to work with the Natural Resource Conservation Service and, if necessary, the Corp of Engineers, US Fish and Wildlife and North Dakota Game and Fish, to ensure no wetlands are impacted by the proposed project. Written confirmation must be submitted with application.
- Water Resource District must sign SFN 50909 in the "Received by WRD" block.
- District Engineer will approve or deny application.
- In addition to SFN 50909, a NDDOT Drainage Permit (written by Bridge Division - Hydraulic Section and signed by Bridge Engineer, Deputy Director for Engineering and applicant) will be issued to the applicant for the requested work.

Method 3: Drainage area 80 acres or more when modifications are proposed:(NDCC 61-32-03)

- The applicant is required to work with the Natural Resource Conservation Service and, if necessary, the Corp of Engineers, US Fish and Wildlife and North Dakota Game and Fish, to ensure no wetlands are impacted by the proposed project. Written confirmation must be submitted with application.
- The applicant shall apply for a permit from the State Engineer (Water Commission).
- The State Engineer (Water Commission) will refer the permit application to the Water Resource District for consideration and approval, but the State Engineer (Water Commission) has final approval if the drainage request has statewide or inter-district significance. A copy of the State Engineer (Water Commission) Permit must be submitted with application.
- Water Resource District must sign SFN 50909 in the "Approved by WRD" block.
- District Engineer will deny or approve application.
- In addition to SFN 50909, a NDDOT Drainage Permit (written by Bridge Division - Hydraulic Section - signed by Bridge Engineer, Deputy Director of Engineering and Water Resource District) will be issued to the Water Resource District for the work requested.

Landowners, Water Resource Districts, or operators working on drainage within NDDOT right-of-way must observe standard safety practices, locate all utilities before working, restore contours as close as possible to original construction, re-seed disturbed areas, be responsible for all work and associated costs and be responsible for the cost of repair of any right-of-way damage caused by their presence.

The District will identify the location of all established drains by highway reference points. Personnel will also be alert for locations where drainage is being artificially diverted onto the highway right-of-way. These locations will be investigated by the district office for appropriate action.

When the result of unauthorized drainage activity is observed on highway right-of-way, the district engineer will notify the Water Resource District to plug the drain. If the drain is not plugged within 60 days, NDDOT will take the necessary action to have the drain plugged.

In the design of roadway reconstruction plans, all reasonable efforts will be made to maintain existing drainage patterns. Revisions to existing drainage patterns may require review and approval by the local Water Resource District and a State Engineer (Water Commission) Permit.
Seismographic Cables on Highway Right-of-Way

Other Utilities
All other utilities should follow the Policy for Accommodation of Utilities on State Highway Right-of-ways Manual guidelines.

Encroachments on Right-of-Way
No part of the right-of-way for state highways may be encroached upon by any structure or personal property without a written permit from the Department Director.

District Engineers are responsible for the elimination of unauthorized encroachments and controlling of authorized encroachments within their districts.

Personal property encroachments are classified as equipment or merchandise on right-of-way, either for sale or for storage. Suggested guidelines:

- Contact owner for voluntary compliance.
- Send certified letter giving notice of encroachment and setting time limit for compliance.
- Contact local law enforcement agencies for assistance. (Coordinate with Maintenance Division).

Structural encroachments are classified as buildings, signs, fences, etc. Suggested guidelines:

- Buildings-contact owner for voluntary compliance. If removal is not a practical solution, recommend another solution to the Design Division.
- Signs, fences, etc.-notify the owner by personal contact and letter, giving a reasonable time to

remove, not to exceed 72 hours. If the encroachment is not removed by owner, remove with state forces. Where the owner cannot be found and the encroachment is in place for more than 72 hours, remove with state forces. In both instances, store at the direction of the district engineer. Contact Legal Division for disposal. Fences connected to cattle passes are exempt.

Where a curb and gutter section is built and the outermost curb is not more than ten feet inside the right-of-way line, awnings, canopies, marquees, and on-premise signs may be considered permitted encroachments if they are totally supported from outside the right-of-way, their farthest protrusion is at least two feet in back of the face of the curb, and the vertical clearance is not less than the local ordinance requires. Eight feet is the minimum acceptable height.

Canopies and marquees which have any supports within the right-of-way must have a written permit from the Department Director and the approval of Federal Highway Administration.

Parking

Do not park vehicles or equipment in the ditch or on approaches within 60 feet from the outside edge of the driving lane.

CHEMICAL VEGETATION CONTROL

Noxious Weeds

North Dakota Century Code requires the Department to provide for eradication or control of noxious weeds on Department land. (N.D.C.C. 4.1-47-26) Maintenance shall coordinate noxious weed control with outside agencies, usually the Commissioner of Agriculture, who is responsible for coordinating control on state-owned land.

Districts shall develop a program for controlling noxious weeds and coordinate efforts with appropriate county and local officials.

Section Supervisors should be alert to spot new infestations of weeds in their sections and report them to the District office. Early detection and treatment will result in a more efficient control program.

Pesticide Certification

Applicators of pesticides or their direct supervisors, depending on pesticide label requirements, need to be certified by the Pesticide Control Board. Applications are available from your local County Extension Service. Certification will require some training and an examination. Certifications need to be renewed every three years. Record keeping is also required by applicators.

Contract Weed Control

It is recommended that Districts direct their weed control program through the county weed control officer. An agreement must be entered into with the county for these services. The terms of the agreement are provided on the Noxious Weed Agreement CLA 17090. When the agreement is with the county, Risk Management Appendix B-#4 must accompany the agreement.

When it is not cost effective to work with the counties for weed control, or when the county and Department cannot agree on indemnification, this work must be let to private contractors through

competitive bidding. An agreement must be entered into with the contractor to provide these services. The terms of the agreement are provided on Noxious Weed Agreement CLA 17090. When the agreement is with a private individual, Risk Management Appendix A-#5 must accompany the agreement.

All private and public weed control efforts are required by law to maintain a daily log of their work and save this documentation for three years. Weed/Grasshopper Control Program, SFN 17825 may be furnished to contractors and counties for this purpose. A copy of this form should be submitted with a private contractor's invoice.

Payment can be made either on a cost-per-acre basis, cost-per-spray hour, or on a force-account basis. Payment should be made only after the work is satisfactorily completed and supported by adequate documentation.

Grasshopper Control

This program allows each district to contract with the counties for the control of grasshoppers on highway right-of-way. Before the Department can enter into an agreement with a county, that county's program MUST be approved by the Commissioner of Agriculture. The Department will only spray if the county has an ongoing program of spraying private property adjacent to the Department right-of-way. No Department funding will be used off the right-of-way. North Dakota Century Code pertaining to pest control can be obtained in N.D.C.C. 63-01.1-25.

To enter into this program, the district and county need to execute a Pest Control Agreement, CLA 17089. Payment to the county can be made either on a cost-per-acre, cost-per-spray hour, or a force-account basis. Payment will be made only after the work is completed and supported by adequate documentation. At a minimum, each county crew should be required to keep a daily diary and the county must attach a copy of the diary to the invoice. Daily Maintenance Diary SFN 50438 can be used for the daily diary. Invoices will be forwarded to the Maintenance Division for payment.

RIGHT-OF-WAY ACCESS

Private Drive Permits

The installation of private drives shall be in conformance with Standard Drawing D-203-08. District Engineers will send a Driveway Application and Permit SFN 5918, and explain the permit requirements and obligations to the applicant. Districts may provide staking assistance as needed to obtain a properly constructed drive.

The Department typically does not furnish culverts for private drives. For all new approach requests, the requestor should pay for the approach unless a new approach is needed for safety reasons as determined by the Department. For modifications requested by the landowner, the Department should participate if the existing approach does not have 8:1 in-slopes. Participation should consist of the cost of the replacement or extended culvert. If the approach does not have a culvert, the requestor will be responsible for all costs.

Culvert information should include the size, type of material, and length. Minimum culvert diameter

is 24 inches. Culvert installations must include end sections. All culvert installations should be at the toe of the back slope or as far from the roadway centerline as the site allows.

Drive Approach Maintenance

The Department is responsible for the maintenance of private drives that were installed or replaced as a part of a construction project. Maintenance of private drives installed by private parties is their responsibility as mutually agreed upon in the executed Driveway and Application Permit SFN 5918. See Decision Memo.

When the ownership of an approach becomes obscure due to the sale of a property, reconstruction of the highway, drive slope-flattening projects, etc., it may be in the Department's interests to accept responsibility for minor maintenance work such as gravel and erosion control.

The Department does not have to maintain a gravel surface on an approach into a pasture or a cultivated field.

For all new approach requests, the requestor should pay for the approach unless a new approach is needed for safety reasons as determined by the Department. For modifications requested by the landowner, the Department should participate if the existing approach does not have 8:1 in-slopes. Participation should consist of the cost of the replacement or extended culvert. If the approach does not have a culvert, the requestor will be responsible for all costs. See Decision Memo.

Access Control

The construction of controlled-access highways necessitates a clear understanding of policies regarding access from adjoining property. It is important that these guidelines be followed and that no infringements are allowed. See Access Control Map.

Where controlled-access highways are constructed without a frontage road, the District Engineer must take reasonable steps to inform owners of the adjoining property of the restrictions upon their access to the highway.

Access to the highway can be made only at designated points. Roadways from adjoining property to an access point are to be located on private property. Exceptions to this policy may be considered if no other feasible route is available.
When buildings are erected or other improvements made, the property owners should bear in mind that buildings should be set back far enough to allow for a roadway to be built on private property if an approach to the access point is desired.

On controlled-access highways, the Department is not responsible for providing access except at the designated points. The property owner is responsible for providing a roadway from the access point to the property without using any portion of the highway right-of-way.

Highway Fencing

General

See Fencing Operations Guidance Memo for more information. Fencing may be replaced on

projects that have a 20 year plus design life. The district has the ability to put out their own district funded project to replace fence.

The primary reasons to install fencing along highways are access control and safety. Fences serve as physical barriers to the through lanes and safeguard against traffic hazards caused by intrusion of people, animals, vehicles, equipment, etc., from outside the right of way.

The NDDOT fences are not intended to prevent wild or domestic animals, or pedestrians from crossing the fence line and entering the highway right of way. If the NDDOT fences are used for such purposes, it is merely out of courtesy to the adjacent landowner that such is tolerated. The adjacent landowner is responsible to provide an adequate fence for their intended use on their property.

The recommended practice is to locate fencing, depending on the terrain, 12 inches inside the right of way line. Fences should not be erected in a location or on an alignment such that sight distance is impaired. Do not straddle or obstruct surveying monuments with any type of fencing.

Access Controlled Highways

On highways with full access control, such as the interstate system, fencing is required. On interstate highways, federal regulations require fencing on both urban and rural routes.

On highways with partial access control, fencing is not required. If fencing is needed to discourage or eliminate repeated encroachments, it will be constructed and maintained by the District. Other means to discourage encroachments, such as delineator posts or Do Not Cultivate signs, may also be used. These spot locations will be determined by the District Engineer.

See NDDOT Highway Access Control Map for more information.

Managed Access Highways

On highways that do not have full access or partial access control, fencing is not required.

If fencing is needed to discourage or eliminate repeated encroachments, it will be constructed and maintained by the District. Other means to discourage encroachments, such as delineator posts or Do Not Cultivate signs, may also be used. These spot locations will be determined by the District Engineer.

Non-Highway NDDOT Sites

Fencing around the District headquarters may be installed for security purposes and to delineate right of way. Fence may also be installed to restrict visibility from adjacent properties. Recommended fence types are chain link or wood fence.

Fencing around the maintenance section lots may be installed for security purposes and to delineate right of way. Recommended fence types are barbed or smooth wire fence.

Fencing at NDDOT radio tower sites shall be installed for security purposes. The District shall

review the original purchase agreements for each site to determine any specific requirements regarding fences. The intent is to place individual fences around the tower, the building, and guy wire anchors, unless there is a previously identified issue that would require fencing the perimeter of the site. Recommended fence type is chain link fence. Corner posts or right of way markers shall be installed on the corners of the sites to delineate the NDDOT property.

Fencing around NDDOT lagoons shall be installed for safety purposes. Recommended fence type is chain link fence.

Fencing may be needed for security reasons, to discourage encroachments and delineate the right of way at special sites such as rest areas, reloading sites, repeated encroachment sites, etc. The need for fencing at these sites will be determined by the District Engineer. Recommended fence types are barbed or smooth wire fence.

Fencing should only be installed on NDDOT owned property and not on leased or rented property.

Fence Types

For material specifications and installation guidance refer to the Standard Specifications for Road and Bridge Construction, Section 752, Fencing, and NDDOT D-752 Standard Drawings.

Chain Link: Urban areas for controlling access and for delineation of the right of way or property line; bypasses around communities or urban areas to prevent encroachment; separation between mainline and frontage road in urban areas; rest areas, lagoons, and scenic overlooks where necessary for public control and protection; and pedestrian structures. May also use an ornamental or decorative fence in urban areas.

Barbed Wire: Rural areas for controlling access and for delineation of the right of way or property line.

Barbless or Smooth Wire or Cable: Rural areas for controlling access and for delineation of the right of way or property line.

Wood Fence: Urban areas for restricting visibility from adjacent properties and controlling access. Any type of tall wood fence, similar height to chain link fence.

Delineator Posts: Rural areas for delineation of the right of way or property line.

Gates

Gates for full access control highways, such as the interstate system have been inventoried by Maintenance Division. The number of gates should be kept to a minimum. Maintenance Division will manage the gate inventory and any requests to add, modify, or remove a gate.

Gates are necessary to allow District forces to reach the right of way without using the interstate main line. Gates may also be needed to provide access to permitted utility appurtenances, legal drains, emergency service vehicles, or other hired contractors.

Gates on the interstate system shall be closed and locked when not in use. Use gates of the same type of material as each fence. Gates should be closed but may be unlocked during active maintenance operations.

The number of gates for Non-Highway sites should be determined by the District Engineer. Gates for Non-Highway sites shall be closed and locked when not in use. Use gates of the same type of material as each fence. Gates should be closed but may be unlocked during active maintenance operations.

Maintenance

Fences should be visually inspected and repaired at least once per year. Inspections should be completed in a time frame that will allow sufficient time and weather to make needed repairs.

Any spot or localized damage should be scheduled for repair as soon as practical and completed by District forces. Any major repair or fence replacement, which cannot be completed by District forces, should be discussed with the District administration and the work added to the next appropriate construction project. The District may also hire contractor services for any repairs which cannot be completed by District forces.

Any damage from the result of a non NDDOT crash or incident shall be reported to the District administration. All time and materials for repairs should be documented and submitted on the Damage Claim Worksheet, SFN 7227.

Replacement

The expected life expectancy for standard galvanized wire (barbed, smooth, woven, or chain link) fence is approximately 20 – 25 years.

Major fence replacement and fencing items should be considered on appropriate construction projects, such as reconstruction, major rehab, structural improvement, or minor rehab projects. These fencing items and discussion should be included in the project scoping report.

The District may also hire contractor services for major replacement.

Environmental Documentation

Fence installation in any new locations or entire corridor fence replacement shall require a CED (Categorical Exclusion by Definition) environmental document for environmental clearance and to complete any required consultation, coordination, and permitting requirements. The CED document is found on the Design Manual Reference and Forms page, and documentation should be coordinated with an ETS Division Environmental Liaison.
All other fence repairs, maintenance, or replacement shall not require any environmental documentation.

Gates in Fence on Interstates

Federal Highway Administration Interstate Access Overview

Federal law provides that State departments of transportation (State DOTs) may not add any points of access to, or exit from, the Interstate System without prior approval of the Federal Highway Administration (FHWA). To implement this authority, FHWA issued the Policy on Access to the Interstate System and the Interstate System Access Informational Guide (Policy).

It is in the national interest to preserve and enhance the Interstate System to meet the needs of the 21st Century by assuring that it provides the highest level of service in terms of safety and mobility. Full control of access along the Interstate mainlines and ramps, along with control of access on the crossroad at interchanges, is critical to providing such service. Therefore, FHWA's decision to approve new or revised access points to the Interstate System under Title 23, United States Code (U.S.C.), Section 111, must be supported by substantiated information justifying and documenting that decision.

Access to the Interstate System is allowed only by interchanges at selected public roads. Each entrance or exit point, including "locked gate" access and access to collector-distributor roads or ramps, is considered to be an access point. Locked gate access through the right-of-way fence may be allowed in rare instances as required for maintenance of the facility or by utility forces in remote areas, between widely spaced interchanges, for emergency management or medical personnel, or for temporary construction access. Locked gates count as access and therefore need FHWA approvals.

General

Access control fences serve as physical barriers to the through lanes and safeguard against traffic hazards caused by intrusion of people, animals, vehicles, equipment, etc., from outside the right of way.

The number of fence gates along controlled access highways must be kept to a minimum and all new gates must be approved. Usually, such gates are necessary only to allow highway maintenance personnel and operating equipment to reach the state right of way without using the Interstate mainline. Gates may be needed to provide access to utility supports, legal drains, maintenance operations, and so on, located within the right of way. Gates must be the same type as each fence and provide locks to deter unauthorized use. They must be closed and locked when not in use. Gates must be closed but may be unlocked during active maintenance operations. NDDOT is responsible for enforcing violations in accesses or use of the gates. New or revised access to Interstate freeways requires collaboration with and approval from FHWA.

Intent of NDDOT Access Control Fence Gate Guidelines

The intent of the NDDOT Access Fence Gate Guidelines is to focus on locked gates in the access control fence of interstate highways. These Guidelines do not apply to fence or gates along limited access control highways or to other interstate access points, such as interchanges. Refer to the NDDOT Design Manual (I-02.02.49) for Interstate System Access Change Request information.

The Guidelines are intended to provide a programmatic approach to managing gate locations,

including the addition, modification, and removal of locked gates. These requirements have been mutually agreed on with the FHWA North Dakota Division.

Existing Access Control Fence Gates

During the winter of 2020/2021, the NDDOT Districts provided a list of gate locations by reference point and direction to the Roadway Data Section of the Planning and Asset Management Division. These locations were compiled, and additional data fields were used to create the initial inventory list of all interstate locked gates. Where existing gates have been and will continue to be used to access the Interstate mainline, NDDOT has evaluated the locations and determined the operational and safety characteristics for the travelling public are acceptable and use of the locked gate access will not impair the full use and safety of the highway. The date that this initial inventory and final Guidelines were approved by FHWA has been added to the database as the initial FHWA Approval date. Maintenance Division will manage the gate inventory and any requests to add, modify, or remove gates in the future. All gates in the access control fence must be closed and locked when not in direct use. Gates must be closed but may be unlocked during active maintenance operations.

Scoping & Project Development

As interstate projects are programmed and scoped, a review of the existing and proposed access control fence gates should be considered for all interstate investment strategies. The Scoping Report should identify proposed gate locations and gates that are no longer needed. The Scoping group should coordinate with the District prior to final Scoping Reports. Interstate preventive maintenance projects require the districts to evaluate the gates. For proposed gate locations, the designer will be responsible to initiate the Interstate Gate Request (IGR) documentation. The designer will work with Maintenance Division to properly document the removal and modification of existing gates through the IGR process.

Modifying/Removing/Adding Locked Gates to Control Access Fence

When the addition of a gate is proposed in the regular project development process, the designer will initiate an Interstate Gate Request. Modification, relocation, or removal of an existing gate access will require the IGR process to be initiated by the designer during project development. The districts will provide an IGR for instances that do not derive from project development. The IGR will evaluate the necessity and justification of the proposed gate or alteration. All proposals for either new or modified access to the Interstate System must be submitted by the State DOT, as the Interstate System owner and operator, to the FHWA Division Office, regardless of the proposal sponsor or the source of funding. The State DOT is responsible for ensuring the analyses are conducted in accordance with the Policy and determining if the proposals are acceptable. The IGR will be submitted to the NDDOT State Maintenance Engineer to review the purpose and need. Then, if satisfied with the request, the State Maintenance Engineer will recommend the gate addition or alteration to FHWA. FHWA's authority allows the division office to grant final approval for all gates in access control fencing along the Interstate System. The Maintenance Division will update and manage the gate inventory database.

Interstate Gate Requests

The analysis of locked-gate access requests is a special case that should be evaluated on a case-by-

case basis. Since these alternatives do not involve regular access to the Interstate, the scope and nature of the analysis may be more qualitative than quantitative. FHWA requires an access report that addresses the requirements listed in the Policy. If required, additional information should be attached to the access report submitted to FHWA. While there is no prescribed format for access requests, the State DOT should ensure that all Interstate Gate Requests need to contain sufficient information to allow for an independent evaluation and consider all pertinent factors and alternatives. The extent and format of the required justification and documentation has been jointly developed by the State DOT and the FHWA Division Office to accommodate the operations of both agencies. The analysis provided should be consistent with the agreement between the State DOT and FHWA Division Office, and sufficient for a person unfamiliar with the project area or conditions to make an informed decision on the engineering and operational acceptability of the proposed change in access.

All requests for a locked gate access require submission of an Interstate Gate Request through the State Maintenance Engineer. Requests for locked gate accesses shall satisfy FHWA's Policy points. Information and factors used by the State Maintenance Engineer to make a recommendation to FHWA for a locked gate access include but are not limited to:

- purpose and need for the locked gate access
- aerial maps of the location, including nearest interchanges, interstate direction, reference points, right of way distances
- review of possible access alternatives, including nearness of other existing access points, to confirm the feasibility of the proposed access
- number, type, duration, and frequency of vehicles proposed to use the locked gate
- existing and future interstate traffic volumes
- traffic safety analysis and crash history of the interstate segment
- ownership and lessee of the property adjacent to the locked gate
- NEPA documentation: Installation of fencing meets the criteria for categorical exclusions (CEs) in paragraph (a) of 23 CFR 771.117, and specifically listed in 23 CFR 771.117 (c)(8). Under these Guidelines, the installation, modification, or removal of fence gates within the existing Interstate access fence facility will be considered categorically excluded by definition and will not require further NEPA documentation.

Locked Gate Design Considerations

Since locked-gate accesses are intended only for a few select users, they should be inconspicuous to the general travelling public with limited improvements. Sight distance is a key consideration in the location and design of locked-gate accesses.

New and modified gates must match the existing control access fence type. Fences and gates shall be constructed conforming to the details on the standard drawings and in the plans unless otherwise directed by the engineer.

DRAINAGE

<u>Cattle Pass Maintenance</u>

A cattle pass is a structure that allows livestock to pass under a highway. A cattle pass approach is

the fence or other enclosure that directs the livestock into the cattle pass and helps prevent livestock from escaping onto the roadway or right-of-way.

The installation of a cattle pass does not guarantee the adjacent landowner access to or through the structures at all times. The Department is not responsible for cleaning snow, ice, or water from the approaches, ends, or inside of a cattle pass.

The Department must maintain the structural integrity of the cattle pass. The landowner must maintain the cattle pass approach between the structure and the right-of-way fence. Fence used to create an approach to a cattle pass must be approved by the District Engineer. If a cattle pass is being abandoned, the district should check with the Right of Way Section of the Environmental and Transportation Services Division for proper disposal.

Posts at Culvert Ends

Each end of a culvert crossing the centerline of a highway should be marked with a metal post as a safety precaution for mowing operations, as well as to determine their location during the spring runoff. Districts may also desire to mark certain approach culverts that are difficult to locate.

The standard color for these posts is aluminum with the top foot painted black. Districts have the option of using one foot of black PVC pipe fastened to the post in lieu of paint. The posts should be located on the approach side of the culverts. See Placement Location.

Pavement Underdrain System Maintenance

Underdrains and outlets should be checked and cleaned twice a year. This maintenance should be done in the spring after the ground is thawed to the depth of the drain and in the fall before freeze-up.

Drains should have siltation, plant growth, debris, and animal nests removed and damage from vehicles should be repaired. Consider flushing where necessary and allowable by design. Also, the Materials & Research Division has a PearPoint Optical camera available for use by the districts to check underdrains.

DISTRICT MAINTENANCE SERVICES TO URBAN & NON-URBAN AREAS

Districts may provide services for Urban and Non-Urban Areas at their request, depending on available District resources.

Districts are to follow Executive Policy Manual guidelines for maintenance services:

- Urban Area Program Policy II 8-1 (cities over 5,000 population)
- Non-Urban Area Program Policy II 8-1.1. (state highways through cities under 5,000 population)

Chapter 4 - TRAFFIC OPERATIONS

DESIRED SERVICE LEVELS FOR SAFETY APPURTENANCES

	Yearly	Spring	Summer	Fall	Winter
Cable Guardrail		1		1	
W Beam Guardrail	2				
Attenuators		1		1	
Barrels		1	1	1	1
Signing	3				
Delineators		1		1	
Pavement Markings	8	4	4	4	
Light Standards	2				
Span Wire Traffic Signals/flashing beacons		1	1	1	1
Highmast Standards Electrical		5	5	5	5
Lighting/Highmast Standard Foundations	6				
Sign Bridges	6				
Clear Zone		5	5	5	5
Snow Gates				1	
Advance Warning Rumble Strip				7	

1. Inspect and Adjust
2. Inspect
3. Perform night inspection, including all stop signs. Poor warning and regulatory signs must be replaced. All warning and regulatory signs will be replaced on a 10-year cycle.
4. Re-stripe maintenance repair areas at the end of each work-week
5. On-going
6. Inspect every 2 years with Bridge Inspection
7. Re-install at patched areas if warranted
8. See Pavement Marking – Striping Section, in this manual, for Striping Schedule

TRAFFIC SIGNS

Traffic Signs at Railroad Crossings

When working on any traffic signs located near railroad tracks, it is important to know that any work within 25 feet of the closest rail is considered trespassing as this is understood to be railroad property right-of-way. Working within 25 feet of a railroad may require a railroad flagger to be on site. See Railroad Crossings under Chapter 5 – OPERATIONS; Page 17 General for more information.

Traffic Control Standards

Traffic control signing and other devices should be installed according to the latest edition of the MUTCD and the Department's design standards for signing. Signs should be maintained in a legible condition both day and night. To ensure proper reflectance, it is necessary to conduct a night inspection at least once a year. Maintenance Division should be notified no later than one week following the completion of the inspection.

Delineators on Freeways and Expressways

Delineators are required on four-lane freeways and expressways. Delineators are also used at hazardous locations to improve safety. Where delineators have been installed, they should be maintained to the extent resources allow. The color of the reflector should match the color of the edgeline. This color rule also applies to guardrail reflective plates. Delineators should be inspected and adjusted twice a year – spring and fall.

Construction projects that replace existing delineators will specify diamond-grade reflectors. Diamond-grade reflectors should be used for replacements when a highway segment has been converted. For placement see Standard Drawing D754-21A.

Flexible delineator posts are also being installed at some locations at the request of the District.

Delineator systems at interchanges should be maintained as originally designed. When in doubt as to replacement, consult the construction plans and design standards.

Snow Pole Marker

For standard installation location http://mydot.nd.gov/manuals/maintenance/snow%20pole.pdf. Districts may use the snow pole of choice. Districts should remove snow poles off guardrail and other crash devices as work load permits.

Snow poles will not be installed as part of construction projects.

Lewis and Clark Trail

Lewis and Clark Trail signs should be erected with the arm and hand of the marker pointing toward the Missouri River. The only exception to this would be when the trail road makes a turn in the direction away from the river and the sign guides traffic in the proper direction. Trail markers may be erected along with other signs on route-marker assemblies.

Signing For Rivers

The Department will sign the following rivers whenever they cross a state or federal highway:

Bois DeSioux	Cannonball	Des Lacs	Elm
Forest	Goose	Green	Heart
James	Knife	Little Missouri	Little Muddy
Maple (North of Hope)	Missouri	Mouse	Park
Pembina	Red	Sheyenne	Tongue
Turtle	White Earth	Wild Rice	Yellowstone

Signing for these crossings will be in accordance with the latest edition of the MUTCD and the Department signing standards. The Department will not sign for creek crossings.

Signing for Lakes

The Department has an agreement with the ND Game and Fish to allow for the signing of lakes. The ND Game and Fish pays for the signs and the Department installs with the approval of the district engineer. All sign replacements are paid for by ND Game and Fish.

Signing for Public Schools
Guidance for signing for public schools shall follow the department decision document. Requests for signing for public schools is to be reviewed on a case by case basis. Typically schools are located within city limits and do not require signing; however, there are times where requests may have to be reviewed due to variability in geographical locations.

Motorist Service Signing on the State Highway System

911 Street Name Signing
Political subdivisions may install 911/Street Names on the Department right-of-way. Prior to installation, a contract must be executed with the District. Use Street Name Signs on NDDOT Right-of-Way CLA 1025. The form can be obtained in Contract Management, must be accompanied with Risk Management Appendix B-#4 "Routine Service Agreements with Sovereign Entities and Political Subdivisions of the State of North Dakota, and a Certificate of Financial Responsibility. Use Standard Drawing D-754-86 and D-754-87 for installation. When the contract has been signed by all parties, the Department district files the original and sends a copy to the county. Any questions, call Maintenance Division.

Recognition/Award Signing
Existing non-advertising Recognition/Award signs such as: City of the Year, Tree City, Red Ribbon City, etc. must comply with the guideline provided in Decision document signed February 10, 2005. See Memorandum of August 17, 2005.

Vehicle Noise Ordinance Signing
Engine brake restriction signing must comply with the guidelines provided in Decision Document signed January 9, 2003. Guidelines provided within Decision Document.

Work Orders for Signs
Work Orders shall be completed within a responsible time frame. Signed Work Orders shall be returned to Maintenance Division within fifteen (15) days of completion.

RIMS Inventory of Signs
RIMS inventory updates of signs, installed by district maintenance forces, should be completed within seven (7) days of installation.

Hazards on Roadway
Whenever signs are placed for hazards on the roadway, such as Water on Roadway, be sure to check the latest standards in the Traffic Control Requirements Handbook.

Removal of Roadway Traffic Hazards
The district engineer, as well as police officers, has the responsibility for removal of hazards to traffic on the traveled way of state highways.

PROCEDURES:

- When a disabled and/or unattended vehicle is found which obstructs traffic or creates a hazard

to traffic, the district will notify the Highway Patrol, sheriff, or local police as applicable, who are authorized by state law to provide for its removal.

- In a special emergency situation when the authorities are unable to provide for removal of vehicles in a reasonable time, they may authorize the District to remove the vehicle or vehicles. Close coordination with the authorities is necessary.
- The District will provide for the removal of objects or debris from the traffic lanes as soon as possible.

Quick Clearance Policy

Public safety is the highest priority and must be maintained especially when injuries or hazardous materials are involved. The quality of life in the State of North Dakota is heavily dependent upon the safe movement of people and goods. Law Enforcement and the NDDOT share the responsibility for achieving and maintaining the degree of order necessary to make this free movement possible. Agencies have the responsibility to do whatever is reasonable to reduce the risk of harm to responders, eliminate secondary crashes, and minimize delays associated with incidents, crashes, roadway maintenance, construction, and enforcement activities.

The following operating standards are based on the philosophy that the State Highway System will not be closed or restricted any longer than necessary.

State Highways will be cleared as soon as it is safe to do so. Reasonable attempts to avoid damage shall be taken, restoring traffic to normal conditions is a higher priority than avoiding such damage to the vehicle. Incident caused congestion has an enormous cost to society. **NDCC 39-10-48, was passed to protect the Department against liability when utilized in applicable events within State Highways.**

Department Responsibilities

The Department recognizes that not all circumstances involving clearing of vehicles, equipment or material that are considered a safety concern can be accounted for, the following are some general guidelines that should be followed:

1. It is always preferred that our operators get a request to remove a hazard from the Highway Patrol or local law enforcement.
2. Every effort should be made to get guidance from Highway Patrol or local law enforcement before removing hazard.
3. Before removing hazard the operator shall make every effort to contact the district administration. If the Highway Patrol or local law enforcement is not present, District Administration can make a determination to call Highway Patrol or to give permission to the operator to remove hazard.
4. The operator shall inform the Transportation Services Supervisor so that the incident can be documented in the section's daily diary.
5. To determine the best practices of how to remove a vehicle the operator should follow the JSA/JHA developed by a team of district representatives, State Fleet and led by the Maintenance Division.
6. Vehicles that are parked outside the lane of travel, or in other words on the shoulder of the highway, should not be removed unless requested to do so by Highway Patrol. When encountered these vehicles shall be reported to the District Administration so that they can inform HP of the issue.

Bump Signs

Bump signs should be used to give warning of a sharp change in the highway profile that may cause a vehicle to deviate from its intended course, cause damage to a vehicle, shift cargo or cause considerable discomfort to drivers and passengers. Signs should be installed according to established standards.

It is important that bump signs be removed as soon as the condition no longer creates a problem to the motorists. This will maximize future respect given to bump signs by motorists.

Sign Support Maintenance

Older tubular post sign supports may have flat, slotted fuse plates that will not hold the sign under high-wind loads. Perforated two-holed plates are available for replacement. Tack welds are not permitted on fuse plates.

Breakaway bases for large signs should be checked annually for missing shims, washers and loose or missing nuts. An annual inspection program can save the cost of repairing a blown down sign.

The slip base height above the ground should be checked for changes due to erosion or frost heave. The slip plane should be within four inches of ground level.

PAVEMENT MARKING

Striping

District roadway striping is conducted by contract for all centerline and edgeline striping of every roadway every year. It is recommended to have the striping contracts completed by July 15th of each year.

Exceptions would be high traffic areas that have high performance materials such as various types of tape which should not be painted and all construction contracts. Districts will stripe reseals by district maintenance forces and any patches done after contract striping is completed.

Temporary Markings

Temporary markings should be used where maintenance operations have obliterated the centerline pavement markings in excess of 300 feet. All temporary markings should be fully reflectorized four-inch paint line or tape and should be replaced at the end of each work week. Markings should be four feet in length at forty-foot intervals.

Stop Lines

Stop lines should generally be used at signalized intersections of major highways. District Engineers may designate locations as appropriate to provide for safe operation of traffic at major junctions or other locations requiring special treatment.

Striping at Railroad Crossings

When working on any striping located near railroad tracks, it is important to know that any work within 25 feet of the closest rail is considered trespassing as this is understood to be railroad property right-of-way. Working within 25 feet of a railroad may require a railroad flagger to be on site. See Railroad Crossings under Chapter 5 – OPERATIONS; Page 17 General for more information.

If paint is used for striping at railroad crossings it should be redone each year. It can be included

with the contract centerline striping if desired. If the striping was done with high performance material such as tape, it needs to be checked each year, and when it is necessary to be redone, it should be done with like material.

Highway Patrol Markings

The following guidelines should be followed when installing Highway Patrol markings:

- Marking size should be 24 inches X 48 inches with the 48-inch side being perpendicular to the edgeline.
- The spacing of the markings should be at half mile increments.
- Markings should be located on the outside shoulder of both roadways on divided highways and on the outside shoulder in only one direction on two-lane highways. If the shoulder width is not adequate to accommodate the 24-inch X 48-inch marking on a two-lane highway, then an 18-inch X 30-inch marking should be used to reduce the amount of the marking encroaching into the driving lane.
- Markings should be installed accurately. It is preferred to have them surveyed in, if possible. Use of a DMI within +/- 1-foot accuracy per half mile is acceptable.
- Paint or plastic pavement marking tape, white in color, is acceptable.

TRAFFIC SIGNALS AND LIGHTING

Inspection of Traffic Signals

Traffic signal poles and mast arms should be inspected annually. Look for loose bolts, any broken or missing parts, cracks in welds or any sign of metal fatigue. Poles and mast arms should be maintained as constructed.

Inspection of Light Standards

Light standards and mast arms should be inspected annually. Look for loose bolts, broken or missing parts, cracks in welds or any sign of metal fatigue. Light standards should be maintained as constructed.

SAFETY APPURTENANCES

Safety Appurtenances at Railroad Crossings

When working on any safety appurtenances covered in this section that are located near railroad tracks such as guardrail, rumble strips etc, it is important to know that any work within 25 feet of the closest rail is considered trespassing as this is understood to be railroad property right-of-way. Working within 25 feet of a railroad may require a railroad flagger to be on site. See Railroad Crossings under Chapter 5 – OPERATIONS; Page 17 General for more information.

Rumble Strips

A rumble strip is used to alert a driver of a changed condition ahead. Rumble strips have been successfully used on approaches to STOP signs where a crash problem is known or thought to exist. Standard traffic control signing should be installed in conjunction with any rumble strip installation. Rumble strips should be maintained every fall if warranted.

Rumble strips may be warranted under one or more of the following conditions:

- Where there have been reported crashes that may be corrected by a rumble strip installation. Such crashes include right-angle collisions and overshooting a T intersection.
- Where a number of credible complaints are received from the public, Department personnel, or law enforcement officials indicating that motorists are violating existing traffic control devices.
- Where engineering judgment, based on a study of operating conditions, roadway geometrics, traffic and crash experience, indicates that rumble strips will result in a significant benefit to the public.

Requests for the installation of rumble strips should be forwarded to Traffic Operations Section in Planning & Programming Division. Traffic Operations will evaluate all available information and determine if the warrants are met and submit recommendations to the Planning & Programming Engineer. The Planning & Programming Engineer shall make the final determination based on warrants and recommendations provided.

Cable Guardrail

Cable guardrail should be inspected and adjusted every spring and fall for proper tension of the cables. Refer to Standard Specifications for Road and Bridge Construction for details on cable tension.

Guardrail Maintenance

Guardrail should be maintained as it was constructed. Refer to the plans, Department design standards, and manufacturer's installation manuals for proper installation of the various guardrails and end treatments. All guardrails should be inspected annually for broken, loose, or missing parts and proper operation of the end. Guardrail installation and maintenance training, manufacturer installation instructions and manufacturer checklists can be found using https://www.dot.nd.gov/divisions/maintenance/guardrail/ .

Guardrail should be repaired promptly after it has been damaged. Repair work should start in a few days and work should progress continuously until repairs are completed.

Crash Cushion

All types of crash cushions will be maintained as constructed. They should be inspected each spring and fall using the appropriate checklists.

For Installation Manuals, training videos and inspection checklists refer to Guardrail Training and Information.

Records

Each district will maintain a file of inspection reports for the inspections completed on street light standards, traffic signals and roadside safety devices. Inspection checklists will be used for all the various inspections and kept on file in the district office.

Inspection of High Mast Lighting and Sign Bridges

High Mast Lighting and Sign Bridges are to be inspected every two years. Bridge Division wrote a Sign Structure and High mast Lighting Manual and this manual was distributed to the Districts. The Districts are responsible for the inspections and bookkeeping.

Chapter 5 – OPERATIONS

PAVEMENT PRESERVATION

Pavement Preservation may be defined as activities undertaken to provide and maintain serviceable roadways, including preserving the investment in our highway system; extending pavement life; enhancing pavement performance; ensuring cost-effectiveness; and reducing user delays. Pavement preservation does not include constructing new pavements, reconstructing existing pavements or performing major rehabilitation to an existing pavement. The purpose of a pavement preservation program is to protect the pavement structure, slow the rate of pavement deterioration and correct pavement surface deficiencies. Pavement preservation includes both preventive maintenance and minor rehabilitation strategies.

Pavement Preservation is a program with measurable results, producing smoother, longer lasting roads and structures. It is applying:

The Right Treatment
To the Right Road
At the Right Time

- **The Right Treatment** may be obvious on some projects. However, it may also be a choice of several treatments such as between a high performance seal or micro-surfacing, or between a thin lift overlay versus micro-surfacing. The identical treatment may perform excellent at one location or less than expected at another location. However, the entire network will improve and benefit from preventive maintenance.
- **The Right Road** involves balancing resources among the entire system. The benefit-cost ratio will be greatest for the roads in better condition. Preventive maintenance keeps good roads in good condition.
- **The Right Time** is usually earlier than later. The right time to perform preventive maintenance on a roadway is before there is significant pavement damage. A regular schedule of maintenance treatments will keep roadways in good condition for a longer period of time.

Preventive maintenance is defined as the planned strategy of cost-effective treatments that preserves the roadway system, retards future deterioration, and maintains or improves the functional condition of the system. The treatment may provide a minor increase in the structural capacity of the roadway. Preventive maintenance will generally be accomplished without improving the safety or operational improvements.

Minor rehabilitation is defined as a strategy to extend the useful life of a highway through pavement structure improvements without necessarily improving existing geometrics. Consideration will be given to providing safety enhancements and operational improvements.

The contents of this chapter will relate to pavement preservation treatments that are performed by state maintenance forces. These treatments will all fall into the strategy of preventive maintenance. Many other treatments included in both strategies, preventive maintenance and minor rehabilitation, will be performed by contract. The timely application of preventive maintenance treatments by state

maintenance forces will be necessary for an effective overall Department pavement preservation program.

Pavement Preservation Schedule

Classification	Desired chip seal cycle (Years)*	Depressed Cracks, Repair if IRI**	Asphalt Repair	Crack Pouring Crack Sealing	Desired Thin Lift Overlay/ Microsurfacing Cycle***	DBR, CPR, & Grinding
Rural Interstate	7	>110	Inspect and schedule each Spring. Repair as needed.	Follow crack pouring/ sealing policy	8 – 12 years	Inspect and schedule each Spring. Repair as needed.
Interregional System	7	>110			8 – 12 years	
State Corridor	7	>120			10 – 15 years	
District Collector	7+	>140			10 – 15 years	
District Corridor	7+	>140			10-15 years	

* Initial seal coat placed 2-3 years after overlay or reconstruction. Other surface treatments may be used.

**IRI = International Roughness Index. Excellent: <= 60; Good: 61-99;
Fair: 100-145; Poor > 145

***Spot patches repaired yearly with HBP or microsurfacing and placed with paving equipment or the minimac. Cold Mix will be used for reactionary repairs only.

Pavement Preservation at Railroad Crossings

When working on any pavement preservation activities covered in this section that are located near railroad tracks, it is important to know that any work within 25 feet of the closest rail is considered trespassing as this is understood to be railroad property right-of-way. Working within 25 feet of a railroad may require a railroad flagger to be on site. See Railroad Crossings under Chapter 5 – OPERATIONS; Page 17 General for more information.

Crack Sealing/Pouring

The definition of crack treatments is as follows:

- Crack Sealing is a process of filling the crack with a polymer or crumb rubber. Routing or sawing of the crack may be used in conjunction with sealing at the discretion of the District Engineer.
- Crack Pouring is the process of pouring the crack with MC 3000.

Crack maintenance is a very important part of pavement preservation and the Department has established the following criteria:

- Require all future HBP to use an anti-strip agent, unless testing shows that the PG graded asphalts used on the project will not have a stripping problem.
- Seal/pour cracks in new hot bituminous pavement within the first three years after the

pavement is placed. Cracks that are more than ¾" wide shall be poured. Poured cracks should be redone at least every other year.

- On new or mine and blend projects, the transverse cracks should be sealed/poured early in the life of the pavement, suggest within 3 years after construction. These projects should also be monitored every other year after the initial cracks are sealed/poured so all new cracks are treated. Poured cracks should be redone at least every other year.
- On thin lift overlay projects where the existing transverse cracks were poured, the reflective cracks should be poured at least every other year. If the cracks in the old existing pavement were sealed in the past, the reflective cracks in the new overlay should also be sealed rather than poured. The District Engineer has option to seal the transverse cracks if aggressive crack pouring program was used and cores have been taken to show there is no stripping at the crack in the existing pavement structure.
- On existing pavements, where the transverse cracks have not been sealed in the past, the cracks should be poured. If cores indicate there is no stripping, the District Engineer has the option of sealing the crack or continuing to pour the crack at least every other year.
- Provisions for traffic control for all preventive maintenance operations, including crack treatments, should be provided as required to meet local conditions, consideration for traffic volume, sight distance, and highway classification. Follow the procedures outlined in the Department's handbook entitled "Traffic Control Requirements for the Department Operations on Highways and Streets."

Crack pouring procedures with cutback are listed below:

- The roadway surface and cracks should be free of moisture before commencing crack pouring operations.
- Only enough oil should be poured in the crack to coat the sides. Do not fill the crack as this would be a waste of oil.
- Crack pouring should be performed only when the great majority of cracks have widened sufficiently to allow the sides of the crack to be coated. A width of ¼ inch is suggested.
- Sand should be used, as required, to prevent tracking.

Crack sealing procedures with polymer are listed below:

- Polymer modified sealant can be used on selected asphalt pavements where the crack pattern will result in this material being cost effective and have an estimated life of 6-8 years.
- Even at the correct application temperatures, polymers are extremely hot. Great care should be taken by employees that a spill does not occur and that they have an avenue of escape open and in mind at all times. It is important to follow the manufacturer's recommendation on heating of polymers. Overheating or prolonged heating can cause a reduction in the adhesive qualities of the sealant and cause jelling of the sealant in the melter. Jelled material is very difficult to remove.
- Transverse cracks should be sawed or routed to obtain a vessel for the polymer material. The optimal crack vessel is ¾ inch x ¾ inch. Backer rod should be used if the material can get into the existing crack below the vessel. ND studies have proven that longitudinal cracks should never be sawed or routed.
- The vessel needs to be clean and dry before pouring polymers. Moisture in the crack can be

dried with compressed air or a heat lance. When using a heat lance, care must be taken not to burn the asphalt. The heat should make the asphalt dark and shiny. If it turns gray, it is overheated. Due to the heat this device can generate, workers are cautioned to be careful in its use.

Crack sealing procedures with crumb rubber are as follows:

- Sealing with crumb rubber can be done with the same procedure as polymers if the cracks in the pavement move very little.
- In most cases crumb rubber is used to over-band the crack and this is done when the crack is fairly tight
- Crumb rubber should **not** be used the year immediately preceding an overlay as it may cause the overlay to slide. Also crumb rubber does not work well over cold mix.

Depressed Crack Repair

North Dakota has many miles of asphalt highways that have depressed transverse cracks with varying degree of severity. The ride on these highways varies with the severity. Over the years the Department has used several methods of treatment for this preventive maintenance operation. Cutback asphalt covered with chips or sand has been put into the depressed crack. In other instances, various asphalt mixes have been placed in the depression and compacted. The success of these treatments has been marginal, at best, since it is very difficult to get them smooth and improve the riding quality. Additionally, they did not last very long.

The latest method for the treatment of depressed cracks is to fill the depressed area with micro-surfacing material. This material is a mixture of polymer modified emulsion, graded aggregate, mineral filler, and water. The material is proportioned and mixed by a micro-surfacing machine and is deposited on the depressed crack in the form of a slurry. The material is struck off and leveled with a screed mounted on a garden tractor. The material sets up very fast and can handle traffic in 30 minutes. It is very stable and resistant to rutting or shoving and it dramatically improves the ride of the pavement. Also, it is much **less** labor intensive than other methods for the treatment of depressed cracks. See the Pavement Preservation Schedule at the beginning of this section for guidelines to initiate depressed crack repair.

Scotch Patching

Scotch patches, in general, are used as a temporary repair on a badly cracked or broken section of asphalt pavement. Patches can be short or rather long depending on pavement conditions. Scotch patching is a preventive maintenance treatment used to extend the useful life of a pavement. Scotch patching is basically spot sealing which is a shot of cutback or emulsified asphalt covered with aggregate, usually chips, and rolled with a truck tire or smaller roller. These patches can be placed in cool weather with a small crew and can cover several areas in a short period of time. This type of repair is usually used during early spring breakup to hold the surface together until the weather warms up and the areas can be patched with a more permanent asphalt mix patch. Inspect each spring and schedule repairs as needed.

Spray Injection Patching

Some Districts have spray injection patching machines which are commonly referred to as pothole

patchers. The basic steps of the technique are:

- Blow water and debris from the repair area using air from the aggregate delivery system.
- Spray a tack coat on the bottom and sides of the cleaned area.
- Blow a combination of asphalt and aggregate into the pothole until it is filled.
- Cover the patched area with a layer of aggregate only.
- Inspect each spring and schedule repairs as needed.

Asphalt Patching

Asphalt patching has been a treatment for preventive maintenance for as long as there have been asphalt roads. This treatment is used to strengthen weak or broken pavement sections and to improve riding quality in areas that have rutted or pushed out of section. Roadways with ¼" to ½" ruts, broken or severely cracked pavement, or areas where temporary patches were placed, should be considered for this type of treatment.

It is the Department's policy that the majority of this work will be done by contract in the form of thin lift overlays or intermittent contract patching. Hot bituminous pavement will be used for this type treatment.

However, there will always be some unforeseen pavement breaks and potholes needing a patching treatment. Material used for this type treatment should always be hot mix if it is available. Methods used for this treatment would be laying short patches either with a paver or motor patrol or placing the patch by hand. Several different techniques are used for hand patching potholes and surface breaks in the roadway surface. The selection of the best repair technique will be influenced by the time available for making repairs, the traffic level along the road, the types of materials and equipment available, and weather conditions. The objective of all patching operations should be to create the longest lasting patch possible. Inspect each spring and schedule repairs as needed.

Using Hot Mix Material

The use of hot mix material is highly desirable where available. Basic hand patching procedures for hot mix are listed below:

- Remove debris and moisture from the repair area. Repairs should be made during warm, dry weather.
- Create straight, sound sides around the perimeter of the repair area.
- Tack the hole and place the material in thin lifts and compact each as it is placed.

Cold Mix Material

Cold mix material should be used for reactionary repairs only. The lack of hot mix sources and the difficulty in purchasing small amounts and keeping it hot, make the use of cold mix material necessary. Two types of repairs with cold mix commonly used by the Department are the throw-and-roll technique and the semi-permanent technique. Districts are encouraged to use the semi-permanent technique. The throw-and-roll technique is recommended for emergency patches only.

The throw-and-roll technique consists of the following steps:

- Place cold mix into the repair area. Removal of moisture and fine debris is generally not done. However, this would not be the Best Practice way of patching.

- Compact the patch using the tires of the truck.
- Verify that the patch has maintained some crown at the center of the patch. If the patch has any depressions, place additional material and re-compact it with the truck.

The semi-permanent technique is a higher quality repair than throw-and-roll technique and consists of the following steps:

- Remove moisture and debris from the repair area.
- Square the sides of the patch area until vertical sides exist in reasonably sound pavement. The corners of the squared up area should be as close to right angle as possible.
- Place cold mix into the pothole.
- Compact the patch with a portable compaction device such as a vibratory plate compactor.

Bituminous Seal Coats

Bituminous seal coats are a very important preventive maintenance treatment and should be performed in a timely manner. Seal coat material and construction techniques are summarized in the Chip Seal Coat Manual. See Pavement Preservation Schedule, at the beginning of this section, for desired chip seal cycle.

Joint Sealing on Concrete Pavements

Effective maintenance of concrete pavements requires that the joints and cracks in the pavement are sealed. Polymer modified sealants are considered to be the best material available for crack and joint sealing. They work well on random cracks, longitudinal joints, and transverse joints up to a 15-foot joint spacing. Sawing is necessary to obtain a uniform, smooth-sided vessel. Routing does not work well in concrete.

A wide, working transverse joint may need a more positive sealant. A silicone material may be necessary for wider joint spacing. Inspect each spring and schedule repairs as needed.

BRIDGE PRESERVATION

Bridge preservation is defined as actions or strategies that reduce deterioration of bridges or bridge elements, restore the function of existing bridges, keep bridges in good condition, and extend their life. The goal of both bridge preservation and pavement preservation is to efficiently and effectively preserve the condition and enhance the performance of our transportation infrastructure.

Preventative maintenance is a planned strategy of applying cost-effective treatments to our transportation system that preserve the system, retard deterioration, and maintain or improve the condition of the system.

Cyclical preventative maintenance activities are performed on a pre-determined, or scheduled, interval and are aimed at preserving or delaying deterioration to existing bridge elements or components.

Condition-based preventative maintenance activities are performed as needed when identified through the bridge inspection process or by maintenance workers. The main goal of condition-based

maintenance is to fix minor problems before they become major problems.

Performing preventative maintenance, both cyclical and condition-based, will help keep bridges in good condition through their expected service life.

Additional information about Bridge Preservation can be found in the FHWA Bridge Preservation Guide and on the AASHTO TSP2 (Transportation System Preservation Technical Services Program) website.

Environmental Stewardship

It is always good to practice environmental stewardship when performing bridge maintenance activities.

Containing Dirt and Debris

Dirt and debris should be contained to the extent feasible and disposed of properly.

Lead Paint/Coatings

The exposure to lead paint/coatings can be a hazard to both the environment and the work place. If an exposure to lead paint/coating exists, staff must follow proper procedures in order to perform the work. Staff should not perform work where exposure to lead paint/coatings is present without consulting the Maintenance Division Safety Coordinator. Contact the Maintenance Division Safety Coordinator for procedures such as screening to see if lead is present, monitoring air quality, using personal protective equipment (PPE), training, sampling, containment and disposal.

Bird Nesting

Compliance with the Federal Migratory Bird Treaty Act is necessary when work may impact migratory birds or active migratory bird nests. A nest is considered active when it contains eggs or chicks.

Nests are active primarily during the primary breeding season for migratory birds in North Dakota from February 1 to July 15.

All reasonable, prudent, and effective measures should be identified and implemented to avoid take. The definition of take in 50 CFR 10.12 is: to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.

If no migratory birds are present at bridges, reinforced concrete box culverts, or structural plate pipes; prevent migratory birds from building new nests and from using nests built in previous years.

Preventative measures include hosing or knocking down any inactive nests or unfinished nests while avoiding take; or securing tarps, fabric, netting, or wire mesh to the structure to prevent and discourage nesting.

Preventative measures may be utilized before, during, and after breeding season.

Collect nests and nest debris and treat as agriculture waste. Disposal can occur by hauling waste to a permitted landfill or on-site when mixed with topsoil uniformly at the rate of 2 tons per acre away from water bodies and runoff.

If there are nests where birds are present, an inspection of the work area for active nests by the Environmental & Transportation Services Division Biologist should be done no more than 5 working days prior to performing work. If active nests are identified, do not perform work in the active nesting area until nests are no longer active. If district forces want to proceed with work, a minimum buffer space of 25 feet must be maintained around active nests to avoid take. The ETS Biologist may adjust the buffer space in coordination with the USFWS.

Bridge Preventative Maintenance Schedule

Description	Frequency
Cyclical Preventative Maintenance	
Sweep Deck & Approach Slabs	Yearly (Spring)
Clean Expansion Joints	Yearly (Spring)
Wash Deck	Yearly (Spring)
Clean Deck Drains	Yearly (Spring)
Clean Beams, Abutments, & Piers	Yearly (Spring)
Clean Bearings	Yearly (Spring)
Lubricate Bearings	Yearly (Spring)
Crack Seal Bridge Deck	3 Years
Apply Deck Surface Treatment	6 Years
Seal Abutments & Pier Tops	6 Years
Seal Concrete in Splash Zone	6 Years
Condition-Based Preventative Maintenance	
Repair Deck Drains	As needed
Repair Concrete on Bridge Deck	As needed
Repair Concrete on Barriers & Curbs	As needed
Repair Bridge Railing	As needed
Repair Expansion Joints	As needed
Repair Concrete Sidewalks	As needed
Repair and Level Approach Slabs	As needed
Repair Bearings	As needed
Repair Spalled Concrete on Beams	As needed
Repair Spalled Concrete on Substructure	As needed
Repair Erosion & Correct Drainage Issues	As needed
Repair Riprap	As needed
Repair Scour	As needed

Repair Slope Protection & Seal Joints	As needed
Remove Debris near Substructure and Abutments	As needed
Remove Trees and Shrubs near Structure	As needed
Spot Painting	As needed
Remove Graffiti	As needed

Notes: Notify Bridge Division of major repairs

Bridge Preservation at Railroad Crossings

When working on any bridge preservation activities covered in this section that are located near railroad tracks, it is important to know that any work within 25 feet of the closest rail is considered trespassing as this is understood to be railroad property right-of-way. This includes structures that cross over the top of a railroad. Working within 25 feet of a railroad may require a railroad flagger to be on site. For example: using a snooper to work under a structure that crosses over a railroad or having to walk under a structure that crosses over a railroad may require a railroad flagger to be on site. See Railroad Crossings under Chapter 5 – OPERATIONS; Page 17 General for more information.

Cyclical Preventative Maintenance

Sweep Deck & Approach Slabs

Sweep bridge decks and approach slabs yearly in the spring after deicing operations have ceased. Sweep entire deck to remove all accumulated debris from the previous winter snow and ice control activities. Remove all debris from the deck, including any accumulations in the gutter. This accumulated material tends to cause water to pond on the deck, which will cause a more rapid deterioration of the structure. Additional sweepings may be necessary if conditions require. (See Environmental Stewardship section on Containing Dirt and Debris)

Clean Expansion Joints

Clean bridge expansion joints yearly in the spring after deicing operations have ceased. Remove all dirt and debris from all joints in the deck. The joints must be free to expand and contract in order to perform properly. Rocks and debris not only impede the movement of the deck but can cause the joint membranes to tear, rendering the joint seal ineffective and allowing water and salt to coat the beams, abutments, and piers below. (See Environmental Stewardship section on Containing Dirt and Debris)

Wash Deck

Wash bridge deck and splash zone (any area exposed to spray from deicing material such as curbs, barriers, and sidewalks) yearly in the spring after deicing operations have ceased and sweeping has occurred. Flood or power-wash the deck to remove deicing residue that remains after sweeping.

Clean Deck Drains

Clean deck drains yearly in the spring after deicing operations have ceased. Clean the deck drains of all dirt and debris that may be plugging the drain. (See Environmental Stewardship section on Containing Dirt and Debris) Water accumulating on the deck is a traffic hazard as well as a

maintenance issue. Inspect the drains for any damage. Down pipes should not direct water onto beams, substructure elements, or near the base of piers or abutments where it could cause erosion.

Clean Beams, Abutments, and Piers
Remove dirt and debris, including bird nests and droppings, accumulated on tops of beams, abutments, and piers. (See Environmental Stewardship section on Containing Dirt and Debris and Bird Nesting) Wash the beams, particularly the beam ends, abutments, piers, and inspection walkways with water to remove any remaining dirt and salt residue that may have accumulated due to deicing operations. Pay particular attention to the areas under the deck joints and near deck drains, as these areas are particularly prone to damage from salt exposure.

Clean bearings
Clean dirt and debris from bearings and seats to allow bearings to function properly. Bearings allow the bridge to expand and contract. They also transfer the live loads and the weight of the bridge from the superstructure to the substructure. Remove debris and loose rust on and around bearings using hand tools. Power wash to remove any remaining dirt and salt residue that may have accumulated, particularly around rocker bearings. (See Environmental Stewardship section on Containing Dirt and Debris and Lead Paint/Coatings)

Lubricate bearings
For moveable or rocker bearings, lubricate moving parts to maintain mobility. In order for these bearings to perform their intended function, they must be free to move. After cleaning, protect and lubricate the steel bearing components with one of the following materials.

- Ultimate Penetrating & Lubricating Oil
- LE, Inc. Pyroshield® 5100 Syn Open Gear Grease

Crack Seal Bridge Deck
Seal bridge deck surface cracks every three years. Seal cracks that can be seen with the naked eye (without the use of water). Blow debris from the cracks with compressed air. (See Environmental Stewardship section on Containing Dirt and Debris) Pour two-part epoxy crack sealing material into the crack allowing time for it to fill the crack. If needed, repeat application to completely fill the crack. Do not allow the material to spread over a large surface area, as the material will cause a slick surface. (Clean sand can be broadcast over the area, if needed, to maintain skid resistance.) Mix and apply material in accordance with the manufacturer's recommendations. Seal with one of the following materials.

- Paulco TE-2501
- TK Products TK-2110

If cracking is extensive and it is deemed not feasible or cost effective to apply crack sealer to individual cracks, contact Bridge Division for possible solutions.

Surface Treatment
Treat bridge deck and approach slab surfaces with penetrating water repellent (silane) every 6 years to prevent water and deicing materials from penetrating into the deck surface. When water and salts get into the concrete they cause cracking, scaling, spalling and delamination. Sealing the surface of

the concrete with silane will help the concrete repel both water and salts. Visible cracks should be sealed prior to applying surface treatment.

Before applying the treatment, clean the concrete and let it dry thoroughly. (See Environmental Stewardship section on Containing Dirt and Debris) Apply one of the following materials, following the manufacturer's recommendations.

- TK Products TK 590-100
- BASF MasterProtect® H 1000
- Advanced Chemical Technologies SIL-ACT® ATS-100
- Evonik Protectosil® 300S

Seal Abutment and Pier Tops

Seal bridge abutment and pier tops below expansion joints with penetrating water repellent (silane) every 6 years to prevent water and deicing materials from penetrating into the concrete surface. When water and salts get into the concrete they cause cracking, scaling, spalling and delamination. Sealing the surface of the concrete with silane will help the concrete repel both water and salts.

Before applying the treatment, clean the concrete and let it dry thoroughly. (See Environmental Stewardship section on Containing Dirt and Debris) Apply one of the following materials, following the manufacturer's recommendations.

- TK Products TK 590-100
- BASF MasterProtect® H 1000
- Advanced Chemical Technologies SIL-ACT® ATS-100
- Evonik Protectosil® 300S

Seal Concrete in Splash Zone

Seal tops and traffic sides of concrete curbs and, barriers, sidewalks and other concrete surfaces prone to damage from salt spray with penetrating water repellent (silane) every six years. This will help prevent water and deicing materials from penetrating into the concrete surface. When water and salts get into the concrete they cause cracking, scaling, spalling and delamination. Sealing the surface of the concrete with silane will help the concrete repel both water and salts.

Before applying the treatment, clean the concrete and let it dry thoroughly. (See Environmental Stewardship section on Containing Dirt and Debris) Apply one of the following materials, following the manufacturer's recommendations.

- TK Products TK 590-100
- BASF MasterProtect® H 1000
- Advanced Chemical Technologies SIL-ACT® ATS-100
- Evonik Protectosil® 300S

Condition-Based Preventative Maintenance

Repair Deck Drains

Repair deck drain damage or leaks found during cleaning. Down pipes should extend below the

bottom of the beams and direct water away from piers and abutments. Repair any leaks, bends, crushing damage, or other issues that prevent free drainage of the deck runoff.

Repair Spalled Concrete on Bridge Decks
Check for spalled concrete on bridge decks yearly and repair as needed. Identify and mark the limits of delamination or unsound concrete adjacent to the spalled area by sounding the concrete with a chain or sounding hammer. Square off the edges of the unsound area.

Saw cut squared off edges to a depth of 1" being careful not to cut reinforcement. Use a light jackhammer (15lb max) to remove unsound concrete. Do not remove below the reinforcement (if you need to remove below the reinforcement, call Bridge Division). Sound edges again to verify that no unsound concrete remains. Remove all loose material, concrete, and rock. Blow out area with an air compressor to remove all of the finer material. (See Environmental Stewardship section on Containing Dirt and Debris) Prepare surface and patch with a non-asphaltic material as listed below, following the manufacturer's recommendations.

- Sika® SikaQuick® 1000* or 2500*
- BASF MasterEmaco® T 1060* or T 1061*
- Ceratec Pavemend 15.0™
- SpecChem RepCon® 928*
- *Can be extended with aggregate*

Repair Spalled Concrete on Barriers and Curbs
Check for spalled concrete on barriers and curbs yearly and repair as needed. Repair any damage or spalls on the barriers and curbs so they can continue to function as designed. The repairs prevent water from getting to the rebar causing rusting and accelerated deterioration of the barrier.

Identify and mark the limits of delamination or unsound concrete adjacent to the spalled area by sounding the concrete with a sounding hammer. Square off the edges of the unsound area.

Saw cut squared off edges to a depth of 1" being careful not to cut reinforcement. Use a light jackhammer (15lb max) to remove unsound concrete. Do not remove below the reinforcement (if you need to remove below the reinforcement, call Bridge Division). Sound edges again to verify that no unsound concrete remains. Remove all loose material, concrete, and rock. Blow out area with an air compressor to remove all of the finer material. (See Environmental Stewardship section on Containing Dirt and Debris) Prepare surface according to manufacturer's recommendations. Trowel patching material into all voids and finish to surrounding profile. Use one of the materials listed below.

- Ceratec Pavemend VR™
- SpecChem RepCon® V/O
- Sika® SikaQuick® VOH
- BASF MasterEmaco® N425

Repair Bridge Railing
Check bridge railing yearly and repair as needed. Check for deteriorated railing, missing or corroded anchor bolts, corrosion from deck runoff, and impact damage.

Repair Expansion Joints

Repair damage or deterioration of the bridge expansion joints, as needed, yearly after cleaning. Expansion joints that are damaged or not functioning properly can adversely affect other elements of the bridge deck. If joints are not free to move as intended, expansion and contraction of bridge elements can cause major structural damage. Leaking joints can deteriorate bearings, pier tops and beam ends below the joint. It is therefore critical to repair joints that are not functioning correctly.

Repair damage and/or misalignment of finger joints. Repair issues that interfere with joint movement. Repair tears or leaks in joint and drainage trough material. If major damage is present that is beyond the repair capabilities of the district maintenance forces, contact the Bridge Division.

Seal sawed joints and construction joints, particularly joints between the deck, approach slabs, and barriers with silicone based joint filler, using a backer rod as needed for wide joints, to prevent water infiltration and the joint from being filled with incompressible material (dirt, rocks, etc.). Use one of the following materials in accordance with the manufacturer's recommendations. If this joint opens and becomes too wide to effectively seal with these materials, contact Bridge Division for assistance.

- Dow Corning 888
- Sikasil 728 SL

Repair Concrete Sidewalks

Check sidewalks yearly and repair as needed. Repair any cracks, spalls, and deteriorated concrete in the sidewalks. Cracks wider than 1/8" should have a closed cell backer rod installed prior to sealing the joint. The backer rod shall be compatible with the sealant used. Seal cracks with one of the following materials in accordance with the manufacturer's recommendations:

- Degussa Sonolastic NP 1
- Sika-Sikaflex 1c SL

For spalled areas, identify and mark the limits of delamination or unsound concrete adjacent to the spalled area by sounding the concrete with a chain or sounding hammer. Square off the edges of the unsound area.

Saw cut squared off edges to a depth of 1" being careful not to cut reinforcement. Use a light jackhammer (15lb max) to remove unsound concrete. Do not remove below the reinforcement (if you need to remove below the reinforcement, call Bridge Division). Sound edges again to verify that no unsound concrete remains. Remove all loose material, concrete, and rock. Blow out area with an air compressor to remove all of the finer material. (See Environmental Stewardship section on Containing Dirt and Debris) Prepare surface and patch with one of the materials listed below, following the manufacturer's recommendations.

- Sika® SikaQuick® 1000 or 2500
- BASF MasterEmaco® T 1060 or T 1061
- Ceratec Pavemend 15.0™
- SpecChem RepCon® 928

Repair and Level Approach Slabs

Check approach slabs yearly and repair as needed. Repair spalls and delamination using the same

method as repairing bridge decks. Settlement of approach slabs consists of slab lifting which will be handled under a contract project when multiple sites can be identified.

Repair Bearings
Check bearings yearly after cleaning and repair as needed. Check for proper alignment and seating of neoprene bearings and rotational limitation of rocker bearings. If it is determined that major repair is needed, contact the Bridge Division.

Repair Spalled Concrete on Beams
Check for spalled or damaged concrete on beams yearly and repair as needed. The repairs prevent water and deicing material from getting to the reinforcement causing deterioration of the beam. The repair also helps protect the reinforcement from future damage due to vehicle hits (underpasses) or ice impacts (waterways).

Identify and mark the limits of delamination or unsound concrete adjacent to the spalled area by sounding the concrete with a sounding hammer. Square off the edges of the unsound area.
Saw cut squared off edges to a depth of 1/2" being careful not to cut reinforcement. Use a light jackhammer (15lb max) to remove unsound concrete. Do not remove below the reinforcement (if you need to remove below the reinforcement, call Bridge Division). Sound edges again to verify that no unsound concrete remains. Remove all loose material, concrete, and rock. Blow out area with an air compressor to remove all of the finer material. (See Environmental Stewardship section on Containing Dirt and Debris) Prepare surface according to manufacturer's recommendations. Trowel patching material into all voids and finish to surrounding profile. Use one of the materials listed below.

- Ceratec Pavemend VR™
- SpecChem RepCon® V/O
- Sika® SikaQuick® VOH
- BASF MasterEmaco® N425

Repair Spalled Concrete on Substructure
Check for spalled concrete on substructure yearly and repair as needed. Repair spalling or damage on the substructure elements so these elements can continue to function as designed. The repairs prevent water from getting to the reinforcing steel causing rusting and further deterioration of the elements.

Identify and mark the limits of delamination or unsound concrete adjacent to the spalled area by sounding the concrete with a sounding hammer. Square off the edges of the unsound area.

Saw cut squared off edges to a depth of 1" being careful not to cut reinforcement. Use a light jackhammer (15lb max) to remove unsound concrete. Do not remove below the reinforcement (if you need to remove below the reinforcement, call Bridge Division). Sound edges again to verify that no unsound concrete remains. Remove all loose material, concrete, and rock. Blow out area with an air compressor to remove all of the finer material. (See Environmental Stewardship section on Containing Dirt and Debris) Prepare surface according to manufacturer's recommendations. Trowel patching material into all voids and finish to surrounding profile. Use one of the materials

listed below.

- Ceratec Pavemend VR™
- SpecChem RepCon® V/O
- Sika® SikaQuick® VOH
- BASF MasterEmaco® N425

Repair Erosion and Correct Drainage Issues

Check for erosion yearly and repair as needed. Repair erosion at the ends of the bridge, around the abutments, and under the bridge. Place earthen fill in the eroded area and compact. Protect fill area by revegetating, using erosion control measures, as needed, or by using riprap or slope protection similar to existing, if present.

To prevent future recurrence, it is critical to determine the cause of erosion and correct the problem. If the cause cannot be corrected immediately, note the problem and fix, or schedule a project, as soon as possible.

Repair Riprap

Check riprap yearly and repair as needed. If erosion, gravity, etc. has moved or displaced riprap, fix the cause of the problem prior to repairing the riprap. Once the problem has been addressed, replace riprap and add more if needed to prevent future erosion. If assistance is needed to assess the problem, contact Bridge Division.

Repair Scour

Check for scour yearly and repair as needed. If high water causes scour that displaces or removes loose rock riprap protection around piers or abutments; place earthen fill in scoured area and replace riprap, as noted previously. Consider grouting riprap in place to anchor and prevent reoccurrence. Grout shall consist of one part Portland cement and two parts sand by volume. Major repairs or repairs that cannot be readily reached by conventional equipment will be included in a contract project.

Repair Slope Protection and Seal Joints

Check concrete slope protection yearly and repair as needed. Cracks and open joints in concrete slope protection under structures should be sealed with polymer modified or crumb rubber sealant when a crew is sealing cracks or joints in the adjacent pavement.

If cracks are not accessible from the roadway, seal with silicon sealant using backer rod when necessary. Apply material cold with an oversized caulking gun. Where the cracks are too wide or where there is differential settlement, the opening can be filled with asphalt mix.

Repair voids under concrete by placing earthen fill prior to sealing cracks and open joints. It is critical to determine the cause of erosion and fix the problem to prevent reoccurrence of the erosion.

Reset loose rock riprap slope protection and replenish as needed. If rock is disappearing after flood events, the riprap is probably too small and will need to be replaced with larger rock or grouted to hold it in place. Grout shall consist of one part Portland cement and two parts sand by volume.

Remove Debris near Substructure and Abutments
Remove any debris that has accumulated on or near the piers, wingwalls, and abutments. Debris, including deadfall, branches, and garbage, can build up and block drainage, cause erosion, and possibly damage the structure. Check structures for debris after floods or high water events. (See Environmental Stewardship section on Containing Dirt and Debris)

Remove Trees and Shrubs near Structure
Remove any trees and shrubs growing near the structure. (See Environmental Stewardship section on Containing Dirt and Debris) If trees and shrubs are allowed to grow near the bridge, they can impede the flow of water through the structure potentially causing flooding upstream of the structure or cause damage to the structure.

Spot Painting
Check paint on bridges yearly and spot paint as needed. Due to possible presence of lead paint/coatings, do not sand, grind, or scrape existing paint. Staff should not perform work where exposure to lead paint/coatings is present without consulting the Maintenance Division Safety Coordinator. (See Environmental Stewardship section on Lead Paint/Coatings) Prime and paint to match using a spray can, roller or brush so as not to disturb the existing paint/coating. The full painting of a bridge will be completed as needed by contract.

Remove Graffiti
Remove any graffiti found on any area of the bridge. If the graffiti cannot be removed, paint or otherwise obscure it. Surfaces prone to graffiti can be treated with an anti-graffiti coating.

GENERAL

Railroad Crossings
The Department should maintain the road surface, shoulder, and inslopes to the outer ends of the railroad ties, and the remainder of the highway right-of-way to the Railroad's property line. Maintenance of the rails, ballast and crossing between the outer ends of the ties is the Railroad Company's responsibility.

Employees should contact the Railroad, as soon as reasonably possible, about visible maintenance defects at the crossing that present an unsafe condition for either the highway or rail traffic.

The Department is not responsible for traffic control or detour restoration needed for crossing repairs made by the Railroad. The Department may perform work or provide traffic control materials for the railroad at the discretion of the District Engineer. The Department may charge current force account rates if significant work is done. The Railroad should have an employee qualified to supervise the work on the site while work is being performed.

Avoid placing red warning flags closer than approximately two hundred feet to a railroad grade crossing unless you desire the train to stop. Railroad rules provide that when a red flag is seen on or near the track, the train must be brought to a stop and cannot proceed until written instruction is

received or the flag has been removed by the person who placed it.

Districts should monitor railroad crossings periodically. When a crossing is abandoned and the tracks are removed, advance warning signs and pavement markings should be removed promptly. Districts should notify Planning and Programming Division of location and date when advance warning signs and pavement markings are removed.

When NDDOT forces are performing work within 25 feet of the closest rail at a railroad crossing, a railroad flagger must be present. In such case, District Administration should contact the Road Master of the respective Railroad (2 weeks in advance) to coordinate the maintenance activities.

When contacting the Road Master of the respective Railroad it is important to include the crossing number. Each public highway-rail crossing has an individual crossing number. Crossings are referenced by this number or railroad milepost number. Railroads are required to have the crossing number posted at the crossing.

Signalized crossings have the number posted on the outside of a small structure, called a bungalow, which is normally near one of the signals. The name of the railroad and a phone number will be posted with the crossing number and milepost. Example: (DOT 093311A MP 329.5)

Crossings that do not have signals normally have the crossing number fastened to one of the crossbuck posts

Refer to Figure 14 pages 38-41, Work in the Vicinity of a Highway-Rail Grade Crossing, of the Traffic Control Requirements for NDDOT Operations on Highways and Streets, 2017 Edition for more information on Traffic Control requirements.

North Dakota Railroad Emergency Contact List

Railroad Authority		
Burlington Northern Santa Fe (BNSF)	*	800-832-5452
Canadian Pacific/Soo Line (CPR)	*	800-716-9132
Dakota Missouri Valley & Western (DMVW)	Troy Fast	701-471-3435
Dakota Northern (DNRR)	Jason Bierworth	701-741-6068
Northern Plains Railroad (NPR)	Jerry Hegstrom	701-330-8022
Red River Valley & Western (RRVW)	Cal Gruebele	218-643-1532

* BNSF and CPR calls are routed for immediate response by the dispatcher.

Use of Interstate Median Crossings

Median crossings can be used for construction and maintenance operations. The median crossing should be signed in accordance with the MUTCD. Temporary median crossings can be installed for special projects but must be removed when the work is completed. Care should be exercised when using median crossings.

Sampling and Testing of Road Oil

Districts should sample each transport or tank car of liquid bituminous material intended for roadway sealing. Bituminous material used for other purposes should also be adequately sampled to assure that it meets specifications.

Two samples from each transport or tank car should be taken. The supplier's delivery person is required to extract these samples in the presence of a Department employee. One sample is tested by either the District or Materials & Research Lab. The second sample is retained at the District as a check sample.

A sample card, SFN 5650 PG or Emulsion Sample Information, should be included for each type of material submitted for testing. A copy of the manufacturer's manifest should be included with the sample card. For details on proper sampling and testing, consult the Department's Sampling and Testing Manual.

Road Oil Payments

Payment for road oil should be made as soon as the invoice is received from the vendor. In the event of material not meeting specifications, the appropriate deduction should be made on a future payment to the vendor, according to Section 109 of the Standard Specifications. If no payments are pending to the vendor during the contract year, Districts should forward these deductions to Maintenance for processing. The following should be written on the purchase order when taking a specification deduction: "Failing Sample-Less 20 percent deduction per Standard Specification 109.01."

Sale of Road Materials

The Department is authorized to sell road materials in small quantities to local political subdivisions. These sales can take place when local governments are unable to economically procure those limited quantities from the private sector. The Districts will use the following process:

- Road materials are basically: liquid asphalt, oil mix, sand, treated sand, gravel, chips, striping paint, salt, etc.
- Materials will not be sold in quantities that can be purchased from local suppliers.
- It is not intended that the Department become a basic supplier. For example, if subdivisions are using liquid asphalts in quantities that can be purchased from a refinery, they will have to do so, and provide their own storage tanks.
- Materials sold will be billed at the Department's replacement cost plus 5 percent to cover handling costs and tracked using SFN 14311 Authorization to Purchase Materials from NDDOT.
- The Maintenance Division is responsible for monitoring these sales. Districts will be asked to submit a summary of the total sales for the year to the Maintenance Division shortly after July 1st of each year.
- Districts should endeavor to control these sales, as amounts sold are **NOT** transferred back to maintenance funds. Districts should budget accordingly to cover the sales to local governments.

Maintenance of Interchanges and Grade Separations

Interstate

All maintenance within the interstate highway right-of-way is the responsibility of the Department with the following exceptions:

- Interchanges that intersect a state highway, the Department will maintain roadways, structure, guardrail, approach slabs and ramps, unless a Cost Participation and Maintenance agreement states otherwise.
- Interchanges that intersect other than a state highway, roadway maintenance is the responsibility of the road agency having jurisdiction over the roadway. The District Engineer may assist with the roadway maintenance within the interstate right-of-way as deemed necessary. The Department will provide snow and roadway maintenance between ramps, maintain the structure, guardrail and approach slabs, unless a Cost Participation and Maintenance agreement states otherwise.
- Grade separations where the crossroad is other than a state highway, all snow and roadway maintenance is the responsibility of the road agency having jurisdiction over the roadway. The District Engineer may assist with the roadway maintenance within the interstate right-of-way as deemed necessary. The Department will maintain the structure, guardrail and 20' on either side of the structure to include concrete approach slabs or asphalt approaches but does not include any gravel surface, unless a Cost Participation and Maintenance agreement states otherwise.

Non-Interstate

All maintenance within the state highway right-of-way is the responsibility of the Department with the following exceptions:

- Interchanges that intersect two state highways, the Department will maintain roadways, structure, guardrail, approach slabs and ramps, unless a Cost Participation and Maintenance agreement states otherwise.
- Interchanges that intersect other than a state highway, all snow and roadway maintenance is the responsibility of the road agency having jurisdiction over the roadway. The Department may assist with snow maintenance between the ramps. The Department will maintain the structure, guardrail, approach slabs and ramps, unless a Cost Participation and Maintenance agreement states otherwise.

Gravel Shoulder Maintenance

Drop-offs will develop along the longitudinal joint between the pavement and the gravel shoulder. Maintaining this joint is necessary for safety reasons. Gravel needs to be pulled up to the pavement edge and fill the depression along the joint. This can be done with a motor patrol; various drag boxes developed by maintenance employees, or other shouldering equipment. It is best to do this work following a rain and to roll the gravel with a pneumatic roller. Generally, doing this operation once or twice a year is sufficient on most highways.

Disposal of Items

Disposal of items that are hazardous materials, or could possibly be considered hazardous material, such as paint, oil, batteries, filters, etc., must be disposed of in a proper manner. To assure proper disposal occurs, Districts must comply with the following procedures:

- Brief all your employees that disposal of an item **must** follow a printed procedure that details the exact steps for proper disposal.
- If no printed procedure is available in the District, they should consult their Supervisor.
- If the Supervisor is unaware of any printed procedure, they should consult the District Engineer.
- If the District Engineer is unaware of the proper disposal procedure, they will contact Maintenance Division who will assist them in getting the proper procedure from the ND Department of Health.

Additional information can be found in the North Dakota Hazardous Waste Compliance Guide. https://deq.nd.gov/Publications/WM/NorthDakotaHazardousWasteComplianceGuide.pdf

Median Crossovers

Median crossovers, followed by Guidelines for Installing, Removing, or Relocating Median Crossovers on Interstates, are provided at selected locations on Interstate highways for crossing by maintenance, traffic services, emergency and law enforcement vehicles. The use of any median crossover is restricted to those users. The following information is required when submitting a request to construct a new, upgrade a standard, eliminate, or relocate an existing maintenance and emergency crossover on an existing route:

- The request should be submitted to the State Maintenance Engineer stating the route, county and reference point of the proposed crossover change. The request should contain a general statement regarding the need for the crossover of change. Requests for new crossovers shall address the sight distance in both directions of the proposed crossover and the effect on the median drainage. All change requests should include a statement to indicate that a crossover changes have been discussed with local law enforcement.
- An aerial map or general highway map showing the location of the proposed crossover and all existing crossovers and interchanges within 5 miles on either side of the proposed crossover.
- A copy of the plan and profile sheet for the section of roadway where the proposed crossover will be located.

Upon approval of existing crossovers, updating the list and map of crossover locations shall become the responsibility of the Districts to maintain. The list shall be updated by the Maintenance Division when:

- A new crossing is requested
- A previously approved crossing has been relocated, or
- A crossing is removed that is no longer necessary on a roadway

Approved crossovers shall be maintained for use year-round. The Department retains the authority to close or modify any crossover that it deems to be operationally unsafe to the traveling public.

Snowmobile and Off-Highway Vehicle Races

Snowmobile and off-highway vehicle races may be permitted, on a case by case basis, by the Director based on state statute and administrative rule (See NDCC Sections 39-24-08 and 39-29-08. See ND Admin Code Chapter 37-04-01). The races are limited to the ditch bottoms, backslopes, and the top of the backslopes of the highway rights of way. The Department is protected from liability in allowing such races per the referenced statutes and ND's recreational immunity law. Districts must use forms CLA 17835, "Application for Permit to Conduct Recreational Vehicle Race" and "Permit to Conduct Recreational Vehicle Race" when permitting such races. No charge may be assessed for

the permit.

Temporary Highway Closures

When a city requests to make a temporary highway closure for parades, etc., Districts must use forms CLA 1069, “Agreement for Temporary Highway Closure” or CLA 1074, “Agreement for Long-Term Temporary Highway Closure” to enter into an agreement with the city requesting the closure.

Chapter 6 – FACILITIES

DISTRICT AND SECTION BUILDINGS

Budgeting

Construction of new facilities or buildings is identified in the Maintenance Division's Capital Improvements budget process each biennium. These larger projects are programmatic and are coordinated between the Maintenance Division, Districts, and Executive Management.

Smaller type projects are developed by asking the Districts to submit a list of projects. These projects are incorporated into the biennium budget process. These projects are initiated by the Maintenance Engineer, in coordination with the appropriate District Engineer. Many of these projects are paid for through the Maintenance Division's Capital Improvements budget. Some projects may be paid for out of District budgets but still need to be coordinated with the Maintenance Division. Both capitalized and operating projects follow the same process.

Procurement Process

The procurement process for public improvements is split into two categories. One category is those purchases that can follow North Dakota Century Code Title 48 Public Buildings. The second category is those purchases that must follow the OMB State Procurement Procedures. A differentiation that needs to be made is if the procurement is for services provided by a contractor or for building materials only. If the procurement is for services, it may fall under NDCC Title 48 as long as it is not routine operation and maintenance. If the procurement is for building materials only, this must fall under OMB state procurement procedures.

To define which projects fit into which category we must first identify which projects fit into NDCC Title 48. The remainder will fall under OMB State Procurement Procedures. To help identify which projects fit into NDCC Title 48 we first need to understand the definition of Public Improvement and Construction as used under NDCC Title 48.

"Public improvement" means any improvement undertaken by a governing body for the good of the public and which is paid for with any public funds, including public loans, bonds, leases, or alternative funding, and is constructed on public land or within an existing or new public building or any other public infrastructure or facility if the result of the improvement will be operated and maintained by the governing body. The term does not include a county road construction and maintenance, state highway, or public service commission project governed by title 11, 24, or 38.

"Construction" means the process of building, altering, repairing, improving, or demolishing any public structure or building or other improvement to any public property. The term does not include the routine operation or maintenance of existing facilities, structures, buildings, or real property or demolition projects costing less than the threshold established under section 48-01.2-02.1. Therefore, entering into a contract to procure the services for the process of building, altering, repairing, improving, or demolishing any public structure or building or other improvement to any public property would fall under NDCC Title 48 for procurement procedures.

For example, such projects would include:

- A contractor hired to perform a portion of the construction or the complete construction of a brine generating building.
- A contractor hired to remodel office space.
- An electrical, mechanical, or concrete contractor hired to complete a portion of a building constructed using state force labor if the project is building, altering, repairing, improving or demolishing the building.
- A contractor hired to replace a roof, siding, or windows that is beyond its useful life.
- A contractor hired to replace a furnace, air exchanger, air conditioner or other mechanical equipment that is beyond its useful life.
- A contractor hired to perform an extra ordinary repair to a building damaged by a hailstorm, tornado, or ran into by a piece of equipment. Not intended for day to day wear and tear.

Consequently, the definition of "Construction" continues by stating the term does not include the routine operation or maintenance of existing facilities, structures, buildings, or real property or demolition projects costing less than $200,000. These items would fall under OMB state procurement procedures. This also applies when purchasing building materials only.

For example, such projects would include:

- Purchasing building materials such as lumber, nails, or tools from a lumber yard or hardware store to construct a building using state forces.

For service contract procedures follow the Contract Manual for Non-Construction Contracts.

Contact the Maintenance Division if there are any questions if a project should be classified as building, altering, repairing, improving, demolishing, or as routine operation and maintenance.

Procurement following North Dakota Century Code Title 48 Public Buildings
Procurement of services for construction of public improvements should follow the procurement process under North Dakota Century Code 48-01.2-02 and 48-01.2-02.1. The threshold for bidding construction of a public improvement is $200,000 and the threshold for procuring plans, drawings, and specifications is $200,000.

- A minimum of three quotes must be obtained for each project under $200,000. If three quotes are not obtainable, the district must document that a reasonable effort was made to attempt to obtain three quotes.

- Project numbers must be obtained for each project. Districts should request project numbers from the Maintenance Division, Facilities Engineer. The Maintenance Division will forward the request to the Finance Division to obtain the project numbers. Once the project numbers are established by Finance, the Maintenance Division will send the project numbers to the districts.

- Payments for construction work and architect/engineering work should be kept separate for each project. On the description line for the voucher, write in either "construction work" or "architect/engineering work" so it can be easily identified.
- Process must be in accordance with state law N.D.C.C. 48 – 01.2.
- Formal advertising, competitive bidding, bid bond, public bid opening, and a performance bond from the awarded contractor are required.
- The need for architect, engineer, or land surveyor services will be determined by the Maintenance Division and the respective District receiving the project. If professional services are needed and the estimated cost of professional services is in excess of $35,000, the Consultant Administration Services Section of the Environmental and Transportation Services Division (CASS/ETSD) will conduct solicitation and selection of these services.
  - Advertising and bid openings are done by the architect or engineer on projects requiring these services. For other projects, the Maintenance Division or District will prepare the advertising, take bids, and make recommendations to management for the award of the contract.
- If professional services are needed and the estimated cost of professional services is less than $35,000, CASS/ETSD can hire the services without advertising. CASS/ETSD will work with the Maintenance Division to get services in place.
- Contract payments for projects funded through the Maintenance Division's Capital Improvement Budget or Maintenance Division's Operations Budget will be approved by the District Engineer and forwarded to the Maintenance Division for payment.
- A contractor's license is required for any project cost exceeding $2,000.

Procurement that must follow OMB State Procurement Procedures

Procurement of services for the day to day routine operation and maintenance of facilities and building materials only for installation or erection by state force labor is considered a purchase and should follow OMB State Procurement Procedures. And, if applicable, follow the Project Capitalization, Maintenance and Repairs (Operating Expenses), and When to Obtain a Project Number sections below. The total project costs shall include state force labor.

- Up to $9,999 – one fair and reasonable quote
  - A procurement file should be created and retained in the district which should include any hand written notes of oral bid(s).
  - Bids must be obtained by a Department employee who has achieved Level 1 procurement authority.
- $10,000 - $49,999 – Obtain a minimum of three informal quotes
  - The bids should be documented using the telephone or fax bid documents located on the State Procurement website under Agency Forms. http://www.nd.gov/spo/agency/forms/
  - Bids must be obtained by a Department employee who has achieved Level 2 procurement authority.
  - A procurement file must be created and retained in the district.
  - If unable to obtain three quotes, call the Financial Management Division, Procurement Section for further instructions. An alternative procurement request form may be necessary.
- $50,000 - $99,999 – Obtain informal bids using SPO bid list

- Bids must be obtained by a Department employee who has achieved Level 3 procurement authority.
- Require notice to all vendors on an established bidders list.

- $100,000 and over – Formal sealed bid procedures
  - Bids must be obtained by a Department employee who has achieved Level 4 procurement authority.
  - Require notice to all vendors on an established bidders list, competitive bidding, public bid opening, and general liability and auto insurance.
  - Advertising is not required as long as a bidders list is used; however, due to the type and location of the project, advertising in local papers may be beneficial. Advertising will be conducted on a case by case basis as determined by the Maintenance Division and the respective District receiving the project.
  - Guidance to determine whether or not to advertise:
    - For less complex general type projects that house materials, such as salt buildings, etc., that are in close proximity to contract services resulting in reasonable competition, a bidders list is sufficient. If the project is located in an area where it is determined that it would be beneficial to advertise to obtain reasonable competition, advertise in local papers and surrounding newspaper if necessary.
    - For more complex type projects such as office construction or modifications or equipment storage construction or modifications which are heated and contain equipment, staff, etc. that requires multiple contractors to complete such as General, Mechanical, Electrical, etc., advertise in local and surrounding newspapers.
- Guidance for bid bond and performance bond (also known as contract bond)
  - Bid and performance bonds will be addressed case by case based on the complexity of the project as determined by the Maintenance Division and the respective District receiving the project. Bid and performance bonds are used when procuring services to complete the project.
    - A bid bond and performance bond is optional for less complex general type projects that house materials such as salt buildings etc. where there is generally one contractor and minimal additional work such as electrical etc.; and the total project cost estimate ranges between $25,000 and $50,000.
    - A bid bond and performance bond is recommended for more complex type projects such as office construction or modifications or equipment storage construction or modifications which are heated and contain equipment, staff, etc. that requires multiple contractors to complete such as General, Mechanical, Electrical, etc. under one general contract or individual contracts; and the total project cost estimate ranges between $50,000 and $200,000.

State Force Labor

North Dakota Century Code Title 43-07-08 Contractor Exceptions, provides an exception from following this section to the State of North Dakota. This allows state forces to perform work without being required to have a contractors license.

43-07-08. Exceptions.

This chapter does not apply to:

1. Any authorized representative or representatives of the United States government, the state of North Dakota, or any county, municipality, irrigation district, reclamation district, or other political corporation.
2. Any person who furnishes any fabricated or finished product, material, or article of merchandise which is not incorporated into or attached to real property by such person so as to become affixed thereto.

Project Capitalization

New facility construction, improvements, or modifications meeting the criteria set below is required to be capitalized.

Capitalization criteria (**all** three criteria need to be met):

1. Addition, betterment, or improvement to a building, land, or equipment with a service life in excess of one year.
2. Cost of $5000 or greater.
3. The betterment or improvement increases the service life or value of the asset. (Note: normal maintenance or repairs that are replacing existing components in kind **are not** applicable. If uncertain, contact Financial Management Division, Assets and Operations Section Supervisor.)

Maintenance and Repairs (Operating Expenses)

Work on facilities, considered to be repair or replacement of existing items, is funded by either the Districts' operating budget or by Maintenance Division's operating budget if approved by the Maintenance Engineer. Districts must coordinate with the Maintenance Division prior to beginning work if Maintenance Division's operating budget will be used.

When to Obtain a Project Number

District Responsibility

- The District must notify the Maintenance Division of all facility projects that may exceed $5,000 in total expenditure (**this includes materials AND state force labor combined**).
- The district should include detailed information of the work being performed.

Maintenance Division Responsibility

- The Maintenance Division will review the facility projects with the Financial Management Division to determine if a project number is needed.
- The Maintenance Division will notify the Districts as to if a project number was or was not needed, and if needed, provide the district with the project number.

Project numbers are needed when:

- Construction of a **new** structure or the **addition** to an existing structure if the total cost will be $5000 or greater.
- Any improvement to an existing asset that may exceed $5,000 in **total** expenditures (**this includes materials AND state force labor combined**). If uncertain, contact the Maintenance Division. The Maintenance Division will review with the Financial Management Division.
- The capitalization criteria are met with an external contract that exceeds $2,500 **and state**

forces will also be doing work on the project.
- You want to track the total cost of a project.

Change Order Approval Process Authority:

Authority to approve change orders for facilities:

1) Maintenance Division, Facilities Engineer up to $20,000
2) Maintenance Division, Director up to $100,000
3) Office of Operations, Director up to $500,000

ENVIRONMENTAL

SPCC

The Environmental Protection Agency's Oil Pollution Prevention Rule became effective January 10, 1974. It was published under the authority of Section 311(j) (1) (C) of the Federal Water Pollution Control Act (Clean Water Act). The regulation may be found at Title 40, Code of Federal Regulations, Part 112 (40 CFR 112). The prevention rule was revised on July 17, 2002. Facilities subject to the rule must prepare and implement a plan to prevent any discharge of oil into or upon navigable waters of the United States or adjoining shorelines. The plan is called a Spill Prevention, Control, and Countermeasure (SPCC) Plan.

Each district must complete a SPCC Plan for each facility if:
- The facility has a buried oil storage capacity of 42,000 gallons or more
- The facility has above ground storage of 1,320 gallons or more of oil or fuel where containers that hold 55 gallons or more are counted

Three areas which should be addressed in the Plan are:
- Operating procedures the facility implements to prevent oil spills
- Control measures installed to prevent oil from entering navigable waters or ad-joining shorelines
- Countermeasures to contain, cleanup, and mitigate the effects of an oil spill that has an impact on navigable waters or adjoining shorelines

The SPCC plans are on file at each district headquarters and section. The District is responsible for revising the SPCC Plan when any changes are made to the facility or if an update is needed. Other important elements of a SPCC Plan include, but are not limited to the following:
- Professional Engineer certification
- Facility diagram
- Oil spill predictions
- Facility drainage
- Facility inspections
- Site security
- Five-year Plan review
- Management approval
- Appropriate secondary containment or diversionary structures
- Loading/unloading requirements and procedures for tank car and tank trucks

- Personnel training and oil discharge prevention briefings
- Brittle fracture evaluations
- Bulk storage container compliance
- Transfer procedures and equipment (including piping)

For more information, go to the following sites:
http://www.epa.gov/oem/docs/oil/spcc/spccbluebroch2002.pdf
Or
http://www.epa.gov/emergencies/content/spcc/spcc_guidance.htm

Tier II

Title III of the Superfund Amendment and Reauthorization Act of 1986 (SARA) is the Emergency Planning and Community Right-To-Know Act (EPCRA). The Act establishes requirements for industry regarding emergency planning and "community right-to-know" reporting on hazardous chemicals. Section 312(a) states: "The owner or operator of any facility which is required to prepare or have available a material safety data sheet (MSDS) for a hazardous chemical under the Occupational Safety and Health Act of 1970 and regulations promulgated under the Act (15 U.S.C. 651 et seq.) shall prepare and submit an emergency and hazardous chemical inventory form.

This form, known as a Tier II report, must be provided to each of the following: the appropriate Local Emergency Planning Committee (LEPC), State Emergency Response Commission (SERC), and the fire Department with jurisdiction over the facility. When properly prepared, the inventory form contains vital information Local Emergency Planning Committees and State Emergency Response Commissions utilize for emergency planning purposes and that first responders such as law enforcement officials, emergency medical technicians, and of course, fire departments utilize for response purposes.

On the Tier II form, the facility is required to provide the chemical identity, hazards associated with the chemical, maximum and average amounts stored on-site, and general storage locations.

Tier II reporting is required by the Department on each separate facility that contains over 10,000 pounds of a chemical or an extremely hazardous substance and has a MSDS as required by OSHA.

Districts must notify the Maintenance Division of any changes to their storage facilities to ensure compliance with the following requirements. The Maintenance Division must notify the State Emergency Response Commission (SERC) and Local Emergency Planning Committee (LEPC) that a facility is subject to Section 302 Emergency Planning requirements. The Maintenance Division will ensure compliance with EPCRA 311 reporting requirements by sending MSDS or a MSDS list to SERC, LEPC and fire Department within 90 days. The Maintenance Division will update the Tier II report in compliance with EPCRA 312 reporting requirements and submit annually by March 1st the Tier II – Chemical Inventory Reports to the SERC, LEPC, and local fire district. For more information, visit their web site: https://www.des.nd.gov/response-section/haz-chem-preparedness-and-response

STORM WATER

New Facilities
Any new facility that disturbs an area greater than one acre and less than five acres must obtain a construction permit from the Department of Health. Some guidelines must be met in order to obtain the permit see https://deq.nd.gov/WQ/2_NDPDES_Permits/7_Stormwater/StW.aspx .

Any new facility that lies in a MS4 area may require additional requirements. There are eight MS4 cities in the state: Bismarck, Fargo, Grand Forks, Dickinson, Minot, Williston, Jamestown, and West Fargo. Districts must contact the respective local entity to obtain the requirements.

Existing Facilities
All existing facilities must possess or obtain an industrial permit from the Department of Health. For more information:
https://deq.nd.gov/publications/wq/2_NDPDES/Stormwater/Industrial/NDR05per20200401F.pdf

Any facility that lies within a MS4 area may require addition requirements. Check your city's policy regarding storm water.

REST AREAS

Maintenance
It is the responsibility of the District to maintain each rest area in their district. Each District is responsible for obtaining janitorial services for their rest areas. Districts must follow State Procurement requirements when hiring janitorial services. Districts can use either the Invitation to Bid process or the Request for Proposal (RFP) process. If Districts choose to use the RFP process, then the services template on the State Procurement's website must be used and follow the RFP process. Individuals responsible for making purchases must meet the training and delegation requirements outlined in the Accounting Manual, Policy 21.01, Purchasing Authority for Commodities and Services.

Security
It is the responsibility of the District to monitor the security of their rest areas. The maintenance of the security also is the responsibility of the District. Try to coordinate all repairs to the video surveillance systems with the Department's IT Division.

Environmental Policy
Tier II reporting is required by the Districts on each separate facility that contain over 10,000 pounds of a chemical or an extremely hazardous substance and has a MSDS as required by OSHA. See Tier II under Environmental in District and Section Buildings for more information.

Information Signs
All public telephones in rest areas should be signed to enable the user to quickly report their

location. This sign should be located so the user can readily see it when making a call. It may be necessary to adjust the height of the sign to account for disabled callers.

YOU ARE AT THE
CRYSTAL SPRINGS REST AREA
ON I-94, 9 MILES WEST OF MEDINA (EASTBOUND)

The sign should give the name of the rest area, highway number, location, and direction headed if the driver is on an Interstate highway.

Vending Machines

Section III of the Surface Transportation Assistance Act of 1982 (Public Law 97-424) allows the placement of vending machines in safety rest areas constructed or located on rights of way of the State Highway System. Randolph Sheppard Act vendors are given preference for operation of the machines.

The act further stipulates that the vending machines may only dispense such food, drink, and other articles as the Department determines to be appropriate and desirable, and that no federal funds may be used.

Department policy, at this time, is to allow the placement of beverage vending machines only. In permitting the placement of vending machines under the act, the state shall give priority to vending machines that are operated through the state licensing agency. North Dakota Department of Human Services Division of Vocational Rehabilitation has been designated as the State Licensing Agency for purposes of administering the applicable provisions of the Randolph Sheppard Act.

No placement need be allowed if the party requesting the license has not complied with the Department's administrative rules, chapter 37.

Requests for placing vending machines in rest areas should be forwarded to Maintenance Division for submission to Vocational Rehabilitation.

Districts are to monitor their rest areas to assure that the placement of vending machines has been made in accordance with the provisions outlined above.

Free Coffee Service

NDDOT will permit serving free coffee at safety rest areas by nonprofit organizations. No activities of soliciting funds or memberships will be permitted by the sponsoring organization.

- Permission to serve free coffee will be obtained from the District Engineer where the rest area is located.
- The sponsoring agency shall sign an agreement (SFN 58907) with the Department which will "Hold Harmless" NDDOT from any liability which may arise from this activity. This agreement must be signed and in the possession of the district office, which has responsibility for the rest area, prior to serving coffee.

- The sponsoring organization shall maintain the rest area free of litter associated with its function.
- A temporary sign may be used to advise motorists that at the next rest area there are special facilities for a safety coffee break. The sponsoring organization shall provide the sign. NDDOT will install and remove the sign. It shall be the responsibility of the sponsoring organization to ensure that the sign is visible to motorists only during the time service is in operation. The required sign legend shall be "Safety Break Free Coffee." The legend shall be white on a blue background. Sign legend and fabrication details are available from the Design Division. The specific location of the sign shall be determined by the District Engineer.

Memorabilia for Display

The Department will permit the displaying of memorabilia in rest areas. The procedures are as follows:

- Items provided will be displayed outside and should be in keeping with the history and traditions of North Dakota and should be of interest to the general traveling public. Examples of possible items are Steam Engines (agricultural), Coal Bucket, Wind Mill, and Oil Pump Head.
- The items provided should be donated and delivered free of cost. Any additional costs, such as a structurally adequate concrete pad (if appropriate) and a protection fence, should be part of the donated cost. The displays should be of limited cost to the Department.
- The items provided for display should be in good condition, require minimum maintenance, and not require repair. They should be painted or suitably treated to withstand the weather. They should be durable and be able to be on display for many years. While on display, the maintenance will be the responsibility of the Department.
- The items provided for display should be appropriate in design for the size of the rest area. They should be compatible with the surrounding terrain and the geographical features of the particular rest area.
- An appropriate plaque or sign should be part of the display. The plaque or sign should be provided by the donating person/entity. The plaque or sign may not contain commercial messages of any nature. The party responsible for the donation can be recognized provided the recognition does not contain commercial inferences.
- The Department reserves the right as to what should be displayed as well as future control of any item displayed. Actual ownership of the item displayed shall be negotiated.

MISSILE COMPLEX SUPPORT

Districts involved in snow removal and extraordinary maintenance of access roads for the missile complexes do sign an agreement between the Department and Federal Highway Administration (FHWA) and should use the following procedures. It is necessary to keep accurate records of costs involved so the FHWA can be billed for all reimbursable items.

When charging to Project Number RAD0300--- (each year these last three digits change – please contact the District Office Manager or Finance Division for the correct number), you must also include the proper sub-project number. The Activity ID numbers are: 0800 for extraordinary

maintenance and 0900 for snow removal.

The following items are reimbursable under the maintenance guidelines for missile roads:

- All materials such as salt, sand, gravel, road oil, and oil mix necessary to maintain the missile roads.
- All personnel time of the Department maintaining or removing snow from the missile roads.
- All hours or mileage on Department equipment used to maintain or plow snow on the missile roads.
- From October 1 through May 1, the Department should recover 50 percent of the cost of maintaining Section buildings designated in the contract. When paying utility bills during this period, split the bill on your purchase order, and charge half to the missile road project number.

WEIGH STATIONS

Maintenance responsibilities for weigh station facilities are divided between the Highway Patrol and the Department.

The Department is responsible for the following items:

- Scale approaches, sidewalks, and parking lot surface
- Mowing the ditches and unimproved areas
- Roadway lighting
- Traffic signs
- Drainage, lagoons, lift stations, septic tanks, and lines outside building

The Highway Patrol is responsible for the following items:

- Building
- Scale and pit
- Mowing improved lawns
- Radio antennas
- Cleaning and emptying septic tanks

The charges assessed for weigh station maintenance will be made to the adjacent highway milepoint and the appropriate cost center.

GENERAL

Maintenance

It is the responsibility of each district to maintain their facility and to ensure that the section buildings are also maintained.

Security

The District Engineer is responsible for distributing all keys for district buildings. District Engineers will develop their own security plans. The District Engineer is responsible for determining which employees need entrance to the facilities during off-hours and weekends.

Facility Vandalism

After a vandalism incident, each District must keep a record of actual costs incurred including materials, labor, and equipment needed to restore the property. A summary of these costs should be sent to the Maintenance Division as soon as they are available.

Any vandalism may be reported to the law enforcement authorities. When the estimated cost of vandalism exceeds $250, it should be reported to the local law enforcement authorities.

Chapter 7 Displaying of Flags

The Department requires the ability to fly up to 4 flags at designated facilities. The Central Office, District Headquarters, and rest areas will display the following flags along with the ability to fly one additional flag in the future.

1. National Flag
2. POW/MIA Flag
3. North Dakota State Flag

FLAG REGULATIONS

Time and Occasions for Display

- National flag is flown from sunrise to sunset on flag poles in the open. However, when a patriotic effect is desired, the flags may be displayed twenty-four hours a day if properly illuminated during the hours of darkness.

- Flags should not be displayed on days when the weather is inclement, except when all-weather flags are displayed.

- The flags should be displayed on all days.

Position and Manner of Display

- You may never place two national flags on a single pole, as they must be at the same height and the approximate same size.

- You may never place a company or advertisement flag on the same pole as the US flag.

- No other flag or pennant should be placed above, on the same level, or to the right of the flag of the United States of America.

- The POW/MIA flag is flown below the US flag. Generally, it is not displayed with other flags. If it is flown next to the US flag (i.e. on a separate pole), it should be on the US flag's direct left.

- When flags of States, cities, or localities, or pennants of societies are flown on the same halyard with the National flag, the National flag should always be at the peak. When the flags are flown from adjacent staffs, the National flag should be hoisted first and lowered last.

- The order, generally, is as follows, seen top to bottom:

    1. US flag
    2. POW/MIA
    3. State flags (host state first, then others in the order of admission)
    4. US Territories (Washington DC, Puerto Rico, etc.)
    5. Military (Army, Navy, Air Force, Marines, Coast Guard)
    6. Other (not advertising)

Standard Proportions of the Flag

The rule to size of National flag should be approximately one-fourth the height of the pole.

Maintenance of National Flag

Outdoor/all-weather flags can be hand-washed using a mild laundry detergent. Districts may utilize dry cleaners that offer flag-cleaning services. All flags should be inspected periodically for wear and tear. Worn flags should be replace promptly by District. Replacement flags should be purchased through state contract.

Disposal of Unserviceable Flags Policy

Excessively worn and tattered National flags should be disposed of in a dignified manner. Districts are to contact their local Veterans groups to dispose of worn National flags.

Respect for Flag

(1) The National flag should never touch anything beneath it, such as the ground, the floor, water, or merchandise.

(2) The National flag should never be fastened, displayed, used, or stored in such a manner as to permit it to be easily torn, soiled, or damaged in any way.

(3) The flag, when it is in such condition that it is no longer a fitting emblem for display, should follow Disposal of Unserviceable Flags policy.

Half-Staff of National Flag Requirements

NDDOT Maintenance Division will email All District Engineers, All District Maintenance Coordinators/Superintendents and All District Officer Managers when flags are to be flown at half-staff. District staff will notify facility and rest area personal to place National Flag at half-staff.

(1) the term "half-staff" means the position of the flag when it is one-half the distance between the top and bottom of the staff.

(2) The flag, when flown at half-staff, should be first hoisted to the peak for an instant and then lowered to the half-staff position. The flag should be again raised to the peak before it is lowered for the day.

Displaying of the POW/MIA Flags

The Department will fly the POW/MIA flag on the following dates:

- Armed Forces Day — 3rd Saturday in May
- Memorial Day — Last Monday in May
- Flag Day — June 14th
- Independence Day — July 4th
- Patriot Day — September 11th
- POW/MIA Recognition Day — 3rd Friday in September
- Veterans Day — November 11th

POW/MIA flags are available from Veterans associations. Districts requiring flags should contact local Veterans groups to obtain POW/MIA flags.

Chapter 8 EQUIPMENT

MAINTENANCE EQUIPMENT

General

Maintenance Division assumed management of all maintenance equipment in 2002. A centrally managed Maintenance Equipment Management Plan, similar to one used in State Fleet Services Division, was developed. The Maintenance Equipment Management Plan was fully implemented statewide beginning with the 2003-2005 biennium.

The Maintenance Equipment Management Plan establishes a **base fleet** of equipment and a **replacement cycle** to ensure the operational needs of the Department are met. The base fleet specifies quantities per district where large amounts of high dollar equipment have a major effect on the budget. Other smaller amounts of lower dollar equipment are grouped into a miscellaneous category. The replacement cycle was developed from input from all eight districts. Other factors, such as budget, trade-in, maintenance cost, and down time also affect when the actual replacement of a unit is determined. Due to the large backlog of equipment, districts were given **ten years** from the full implementation date to right size to the base fleet requirements. Both the base fleet and replacement cycle are living documents that are open to revision as the Department's Maintenance Equipment Management Plan evolves and as operations change.

State Fleet Services Division is responsible for, and establishes the budget for, all licensed motor vehicles such as trucks, pickups, and automobiles.

All remaining non-fleet equipment such as loaders, tractors, mowers, motor graders, etc. is classified as maintenance equipment for which Maintenance Division is responsible. Maintenance Division establishes the budget for the Maintenance Equipment Management Plan. A portion of the budget is divided up amongst all eight districts for miscellaneous equipment purchases. The districts also have a small amount of equipment funds for district equipment purchases in coordination with the centrally managed Maintenance Equipment Management Plan. Follow the Maintenance Equipment Management Plan Process. See Implementation of new State Procurement Laws and Rules and Delegation of Purchase Authority in the "Guidelines to State Procurement Practices" manual.

Maintenance Qualified Products Process Procedure

The Maintenance Division, Procurement Division of Finance and OMB State Procurement Office worked collectively to develop a Maintenance Qualified Products List Approval – Field Testing And Evaluation - Process Procedure that a majority of maintenance equipment must meet before being purchased by the NDDOT. The Maintenance Division maintains an Approved Maintenance Qualified Products List. Potential bidders will be asked to furnish equipment for field testing and evaluation by our maintenance crews. This testing must be coordinated with the Maintenance Division. If the equipment submitted meets our specification and is deemed acceptable by our district maintenance forces, the equipment will be approved and placed on the qualified products list. The Department may waive the field testing and evaluation requirement if adequate justification can be obtained from an outside source such as another DOT.

Maintenance Equipment Inventory $4,999 or Less

The Maintenance Division and the Districts will consider all maintenance and shop equipment with a service life of more than one year and an acquisition cost between $2,500 and $4,999 to be a non-

capitalized fixed asset. All permanent equipment additions which increase the asset value will be sent to Maintenance Division for evaluation regarding if the cost should be added to the asset and/or if the asset is now a capital asset. (Additions in the first year will be added to the asset; if the additions increase the value to greater than $4,999, the asset documentation will be sent to Finance to determine if the asset has met the capital asset criteria.) The non-capitalized assets will be tracked in the Department's Fleet Focus system. The inventory maintained by the Maintenance Division must be approved by the Maintenance Division and the Districts collectively to be added to the non-capitalized fixed asset list. There will be select maintenance and shop equipment less than $2,500 that the Maintenance Division and the District decide are non-capitalized assets that will need to be tracked in the same Fleet Focus program.

Costs
Non-capitalized fixed assets will be accounted for on the property listing at cost.

The Maintenance Division will account for donated property at current market value and property transferred from other state agencies at its original cost as reported by the transferring agency.

The Maintenance Division will account for new non-capitalized fixed assets at invoice cost of the new equipment before the reduction in cost resulting from a trade-in.

Lease Agreements
The Maintenance Division will account for non-capitalized maintenance and shop leased equipment when the lease agreement, in fact, transfers substantially all the benefits and risks of ownership of the property to the Department.

Substantially, all benefits and risks of ownership are transferred if one or more of the following criteria are met at the time the lease agreement is signed.

1. Ownership of the leased property is transferred to the Districts by the end of the lease term.
2. The Maintenance Division or the District has the option to purchase the leased property at a bargain price which makes the exercise of the option almost certain.
3. The lease term is for 75 percent or more of the estimated useful life of the leased property.
4. The present value of the minimum lease payments is 90 percent or more of the fair value of the leased property.

Leased equipment which meets one or more of the four criteria will be considered non-capitalized equipment and accounted for at the lesser of the fair value of the leased property or the present value of the minimum lease payments.

Responsibility
The Maintenance Division will be responsible for tracking and maintaining the Fleet Focus data base for the following items if they cost between $2,500 and $4,999. The Maintenance Division can put an item that costs < $2,500 in Fleet Focus if it's necessary for tracking purposes.

Items < $2,500 that may be tracked are:

Trailer Mounted Arrowboard	Pre-Wet Tanks
Pickup Mounted Arrowboard	Brine Storage Tanks
Vibratory Plate Compactor	Tailgate Sanders
Earth Auger	Hopper Sanders
Generators	3 Point Mount Snow Blowers

Concrete Breakers	Skid Steer Mount Snow Blowers
Garden Tractors	Tractor Mount Snow Blowers
Grapple Forks	V-Plows
Pallet Forks	One-Way Plows
Equipment Trailers	Reversible Plows
Sign Truck Package Equipment	Wings
Weed Sprayers	Underbody Scrapers

The Maintenance Division will use the letter "M" in front of the unit number to identify the non-capitalized equipment the Maintenance Division is responsible for maintaining.

Purchases of maintenance and shop equipment are the responsibility of the Finance Division, Procurement Section or it can be the responsibility of the District if the item being purchased falls under the Districts delegated authority limit. The Maintenance Division will assign "M" property numbers to the new non-capitalized maintenance and shop equipment.

Procedure for purchases done by Finance Division, Procurement Section:

1. Procurement Officer must determine final cost is $4,999 or less.
2. Procurement Officer will notify Maintenance Equipment Manager of asset to get "M" asset number assigned.
3. Maintenance Equipment Manager will assign an "M" asset number and provide the number to the Procurement Officer.
4. Procurement Officer will put the "M" asset number assigned on the Purchase Order prior to distribution.

Procedure for purchases done by District:

1. District must determine final cost is $4,999 or less.
2. District will notify Maintenance Equipment Manager of asset to get "M" asset number assigned.
3. Maintenance Equipment Manager will assign an "M" asset number and provide the number to the District.
4. District will put the "M" asset number assigned on the Purchase Order, Voucher Payment or description line of the PCard and supporting invoice prior to submission.

Transfers and Disposals

The Procurement Section will be responsible for disposing of all non-capitalized maintenance and shop equipment as surplus property or at public auction. Non-capitalized fixed assets traded for new items will be removed from the accounts.

When transferring/disposing of non-capitalized maintenance and shop equipment, SFN13708 Electronic Equipment Transfer/Disposal Form will be used by the District. The transferring/disposing district is responsible for initiating the electronic Equipment Transfer/Disposal form, SFN 13708. The transfer/disposal documentation system is set up with automatic email notification which are sent to the final approvers.

Maintenance Equipment Manager will remove the asset from Fleet Focus as disposals are received.

Physical Inventory

A complete physical inventory of non-capitalized fixed assets will be performed annually by each District. Maintenance Equipment Manager will provide a copy of the non-capitalized maintenance and shop equipment asset list from Fleet Focus to the District by approximately May 1 of each year. The District will take inventory by starting at one point and systematically moving throughout the asset list so no items are missed. Every piece of non-capitalized maintenance and shop equipment with a property number should be on the non-capitalized fixed asset list. The serial number and model number should be compared to the serial number and model number on the non-capitalized fixed assets list. Differences and additions are to be recorded on the asset list. If the district no longer has a piece of equipment, SFN13708 Electronic Equipment Transfer/Disposal form must be prepared and submitted. Automated workflow will route the form to the appropriate staff.

The non-capitalized fixed assets list, once reviewed, shall be signed by the District Engineer, dated, and returned to the Maintenance Division by June 30th of each year with the appropriate source documents for any needed changes.

Index for Maintenance and Shop Equipment $4,999 or Less

M2000 – M2029	Compressors
M2030 – M2074	Floor scrubber/sweepers
M2075 – M2099	Cleaner hydraulic, sand blender
M2100 – M2249	Hopper spreader
M2250 – M2499	Tailgate spreader
M2500 – M2774	Mowers: Flail, Rotary, Disc
M2775 – M2799	Hot Box
M2800 – M2869	Mowers: Sickle
M2870 – M2889	Paint Striper
M2890 – M2949	Sweepers
M2950 – M2974	Sprayers: skid mount
M2975 – M2999	Lifts: pallet jacks, Tommy gates
M4000 – M4119	Wings: motor grader
M4120 – M4149	Wings: truck
M4150 – M4239	Underbody scrapers
M4240 – M4669	Snow Plows
M4670 – M4999	Prewet systems
M5000 – M5024	Pressure washers
M5025 – M5039	Crack router, Joint saws
M5040 – M5124	Jack hammers, Rock drills, Post drivers, Air lance, Plate compactors
M5125 – M5149	Toppers
M5150 – M5174	Intrusion Alarms
M5175 – M5224	Prewet Systems
M5225 – M5274	Snowmobiles, Windrow eliminator, Gravel catcher, Floor sweepers, Land scraper, Shoulder retriever, Rotary ditcher, Backhoe attachments
M5275 – M5349	Prewet systems
M5350 – M5374	Earth augers
M5375 – M5399	Prewet systems
M5400 – M5429	Water pumps

M5430 – M5449	Generators
M5450 – M5474	Roto-tillers
M5475 – M5534	Snow blowers
M5535 – M5549	Prewet systems
M5550 – M5599	Riding mowers, garden tractors, jari mowers
M5600 – M5674	Brine tanks
M5675 – M5699	Semi-trailers
M5700 – M5774	Water tanks, pickup fuel tanks
M5775 – M5909	Equipment trailers
M5910 – M5999	Arrow board trailers, advance warning trailer, radar units
M6000 – M6074	Parts washers, pressure washers
M6075 – M6099	Tire balancers, tire changers
M6100 – M6174	Welders, metal cutter and saws
M6175 – M6199	Air conditioning recharge reclaim units
M7000 – M7399	Prewet systems
M7400 – M7499	Brine tanks
M9000 – M9499	Miscellaneous

EQUIPMENT RENTAL

District Equipment Rental Delegated Authority

Districts have received limited delegated authority to obtain rental equipment.

Districts may procure rental equipment where the cumulative cost of the rental does not exceed $10,000. Rentals of $10,000 and greater must be requisitioned through Financial Management Division, Procurement Section.

Rental equipment with a cumulative cost **less than $10,000** requires only one fair and reasonable oral bid. However, three oral or written informal bids are desired.

1. A procurement file should be created and retained in the district which should include any handwritten notes of oral bid(s).
2. Bids must be obtained by a Department employee who has achieved Level 1 procurement authority.
3. Contact the Financial Management Division, Procurement Section to determine if insurance will be required.

Statewide Re-occurring Equipment Rental

This section pertains to equipment rental that occurs on a fairly frequent basis (annual semi-annual, seasonal, etc.) such as: rental tractors, rollers and motor graders. This type of rental is typically for similar equipment types that are requested by several districts on more of a statewide basis where by coordinating with Maintenance Division the bid would lead to more quantities for typically better pricing.

Districts should submit requests to Maintenance Division who will establish quantities of like items and coordinate with Financial Management Division, Procurement Section to prepare a statewide bid.

Emergency Equipment Rental

By District

Under circumstances where people or properties are at risk, the Districts may procure rental equipment where the cumulative cost of the rental does not exceed $10,000. Rentals greater than $10,000 must be requisitioned through Financial Management Division, Procurement Section.

Emergency rental equipment **less than $10,000**, Districts must follow the same rules as noted above.

By Maintenance Division

Maintenance Division does not have procurement authority and all emergency equipment rental requests received from the Districts by Maintenance Division are coordinated with Financial Management Division, Procurement Section.

Chapter 9 - SHOP OPERATIONS

SHOP OPERATIONS

Charges to Shop and Repair Orders

Auto service workers usually charge time to shop overhead. When auto service workers do vehicle repair work, such as brake lining, shock absorber, muffler and tailpipe replacements, etc., charges to the unit or group may be made.

The following work should be charged according to the chart below:

The Department 9000 UNITS ONLY	
Type of Repair Work (labor only)	**Applicable Charge To:**
Emergency or safety light repair	Charge to unit
Vehicle washing	Charge to the activity
Snowplow repair	Charge to unit
Hopper, tailgate, sanders (chassis mount charge to unit)	Charge to unit
Daily inspection	Charge to the activity
Interior cleaning	Charge to the activity
Prep time and painting truck boxes, except for detailing for a sale	Charge to unit
Mounting of hitches and other miscellaneous items	Charge to unit
Travel time	Charge to unit
Shop waiting time without Shop Supervisor approval	Charge to the activity
Interim radio change	Charge to the activity

Department 3000, 6000, 7000, 8000, 17000 - Charge all repairs to unit
Department 00200-01999 units - Charge all repairs to unit
Department 02000-02999 units - Charge all repairs to G95*
Department 04000-05999 units - Charge all repairs to G95*
Department all M units - Charge all repairs to G95*

***If any of these units are attached to a 9000 unit#, charge to the 9000#.**

Utility Charges to Shop Operations

See the following for Shop Overhead Policy fm17.1.

VEHICLES

Towing Vehicles

Towing disabled State Fleet trucks and light vehicles with other Department equipment generally should not be done. Exceptions may be made in emergency situations or where towing short distances at low speeds may be appropriate. All exceptions should be approved by the District Engineer.

Emergency Starting of State Fleet Vehicles

The need for booster starts for State Fleet vehicles is usually for a very short time period. Booster starts should be charged to Dept. ID X021. If it is for an hour or longer, charge it to Dept. ID X060. (X denotes the district number)

Warm-up and Idling of Vehicles
Trucks and light vehicles should not be allowed to idle for more than five minutes. When a vehicle is started in cold weather, it is acceptable to let it idle while scraping the windshield. After a couple of minutes, a vehicle may be driven slowly until it reaches full operational temperature. Hard acceleration should not be applied until normal temperatures are reached.

Warm-up and Idling of Motorized Maintenance Equipment
All motorized maintenance equipment should not be allowed to idle for more than five minutes. When a piece of equipment is started in cold weather it is acceptable to let it idle until it reaches operational temperature. During winter weather emergencies you may allow equipment to idle if necessary.

Exercising Seasonal Vehicles
All rotary snow blowers should be exercised once a month. Exercising should consist of slow and fast idle of about five minutes and the balance of an hour driving on the road. This hour must be entered on the vehicle use report.

Usage Charges for State Fleet Vehicles
Mechanics driving service vehicles to a location to repair a fleet vehicle should charge those miles to the vehicle being repaired. A mechanic's travel time and repair time should be charged to the vehicle being repaired. When a truck tractor and low boy or truck and tilt-bed trailer is used to transport a disabled fleet vehicle, the truck usage should be charged to the disabled vehicle.

Time Charge for Dispatching Daily Pool Vehicles
The Dickinson, Williston, Devils Lake, and Valley City Districts should charge their time dispatching daily pool vehicles to X060. (X denotes the district number)

Fuel Storage Tank Maintenance
The fuel storage tanks must be tested annually, (within two weeks of September 1), for water or any other contamination. In addition, the bottom of the tank is to be pumped until only clean fuel is being dispensed from the pump. The pumping may be done commercially if so desired. The quantity of contaminated fuel is to be reported by e-mail to the fuel manager in State Fleet Services so the fuel supplier can be notified of the missing fuel. In the e-mail report, a description is to be provided of what type of contamination (water, rust, sludge, etc.) was removed. This will ensure that the tanks will have clean fuel going into the winter months.

Wash Tickets for State Fleet Vehicles
Wash tickets purchased for automatic car washes should be charged to Dept. ID 9750 and account code 534130.

Shuttle Vehicles
When vehicles are brought to auction locations and the trip is not associated to another function, such as a meeting, the time should be charged to Dept. ID X060. When shuttling vehicles to commercial garages for repairs and/or warranty and the time is at least one hour, charge time to Dept. ID X060. (X denotes the district number)

District Personnel Recording State Fleet Services Vehicle Use Reports
All time spent by district personnel recording State Fleet Services vehicle use reports must be

charged to the district administrative Dept. ID X050. (X denotes the district number)

Areas of Responsibility for Reassignment or Sale of Fleet Vehicles

NOTE: Units turned in for sale are not necessarily routed through the assigned service location and may require repair or maintenance at turn-in location.

SALE LOCATION BISMARCK - FARGO	STATE FLEET
• Responsible for vehicles turned in • Direct to storage area • Key distribution/storage • Record mileage/hours and enter in Fleet Focus • Remove credit card at time of turn-in • Request/collect checklist for vehicle turn-in SFN 50652 • Check for loose spare tire, mark or tag, and remove from unit • Check/fill all fluid levels • Service/repair, if necessary (see note) • Coordinate activities with detailer • Instruct vendor to park in sale-ready area • Inspect vehicles as per checklist • Remove license plates and stickers, if not removed by detailer	• Notify agency where to deliver vehicles • Request timely delivery • Monitor delivery activity • Prepare sale bill and arrange advertising • Coordinate detailing activities with sale location rep (determine level of detailing) • Inspect vehicle detailing • Verify/record odometer and hour-meter reading • Mark/tag, and line up sale vehicles • Prepare and verify sale handout • Collect credit cards • Collect license plates • Prepare titles • Prepare damage disclosure form • Direct public parking • Set up PA system • Provide keys to sale drivers • Get copies of bidder's list and selling prices from clerk • Disposal forms • Terminate credit cards
SALE DAY	
• Set cones • Set up bleachers • Direct traffic • Restrict/tie off areas not allowing parking, if desired • Assist in starting non-starting vehicles • Provide clerk with table, chairs, and cord • Place spare tires in unit • Fargo - provide portable toilet	

Areas of Responsibility for Maintenance Equipment Auction

Assigned District	Sale Location Bismarck	Finance
• Update and report hours	• Line up equipment	• Request timely delivery
• Check/fill all fluid levels	• Set cones	• Monitor delivery activity
• Service/repair, if necessary (Ensure that unit will start for sale day)	• Set up bleachers	• Prepare sale bill and arrange advertising
• Wash unit inside and out	• Direct traffic	• Verify hour reading
• Notify Bismarck when unit will be delivered	• Restrict/tie off areas not allowing parking if desired	• Prepare and verify sale handout
• Send in disposal form	• Assist in starting non-starting	• Prepare titles

SFN 13708	equipment	
• Tag unit with Surplus Property tag SFN 17902	• Provide clerk with table, chairs, and cord	• Get copies of bidders list and selling prices from clerk
	• Aid in loading sold equipment	
	• Remove credit cards	
	• Key distribution/storage	

AGENCY/INSTITUTION AND ASSIGNED SERVICE LOCATION RESPONSIBILITIES

Agencies/Institutions

See State Fleet Services Policy Manual or website under Motor Vehicle's Returned to State Fleet Section.

Vehicles are to be turned into the assigned service shop or sale location as directed by State Fleet Services.

Agencies/Institutions are responsible for filling out the form and completing the tasks identified in form SFN 50652 "Checklist for Vehicle Turn-in". The form is to accompany the vehicle and the vehicle is to be turned into the receiving location designated by State Fleet Services Division.

Assigned Service Location

Assigned Services Locations (61, 62, 63, 64, 65, 66, 67, 68, 30, 35, 41, 38)

- Accept turned in vehicle
- Request and/or collect turn-in form
- Check for and/or collect credit card
- Check/fill all fluid levels
- Report ending miles/hours in Fleet Focus and change Department number to service location

3000, 6000, 7000, 8000, 17,000 numbered units-includes vans and pickups

- Check for/include spare tire and jack
- Check for/include pickup tailgate

9000 numbered units

The following is the minimum detailing required:

- Spot paint box, unless box is in need of complete painting. If in doubt, contact State Fleet.
- Paint rear wheels gray
- Paint front wheel spokes black
- Paint front bumper/quick hitch black
- Clean interior of cab, including road oil
- Battery cables cleaned and condition
- Newer tires should not be removed and replaced with worn tires
- Empty truck box of sand, gravel, road material, etc.
- Include records and manuals
- Strobe/revolving lights to be sold with unit
- Remove all numbers and decals
- All vehicles to meet Fleet operating policies and standards (glass and tire requirements – check

turn-in form for required minor repairs: operational battery, power steering, alternator, etc.)
- Coordinate transfer of unit to sale location with State Fleet

Contract Detailing

It shall be the vendor's responsibility to pick up units at the Department's storage area and return them to the assigned parking area. All activities shall be coordinated with the Department's representative.

Conditioning shall consist of:

LEVEL 1 - LIGHT VEHICLES	LEVEL 2 - LIGHT VEHICLES	LEVEL 3 - TRUCKS 12,000 TO 26,000 GVW
• Steam clean engine • Clean battery terminals • Remove all tar (see options), grease, and bugs • Repaint painted bumpers • Wash • Wax process • All chrome polished • Complete trunk cleaning • Shampoo carpets and mats, recondition rubber mats (Return all mats) • Clean windows • Clean upholstery • Clean all interior - under seats, glove compartments, etc. • Clean and treat dash and instrument panel • Clean door jams • Clean and treat tires • Remove license plates and place inside vehicle (Obey Laws)	• Steam clean engine • Clean battery terminal Wash • Clean/vacuum all interior, under seats, glove box, etc. • Clean/vacuum trunk or box • Clean windows • Remove license plates and place inside vehicle (Obey Laws)	• Steam clean engine • Clean battery terminals • Wash • Clean/vacuum all interior, under seat, glove box, etc. • Clean box • Clean windows • Remove license plates and place inside vehicle (Obey laws)
BID PRICE PER UNIT $_____	**BID PRICE PER UNIT** $_____	**BID PRICE PER UNIT** $_____

Option 1: Extra charge for removal of heavy concentrations of tar. (As per approval of Department representative) PRICE EACH $_____

Option 2: Rinse vehicles at storage area 24 hours prior to sale, (dependent on weather conditions) (As per approval of Department representative) PRICE EACH $_____

REPAIRS

Repair Work for State Vehicles

In setting priorities for repair work, the highest priority must be given to snow removal equipment

when road conditions warrant. The next priority should be given to Highway Patrol vehicles, when similar conditions exist.

Outside of these two priorities, all agencies, including the Department, should be given similar priorities. Normally, it is easier for Department employees to make alternate arrangements than other agency employees.

Shop Supervisors must use good judgment in setting repair work priorities. Repair work can be taken to outside shops to expedite repairs and keep everyone satisfied. The Department wants to maintain a reputation of treating everyone fairly and keeping all vehicles and highway equipment operating efficiently.

Commercial Garage Repair

When the District shops encounter an unusual vehicle repair that is unfamiliar or very difficult, other repair alternatives should be selected. Estimates from commercial garages should be taken so the lowest price, best quality repair can be obtained.

Shop Supervisors should outline repairs needed. Additional work must be approved by the shop supervisor. Price discounts should be requested on repair work.

Credit Card Purchases Requiring a Work Order

Credit card purchases of items normally on inventory require a work order. Examples are tires, batteries, etc. When the item is not on inventory and the labor and parts exceed $50, a work order is required. Credit card purchases of non-inventory items less than $50 in value do not require a work order.

Lube Services

Districts are encouraged to service vehicles at their district shop and sections before utilizing speed lube services or other vendors.

In some cities, speed lube services are convenient and available in a timely manner. Districts should obtain quotes from speed lube vendors for regular Preventative Maintenance (PM) work for State Fleet vehicles. Quotes or contracts should be approved by the State Fleet Services Director and Procurement.

Warranty

All vehicles should be checked for warranty applicability before repairs are made. A work order should be made to report all warranty work.

LIGHT VEHICLES

Preventative Maintenance Schedule

Drive Train Repairs

Vehicle repair decisions can be made by shop supervisors without prior approval by State Fleet Services except for:

- Engines needing major overhaul or engine replacement
- Transmissions and transfer cases needing major repair

- Body repair exceeding $1,000
- Major A/C failure

Re-assignment or Sale Vehicle Repairs
Repair policies apply to units scheduled for re-assignment. Any repairs to a unit scheduled for sale, other than safety related items, requires approval of State Fleet Services.

Do not perform Schedule C maintenance for identified sale vehicles.

Tires
The standard replacement depth for tire replacement is 3/32nds of an inch. For 15 passenger vans it is 4/32nds of an inch. Only all-season radial tires will be the replacement tire. Exceptions to the above shall be evaluated on a case-by-case basis and approved by State Fleet Services. All new Highway Patrol vehicles will have grip tires installed about November 1. The takeoffs will not be returned to the same unit in the spring. They may be used for Emergency Vehicle Operations Course (EVOC) cars located in Devils Lake and Bismarck, spare tires, or disposed of if nearly worn out. See Highway Patrol Tire Policy. All tires shall be purchased from the state tire contract. Any exception to the above will be made by State Fleet Services except in emergency cases.

The shop supervisors are responsible for decisions regarding tire replacement on maintenance equipment.

Windshields
Windshields with chips shall be repaired by a commercial windshield "doctor." Windshields with cracks in the driver's view shall be replaced. Cracks above or below driver's view or on the passenger side should not be replaced. Replace windshields when major or substantial cracks make the glass weak or may cut a person.

Hail Damage
No repairs allowed unless hail has broken the paint and rust may occur. Approval shall be obtained from State Fleet Services for all repairs.

Safety Repair Items
The repair of brakes, steering, tie rod ends, lights, mufflers, catalytic converters, struts, shocks, etc., must be repaired immediately and without question.

Interior
Repair of torn or damaged seats and upholstery may be performed to avoid further more costly damage.

Auxiliary Lighting and Radio Maintenance
District shops should service all equipment which is original and furnished by the manufacturer in a new vehicle. The transfer of special state-owned equipment such as two-way radios, auxiliary lighting, CBs, toppers, etc is Fleet Services responsibility. However, the initial installation of new equipment into vehicles already in service is the user's responsibility. Servicing of the above will not be at Fleet Services' expense except for minor electrical problems. The appropriate time charges should be entered on a work order.

Any radio maintenance, transfer or repair to auxiliary lighting not covered in the above paragraph is up to the State Fleet Manager's discretion.

TRUCKS

Preventive Maintenance Schedule

Drive Train Repairs
Truck repair decisions can be made by shop supervisors without State Fleet Services approval, except as follows:

Groups #18 thru 32
- Vehicle accident body repairs exceeding $1,000
- All major engine or drive-train repairs
- Any major truck repair within two years of scheduled replacement Maintenance Schedule for Diesel Engines

Tires
Replace front tires on the steering axle at 4/32nds. All tires must be replaced at 2/32nds. No recaps or re-grooves on steering axle. Bus tires must be replaced at 4/32nds, both front and rear tires.

Recapping Truck Tires
All rear radial truck tires should be recapped by a local or nearest Bandag authorized dealer if practical. If suitable casings are not available, new tire purchases will be necessary. Do not use recapped tires on front steering axles. The retread design is at District discretion. Do not recap a tire more than once or purchase used casings for recapping.

Windshields
Windshields with chips shall be repaired by a commercial windshield "doctor." Windshields with cracks in the driver's view shall be replaced. Cracks above or below view or on the passenger side shall not be replaced. Obvious major or substantial cracks in these areas require replacements.

Painting
Re-painting of cabs or chassis shall not be performed without State Fleet Services approval. State Fleet Services will allow and pay for painting of the truck box twice during the life of the vehicle. The painting should be done at approximately five and ten years during the life of the truck.

Misuse
Any repair requirement caused by misuse, negligence, improper maintenance, or improper operation shall be reported to State Fleet Services.

Miscellaneous
- Cab or body replacement not authorized - exceptions need State Fleet Services approval.
- Retrofitting or component modifications; i.e., load levelers, experimental filters, etc., require State Fleet Services approval.
-

Component Services
Manufacturer provided maintenance schedules and service bulletins shall be conformed to. Refer to the owners' manual and service bulletins for requirements not addressed by the Preventative Maintenance (PM) schedule.

REPAIR PARTS

Purchase of Parts from Vendors
Repair parts should be purchased from vendors who provide delivery service. Mechanics should not go out for parts. Exceptions exist in an emergency or when a mechanic is the only one who is familiar with an obscure part. When mechanics do run for parts, the time should be charged to that unit.

Remanufactured Parts

It is the Department's policy to use remanufactured parts whenever the following criteria are met:

- The remanufactured part is significantly less costly than a new part.
- The warranty is comparable to that of a new part.
- Past experience with other remanufactured parts has been satisfactory.

This guideline is primarily for, but not limited to, engines, transmissions, hydraulic pumps, starters, alternators, etc.

Return of Parts Under Warranty
When a part or accessory has been placed on a unit and charged to the unit through a work order and the part fails, the following procedures must be followed:

- The part should be presented to the store or manufacturer for replacement under warranty.
- If a new part is issued and no cost is incurred by the Department, only the labor cost of removing and reinstalling the part is to be charged on the work order with a note on the work order stating that the part was replaced under warranty at no cost.
- If the manufacturer charges a prorated price, only the amount paid with an explanation is charged on the work order.
- If we purchase a part and the credit for the returned part is to be sent at a later date, the full charge is made on the work order and the check for the credit, along with an explanation, is to be sent to State Fleet Services for processing.

FUEL

Credit Card
All vehicles are issued a credit card for fueling. This card can be used at State Fleet fueling sites or at most retail sites.

Credit Card Procedures
Refer to State Fleet Services Policies Manual

Filling Field Service Tanks
When filling a field service tank, follow the guidelines below:

- Fueling can be made from commercial or on-site locations

- The credit card from the unit or units that are going to be filled from the service tank are used. Fill the service tank with each card in proportion to each unit used. Current hours or mileage should be entered for each unit.

SCHEDULED SERVICE

Entering Scheduled Service Work into EMS

Currently, all oil added between Preventive Maintenance (PM) service intervals is entered on a petroleum products disposal form. This procedure is used for both oil obtained from Department supplies or that purchased at a service station.

- All oil used during a PM service will be entered directly on the PM work order.
- All PM work performed in Department shops shall have the mechanic's time, cost of the oil, and filter charged to the PM work order. Additional non-PM work may be added to the PM work order. However, it should be coded accordingly to charge out labor and parts.
- All PM work done by others on a credit card receipt or purchase order and submitted to the Department for entry shall have the cost of labor, oil and filter entered into EMS on a PM work order.
- If other work is on the receipt, it may be entered on the same work order and coded accordingly.
- All maintenance equipment requires a T PM which is 200 hours or 12 months (gas 100 hours)

TOOL REIMBURSEMENT POLICY

Tool Policy 4-20-2017.docx

Chapter 10 – MAINTENANCE TECHNOLOGY

INTELLIGENT TRANSPORTATION SYSTEM (ITS) - REQUIREMENTS FOR DEPLOYMENTS

ITS Planning and Design

Technology has been in use by the Department for many years for collecting data to alert travelers to emergency conditions along the state highway network. This technology is known as Intelligent Transportation System(s) or ITS. In 2004 the State ITS Plan was completed, followed by the NDDOT ITS Regional Architecture (RA), based on the National ITS Architecture. The Preventive Maintenance checklist should be followed to ensure proper operation of all ITS devices.

23 CFR 940 requires NDDOT to use the RA in the development of ITS. ITS is defined as *"electronics, communications or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system"*. An ITS project means *"any project that in whole or in part funds the acquisition of technologies or systems of technologies that provide or significantly contribute to the provision of one or more ITS user services as defined in the National ITS Architecture."* In 2005, the NDDOT Deputy Director for Engineering signed a decision document recommending the Department incorporate the requirements of 23 CFR 940 into the Department planning and design processes for deploying ITS, both individual deployments or as part of highway projects.

To comply with 23 CFR 940, the System Engineering (SE) process must be followed to ensure compliance with the RA. By conducting an SE, ITS deployments reduce the risk of cost overruns; increase the likelihood the implementation will meet our needs; improves stakeholder participation; provides for more reliable and resilient systems; functionality with fewer defects; higher level of reuse from one project to another; and better documentation of the devices or systems. The SE will be included in all Concept Reports for ITS that is part of a highway project.

Funding

The Statewide Transportation Improvement Program (STIP) has included dedicated funding for ITS deployments. The program funding will be used for:

- operation of the ND 511 system, and
- deployment of ITS devices approved in the ITS program.

Existing systems can be added to as part of a highway project (i.e. cameras/CCTV, fiber, etc.) as long as the SE process is followed. The Maintenance Division will assist the districts in this process. **All** ITS projects must be reviewed by the Maintenance Division prior to inclusion into a Concept Report.

Road Weather Information System (RWIS)

RWIS is a tool available in the Intelligent Transportation System (ITS) toolbox and consists of a combination of technologies that collects, transmits, models, and disseminates weather and road condition information. The component of an RWIS that collects the weather data is the Environmental Sensor Station (ESS). The ESS consists of a number of sensors that collect and transmit pavement and meteorological data. Sensors can measure a wide variety of weather related conditions. The ESS collects data for pavement temperature and status (wet, dry, chemical), subsurface roadway temperature, wind speed and direction, precipitation (occurrence, a few also

collect type and amount), humidity and some have visibility sensors, while others have video cameras.

This data is transmitted to the RWIS server located in Bismarck. From there the data is disseminated to various other non-Department users of the data. One of the users is the UND Regional Weather Information Center, which uses the data as part of their road weather research they are conducting for the Department. Data is also given to Meridian Environmental Technology, Inc., who provides the Department with weather information for our maintenance forecasts, 511 Traveler Information, and MDSS. National Oceanic and Atmospheric Administration (NOAA) also uses our data for their Metrological Assimilation Data Ingest System (MADIS). This system displays quality controlled surface data from across the country and can be viewed at https://madis-data.ncep.noaa.gov/MadisSurface/.

More importantly, the data is available on the Department web page and is used to:

- Provide information to assist the Department with roadway management decisions
- Improve traveler information to assist motorist decision making during severe weather events
- Provide more effective maintenance operations
- Provide information sharing with other stakeholders
- Ability to add other ITS field devices, such as cameras, message signs, traffic data collectors and FAST (Fixed Automated Spray Technology); i.e. bridge deck sprayers NDDOT Sensor Locations.

Fixed Automated Spray Technology (FAST)

A FAST is made up of various components that include pumps, plumbing, spray disks, surface sensors connected to an ESS, anti-icing chemical and algorithms (mathematical formulas) for determining the firing of the system.

The system is installed mainly on bridge decks but can be used in other areas such as steep highway inclines or sharp curves at the bottoms of steep hills.

A FAST is installed in order to prevent ice or frost from forming and causing slippery conditions. The sensors installed in the pavement, as well as atmospheric sensors on the ESS, feed data into the system and based on the algorithm settings, the system will automatically spray the deck with chemical. The surface sensors usually consist of a passive sensor and an active sensor. Passive sensors measures existing pavement conditions. Active sensors freeze small amounts of existing liquid on the pavement and can determine the freeze point of the liquid. Active sensors are more accurate than passive sensors and can determine the freeze point over a wider range of chemicals.

When the system has collected information from the sensors (which is an ongoing process), the information is compared to settings in the software to determine if the system should fire. Some factors the system takes into consideration are wind, actual freezing point of existing pavement conditions, precipitation, temperature, etc. When all environmental factors satisfy the system settings and determine the pavement will form ice or frost, the spray system will fire a chemical onto the surface, preventing ice or frost formation.

Dynamic Message Signs (DMS)

DMS are used by the Department to alert motorists to emergency roadway conditions, alternate routes, construction activities, or any information that will assist motorists in making decisions. DMS have also been approved by Federal Highway Administration (FHWA) to be used for AMBER

Alerts which notify the public of a missing person.
The Department uses two types of DMS; portable, which are trailer mounted, and permanent, which are larger signs placed on fixed supports. The Department uses DMS in three areas; Winter Road Closure Plan, summer construction, and miscellaneous maintenance activities. During winter operations, DMS are placed along Interstates, four lane highways, and near major urban areas to alert motorists when the roadways are closed. DMS Guidelines are used to ensure DMS are being used in accordance with Federal Standards. DMS Maintenance and Testing Procedures should be followed to ensure proper operation when needed. A DMS Deployment Priority List has been prepared for implementation of DMS.

The signs are controlled by a centralized software system called Intelligent Control. This software allows the Department to control DMS supplied by different vendors using one application. This is very effective when placing statewide emergency messages on DMS, such as road closures and AMBER Alerts. For statewide emergencies, DMS are controlled by Maintenance Division. Districts can also control DMS for use in localized events.

AMBER Alerts
AMBER Alerts are issued in North Dakota by the Highway Patrol (HP), when a child or children under 17 years old have been abducted and are in grave danger. Other criteria must also be met in order to issue an alert. www.nd.gov/amber/.

The Department assists the HP by placing AMBER Alert messages on DMS, kiosks, and the 511 Traveler Information System. Maintenance Division is contacted by the Department of Emergency Services (DES) when there is an alert. Maintenance Division then places the messages on the information systems.

Weigh In Motion (WIM)
WIM technology is used for measuring the weight of moving trucks at highway speeds and used for monitoring pavement loadings. In 2003, HP moved toward a more mobile weight enforcement concept. Together with the DOT, twelve WIM sites were installed throughout the State. The WIM can be used to collect truck profiles that include; weight, classification, time of day, day of week. The truck profile information is collected by the central office and can be used by the DOT for planning and design purposes. This information can also be sent wirelessly to a HP cruiser that is on site and can be used as a screening tool for overweight trucks.

The twelve WIM sites are located across the state on Interstate and non-interstate highways with a total of 24 lanes instrumented. Seven out of the twelve sites are on four lane roadways with only one of these sites having all four lanes instrumented. Two of the five remaining two lane sites have only one lane instrumented.

Video Detection System for Signals
Video detection is a new technology for control of traffic signals, which uses video cameras mounted on signal mast arms for monitoring traffic conditions at controlled intersections.

The components of the system consist of a video camera for each direction of travel, communication link, computer system and software. The system operates by using the software to draw detection boxes at each intersection. These detection boxes are visible on a computer screen and are overlaid on the video image of the intersection. When a vehicle enters the detection box, the system registers the information and begins the signal timing sequence. These systems are very sophisticated and can

also be used for traffic counting, vehicle classification, and monitoring traffic conditions. Video detection is more reliable and requires less maintenance than magnetic loops embedded in the pavement. As signals are added or upgraded, video detection systems are replacing the magnetic loops.

Chapter 11 – CONTRACT PROCEDURES

MAINTENANCE CONTRACTS

Districts Contract List:
This list is not all inclusive of contracts. Districts may utilize any NDDOT contract that is available in Contract Management that will cover that appropriate topic of contract needs.

Standard form #		Contract Description
CLA	10079	Agreement to permit use of Highway Right-of-Way for temporary sidewalk extensions (Parklets)
CLA	1024	Agreement to Install and Maintain Recreational, Tourist, and Historical Signs on NDDOT Right-of-Way
CLA	1025	Street Name Signs on NDDOT Right-of-Way
CLA	1035	Contract for Personal Services under $10,000
CLA	1046	Work-Zone Safety Initiative Contract
CLA	1053	Lease-Storage Space for Maintenance Crews
CLA	1069	Agreement for Temporary Highway Closure
CLA	1074	Agreement for Long-Term Temporary Highway Closure
CLA	17055	Lease - Field Office Space
CLA	17084	Contract for Building Construction
CLA	17087	Fire Extinguisher Service
CLA	17088	Agreement to Enter and Do Work on Highway Right of Way
CLA	17089	Pest Control Agreement
CLA	17090	Noxious Weed Agreement
CLA	17091	Temporary Permit for the Movement of Non-Hazardous Materials within Highway Right-of-Way
CLA	17823	Proposal for Maintenance Work
CLA	17834	Hay Harvesting Contract
CLA	17835	Permit to Conduct Recreational Vehicle Race
CLA	5479	License to Plant on Highway Right of Way
CLA	6100	Living Snow Fence Agreement
CLA	9707	Seismic Cable Permit (Temporary)
CLA	1049	Rest Area Janitorial

DELEGATION OF PROCUREMENT AUTHORITY

Districts shall follow the NDDOT **Delegation of Procurement Authority** process. Employees are to complete OMB State Procurement Officer Certification training. It is the discretion of the District to determine the level of procurement each employee must obtain. Once complete the employees will be added to a list which identifies the level of procurement authority achieved.

NON-CONSTRUCTION CONTRACTS

Districts shall follow the guidance outlined in this manual and the NDDOT Legal Division **"Contract Manual for Non-Construction Contracts"**.
Districts shall follow the guidance outlined in this manual and the NDDOT Finance Division "Invitation to Bid or Request for Bid" process.

Chapter 12 – EMERGENCY OPERATIONS

STATE EMERGENCY RESPONSE

Purpose
The Department is part of a coordinated effort of federal, state, local, and tribal governments and volunteer agencies to manage emergencies or disasters of national, state, or local scope, to save lives and to protect property and the environment. Each agency has defined responsibilities for emergency operations, and these responsibilities make up the State Emergency Operations Plan (SEOP).

State Emergency Operations Plan (SEOP)
State government emergency or disaster operations will be guided by the SEOP, which is comprised of a Basic Document, functional annexes (the Department has the Transportation Annex) and a resource library. These annexes contain the procedures, policies and reference material from the state Departments and agencies, to include hazard specific incident response procedures. When the SEOP is implemented, all or parts of these documents, plans or procedures can be activated.

The Governor has the overall responsibility to direct and control state government operations necessary to support local emergency or disaster operations, and to protect the state and its people from dangers presented by an emergency disaster. The Governor has statutory authority to avert the effects of a disaster or emergencies as stated in N.D.C.C. 37-17.1.

Execution
The SEOP is in effect at such time as:

- An emergency or disaster occurs or is imminent.
- The State Coordinating Officer (SCO) requests appropriate state Departments or agencies to perform emergency operations in response to a hazard/incident that has the potential for becoming an emergency or disaster.
- An emergency or disaster is declared by the Governor.

Department Activation
When an emergency or disaster occurs or is imminent that requires the Department resources, the Department, specifically Maintenance Division, will get notification. Notification occurs by means of a telephone call from the React Officer on duty at the Department of Emergency Services (DES) to one of the Department contacts listed on the emergency contact list. Depending on the nature of the emergency, the Department person who is contacted will either be asked to attend a briefing at the Emergency Operations Center (EOC), or this person will contact the district that the emergency situation exists.

EOC Briefing
When the Department is summoned to the EOC, the emergency usually impacts several counties or jurisdictions. At an EOC briefing, the state agencies that were alerted to the emergency along with the Governor's office, are briefed by the DES Director and staff. Agencies are then assigned tasks according to their expertise and resources, to assist in the emergency.

At this point, Maintenance Division will begin working with the districts to assist in the emergency. The district may be asked to support any variety of emergencies or disasters ranging

from blizzards to wild fires, and may require relocation of equipment and/or personnel.

Contacting a District
When Maintenance Division contacts a District, the District will be apprised of the situation, and be given specific tasks, to assist with the emergency. The call may come at any time.

Managing an Emergency Operation

Staging

Occasionally the Department is put on notice that we may be called to assist with an emergency. For example, during dry weather, conditions are right for range fires. During fire operations, the Department can assist by providing water tenders and motor grader support. Maintenance Division will then work with the districts to "pre-position" or stage equipment in the area affected. This provides for rapid response to the event when called upon to assist.

Emergency Reimbursement

- During an emergency operation Maintenance Division works with the Finance Division in order to provide for employee expenses and to track costs and time associated with the emergency operations tasking.
- When the Department is asked to support an emergency operation, the districts involved will be given a project number to track time and costs. This number must be used for tracking employee's time, expenses, equipment usage and repairs. These tracked items can be used to obtain reimbursement for the emergency whether the repair is done by district personnel or by contract.

MAINTENANCE DIVISION EMERGENCY RESPONSE

Notification Procedures

Localized Emergency

- The Department/Maintenance Division contacted by Department of Emergency Services (DES)
  - Depending on seriousness or type of emergency one or more of the following may occur:
    - Department personnel report to State Emergency Operations Center (SEOC)
    - District personnel contacted via phone/cell phone and assessed of the situation
    - District responds to emergency/incident
  - Department management briefed on the situation
  - Public Information Office (PIO) notified

Statewide Emergency

- Statewide emergencies require Maintenance Division personnel to report to SEOC
  - Department assessed of the situation
  - Maintenance Division personnel set up Functional Coordinator operations
  - Districts notified for assistance if necessary
  - Department management briefed on the situation
  - Department PIO notified
- All transportation issues regarding the emergency are managed through the Department at the SEOC as stated in the Emergency Operations Annex

Department Emergencies (Road Closures and Incidents)

- District notifies Maintenance Division regarding the situation
- A duration of approximately two hours should be used to determine the method of communication
  - For incidents with an expected duration of two hours or less, information should be relayed through State Radio
  - For incidents with an expected duration longer than two hours, information should be relayed through NDDOT staff to Communications Division to issue a news release and to update the Travel Map
- Travel Information Systems updated (Including DES)
- Department management and PIO notified

AMBER Alerts

- Department notified by North Dakota Highway Patrol, State Radio, or DES
- Department may be requested to report to SEOC for briefing
- DMS are used, if available, to alert traveling public. See NDDOT DMS Guidelines for more details on the use of DMS for AMBER Alerts. (NDHP Activates 511)
- Department PIO notified

TRAINING

NIMS/ICS

On December 21, 2004, Governor Hoeven signed Executive Order 2004-11, which adopts the National Incident Management System (NIMS) and requires all agencies identified in the Emergency Operations Plan, to incorporate the NIMS principals for emergency management. Since the Department is a Functional and Task Coordinator in the Emergency Operations Plan, all the Department employees who respond to incidents must be trained in the NIMS principals.

Maintenance Division personnel are the main responders to emergencies and therefore, are required to take NIMS and Incident Command System (ICS) training. Following are the ***minimum*** requirements for NIMS and ICS training:

Emergency Responders/worker (All Equipment Operators, Maintenance Coordinators/Superintendents, District Management, Maintenance Division, Other Operations)

- IS-700.b
- IS-100.c

First Line Supervisors (Maintenance Coordinators/Superintendents, Transportation Section Supervisors, District Management, Maintenance Division EOC personnel, and Other Operations)

- IS-700.b
- IS-100.c
- IS-200.c

EOC Involvement (Maintenance Division EOC Personnel and/or involvement with the National Response Plan)

- IS-700.b

- IS-100.c
- IS-200.c
- IS-800.c
- ICS-300
- ICS-400

All NIMS and ICS training is conducted in a classroom setting or can be taken online at https://training.fema.gov/nims/. In either case, successful completion of a final exam is required to be certified in NIMS and ICS. Classroom training can be conducted by contacting the North Dakota Association of Counties (701-328-7300) or North Dakota League of Cities (701-223-3518) for training near you.

Traffic Incident Management (TIM) Training

TIM consists of a planned and coordinated multi-disciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible. Effective TIM reduces the duration and impacts of traffic incidents and improves the safety of motorists, crash victims and emergency responders. The objectives of training are responder safety, safe and quick clearance of vehicles, and prompt communications. This coordinated process involves a number of public and private sector partners.

Other Training

The Department is continuously looking for training to assist employees in conducting emergency operations. In the past, other training has been for fighting range fires. The Department will continue to work with the ND Fire Marshall and ND State Forest Service to offer this training when available.