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Number 1.01 January 1, 2011

Subject: Equipment Management

The purpose of the Equipment Management Manual is to keep NDOR personnel aware of policies and procedures relating to the use and maintenance of the Department of Roads' automotive, heavy road, and other maintenance equipment.

This manual will take precedence over any conflict in information with other NDOR publications. Any conflict is to be brought to the attention of Fleet Management for resolution. This manual is to be used in conjunction with current published Department safety procedures and applicable State and Federal regulations.

Equipment management chapters and policies are categorized by subject matter as outlined below for ease of locating topics.

Chapter	Subject
1.00	Equipment Management
2.00	Oils and Lubricants
3.00	Tires and Wheels
4.00	Engine Maintenance
5.00	Transmissions and Drive Trains
6.00	Brakes and Brake Systems
7.00	Snow Removal Operation and Equipment
8.00	Preventive Maintenance
9.00	Repair Shop Operation
10.00	Storage Tanks
11.00	Enterprise Asset Management System (EAMS)
12.00	Equipment

Highway Fleet Manager

Number 1.02 January 1, 2011

Subject: Equipment Management Manual Distribution

The Equipment Management Manual is published by the Fleet Management Section and will be updated on a regular basis. The latest version of this manual will be available on the intranet.

District Mechanics shall maintain an updated copy of the Equipment Management Manual for reference. Distribution will also be made to each District Operations Maintenance Manager, Maintenance Superintendent, Maintenance Supervisor, Crew Chief, and Field Mechanic.

Copies of the Equipment Management Manual are made and distributed as follows:

	DOMMS	DM	DCE	MS	HMS	CC	FM	Total
District 0							1	1
District 1	1	1		3	16		14	35
District 2	1	1		3	9		8	22
District 3	1	1		5	12		11	30
District 4	1	1		4	19		12	37
District 5	1	1	1	3	10	2	9	27
District 6	1	1		5	12		9	28
District 7	1	1			8			10
District 8	1	1		3	6	3	5	19
Total	**8**	**8**	**1**	**26**	**92**	**5**	**69**	**209**

In addition to the District distribution, a copy will be issued to:

Fleet Manager – Janie Vrtiska
Highway Mechanic Superintendent – Dale Piening
Highway Fleet Shop Supervisor – Fleet Management – Mike Gates
Business Manager – Nikki Krause
Employee Safety Coordinator – Blane Osterman
State Property Damage Coordinator – Chuck Hoster

Highway Fleet Manager

Number 1.03 January 1, 2011

Subject: Repair Shop Equipment Responsibility

The Operations Division is the Resource Office for repair shop equipment. All inventoried repair shop equipment must be ordered thru the District Mechanic. Accountability by assuring all inventory tags are properly affixed is accomplished by Fleet Management in coordination with Operations Procurement.

Inventoried repair shop equipment is ordered by the Operations Division thru the annual request by Districts through the use of the Shop Equipment Request form. All inventoried replacement tools must be sent to Fleet Management with a copy of the turn-in form to allow Fleet Management to check off these turn-in units.

All inventory tags will be affixed to shop equipment prior to field assignment when shop equipment is ordered through the Operations Division. If it becomes necessary to order inventoried shop equipment at the District, prior approval to order must be obtained and an inventory tag will be requested thru Fleet Management and sent to you for affixing to the tool.

Non-inventoried repair shop equipment items must be budgeted annually by each District and can be ordered either locally or by request thru the Operations Division.

Non-repairable inventoried tools will be surplussed thru Fleet Management procedures by use of DR Form 332 (Furniture and Equipment Issue/Transfer Document). This will assure the removal of the item from your automated inventory data base file.

Highway Fleet Manager

Number 1.04 January 1, 2011

Subject: Equipment Borrowed from Fleet Management

Fleet Management has several units of numbered equipment available upon request for assignment to field operations to use in case of an emergency or for short term use. These units are identified in the Enterprise Asset Management System (EAMS) to help Fleet Management track this equipment and for field supervisors to know where a particular unit is temporarily assigned at any time.

The “general tab” in the EAMS system has been updated to identify equipment assigned to Fleet Management and borrowed by the Districts. By entering the equipment number, the Control Position will show as Fleet Manager if the unit is at Fleet Management. It will show DIST 1 BORROWED; DIST 2 BORROWED; etc., if the unit is being used in a District.

The procedure for issuing this equipment to Districts will be as follows:

1. All equipment borrowed from Fleet Management will be picked up at Fleet Management. Only by permission of Fleet Management will these units of equipment be transferred between Districts. This means, as soon as a District no longer has need for this equipment, it must be transported to Lincoln for reassignment.
2. When picking up equipment from Fleet Management in Lincoln, EAMS will be updated at that time by Fleet Management personnel.
3. When a unit is returned to Lincoln, Fleet Management personnel will update EAMS.

If permission is granted by Fleet Management to transfer between Districts without first coming to Lincoln, the transfer request must state the general condition of the unit. Any problems identified by the transferring district during operation should be conveyed to the receiving district and Fleet Management. Receiving districts should also report any problems during operation to Fleet Management.

It is important when a unit is transferred that all the books go with the unit. This will be the responsibility of the supervisor that last used the unit. The receiving supervisor will also be responsible for receipt of these manuals. It is most important these books go with the unit in case an operator needs to understand how a unit operates or if repairs are required.

Highway Fleet Manager

Number 1.05 September 1, 2011

Subject: Damaged Numbered Equipment

Following are the procedures to follow when numbered equipment is damaged and needs to be repaired or declared a total loss. Any charges to repair a damaged unit of equipment in excess of $3,000 must be requested and approved in writing to the Fleet Manager prior to the work being done. The District Mechanic must be notified when equipment is damaged due to an accident. The District must obtain estimates for equipment repair and forward them to Fleet Management.

When NDOR equipment is damaged by a non-private source (i.e. NDOR employee, weather, etc…), complete DR Form 82 (Supervisor's Accident Loss Report) and submit it to Human Resources with a copy to Fleet Management for the equipment file. Complete DR Form 262 (Vehicle Accident Report) when an NDOR vehicle is involved and submit it to the Fleet Manager in Operations and to the State Property Damage Coordinator in the Traffic Engineering Division.

If an NDOR vehicle/equipment is damaged by theft or vandalism, complete DR Form 25 (Vandalism – Theft Report) and submit it to the State Property Damage Coordinator with a copy to Fleet Management in Operations for the equipment file.

If an NDOR vehicle is damaged by a private source, complete DR Form 262 (Vehicle Accident Report) and submit it to the Fleet Manager in Operations and to the State Property Damage Coordinator in Traffic Engineering. Please make sure **ALL** numbered equipment damaged is noted on the accident report.

Any NDOR vehicle accident involving injury/death and/or property damage over $1,000 requires the completion of DR Form 41 (Driver's Motor Vehicle Accident Report) in addition to DR Form 262 and both are to be submitted to the Fleet Manager in Operations and to the State Property Damage Coordinator in Traffic Engineering.

When equipment has been damaged in an accident involving a private source, an SPD will be generated in DIRK (District Incident Reporting Knowledgebase) the District/Division will repair the equipment and all costs will be itemized. The District/Division will work with the State Property Damage Coordinator and the Fleet Manager with all essential cost documentation. The higher the cost of repairs, the greater the need for accurate itemization because these usually prompt an insurance inquiry. The District/Division will retain all documentation and investigator reports for 2 years after the SPD is completed. Fleet Management in Operations will keep all accident reporting documentation in the equipment file. All inquiries from insurance companies will be referred to the State Property Damage Coordinator.

Each month, the Districts are provided with a listing of all SPDs in the DIRK that are open in the RBS system. The DIRK system will show them "open" until they have been paid. If the State Property Damage Coordinator is informed, via a signed SPD DIRK that no costs will be charged, the DIRK will be "closed". If a SPD has been determined to be "uncollectible" or "no

responsible driver" can be identified, they will be "closed" in the DIRK system two months after that determination.

If the damaged equipment appears to be a total loss, the District Mechanic will coordinate with the Fleet Manager to determine the dollar value of the equipment. That information, along with all other pertinent information used to determine the value, shall be reflected on the SPD in DIRK for the State Property Damage Coordinator's review. If the damaged equipment is to be repaired, it may be done by NDOR employees or privately. When the costs to repair the vehicle have been determined, they will accompany the SPD when it is returned for billing to the State Property Damage Coordinator.

In the event repair estimates cannot be supplied by the District, Fleet Management will obtain either the repairable estimate or salvage value estimate depending upon what decision is made as to the disposition of the unit of equipment. Upon written approval of this information, the equipment can then be repaired or surplussed. Refer to NDOR Operating Instruction 80-06 for Surplus Property.

All total loss numbered equipment becomes the property of Operations upon surplus.

Highway Fleet Manager

Number 1.06 January 1, 2011

Subject: Equipment Repair Approval

The Operations Division is the Resource Office for equipment. One of its responsibilities is to monitor equipment repair costs. To meet this responsibility, the following policy is established.

Prior written approval will be required on the repair of any equipment where the total estimated or actual repair cost will exceed $3,000 per NDOR Operating Instruction 80-09. The request for approval can be submitted either by e-mail or letter to the Fleet Manager for approval. This cost must include parts, contractual service and Department repair labor costs. A response will be made in writing or email showing approval or reason why the unit was not approved for repair.

Request for repair parts through Operations that exceed the $3,000 amount will be forwarded to Fleet Management for review and forwarded to the Fleet Manager for approval on the purchase order.

This procedure accomplishes the following objectives.

1. Limits major repairs on equipment scheduled for retirement or surplus.
2. Allows Fleet Management to review like equipment for similar or related problems.
3. Controls the cost charged against the budgeted allocation.
4. Allows Fleet Management to determine reliability of specific equipment.

Highway Fleet Manager

Number 1.07 January 1, 2011

Subject: Recording of Training on New Equipment

Fleet Management will request training on any new unit of equipment purchased. This training is to familiarize both operators and mechanics on the unit of equipment.

To make sure employees involved with the new unit of equipment have received proper training and instructions on the proper maintenance and operation of the unit, DR Form 362 (Training Report) has been developed. The person in charge of the training session (usually the District Mechanic) will complete the form and forward it to Fleet Management immediately upon completion of training.

Highway Fleet Manager

Number 1.08 January 1, 2011

Subject: Equipment Obtained from Construction Projects

Special units of equipment purchased for use on construction projects fall into the responsibility of Fleet Management. Fleet Management will work through Traffic Engineering assuring proper specification of requested equipment and will procure this equipment through special provisions in the construction contract. Fleet Management will procure this equipment using guidelines established in the Business Rules.

Highway Fleet Manager

Number 2.01 January 1, 2011

Subject: Engine Driven Air Compressor Lubricants

NDOR may have two distinct types of engine driven air compressors. Prior to 1976, the compressor may be rotary **vane** type or a rotary **screw** type. All compressors purchase after 1976 should be a rotary screw type.

The manufacturer's recommended oil lubricants are to be used in the compressor units. This information should be found in the operator's manual.

Highway Fleet Manager

Number 2.02 January 1, 2011

Subject: Diesel and Gasoline Engine Oils and Service Intervals

The following guides are to be used for servicing of equipment:

1. Diesel engines, except 2-cycle Detroit and air cooled, are to use SAE 15w-40.

   Exception: Kubota engines should use SAE 10w-30 year round.

2. Detroit 2-cycle diesel engines are to use the manufacturer's recommended oil.
3. Gasoline engines are to use manufacturers recommended oil grade and weight.
4. 2-cycle gasoline engines will use manufacturer's recommended oil or equivalent mixed with the proper quantity of gas.
5. 4-cycle light duty air cooled engines will use the manufacturer's recommended oil.
6. All oil changes need to be recorded in EAMS on a work order, this includes the oil. The only time oil is charged out on the Data 2 U is when you are "topping off" with a quart or so of oil.

Oil change intervals for heavy duty diesel engines will be 150 hours or annually whichever comes first. For gasoline powered vehicles change oil every 5,000 miles or annually whichever comes first. For extreme duty use definition and service intervals, see the operator's manual and follow the manufacturer's recommended guidelines. (District decision – Intervals may be lessened but not exceeded.)

NOTE: Contact the Fleet Manager if there are questions regarding oil change intervals on any equipment.

Oil filters are to be changed with every oil change. Oil filter disposal will be done in accordance with Section 2.10.

If an engine is suspected to have a problem, cutting open of the filter is recommended to check for foreign material in the filter media. Oil samples may also be taken and sent in for analysis if a problem is suspected with an engine. Check attachment for wear metal origins.

Highway Fleet Manager

Number 2.03 January 1, 2011

Subject: Rotary Mower Gear Box Lubrication

It is recommended that you follow the manufacturer's recommended guidelines for lubricant selection and service intervals. This information should be found in the operator's manual.

Highway Fleet Manager

Number 2.04 January 1, 2011

Subject: Automatic Transmission Fluids (ATF's)

With all the different manufacturers of transmissions that NDOR has in its fleet, it is highly recommended that the operator's manual be checked for the selection of the proper transmission fluid and that the manufacturer recommended service intervals be followed.

Examples of fluids and their applications:

Dextron III: Used in many GM vehicles and several foreign manufacturer also. Dextron III may also be used in place of Dextron and Dextron II.

Mercon: Used in most Ford vehicles from 1980 to 1999. Most ATF's that meet Dextron III requirements will likely meet the requirements of Mercon.

Mercon V: Introduced into Ford vehicles in 1997. Many 1999 models and newer will Require Mercon V, with the exceptions of the E4OD, 4R100, and CD4E, transmission models which may still specify only Mercon ATF.

Type F: Used in many older model Ford vehicles.

ATF+4: Used in newer Daimler Chrysler products. Example being newer Dodge pickups and vans. ATF+4 is currently only available at dealerships.

Allison Transmissions started a factory fill of synthetic oil in February of 2002, in most of their automatic transmissions. This oil carries a TES-295 specification and the manufacturer's recommended service interval of 75,000 miles for extreme duty applications should be followed.

When in doubt you can supply the dealership with the model and serial number for reference to select the correct fluid.

Highway Fleet Manager

Number 2.05 January 1, 2011

Subject: Transmission and Rear Axle Lubricant

The general agreement of opinion is that the use of a gear oil having a proper viscosity or flow characteristic at our Nebraska temperature extremes, is of the utmost importance.

The Operations Division stocks an all-season, multi-purpose transmission and rear axle lubricant with an SAE 85w-140 rating. This lubricant will replace all formerly stocked 80w, 90w, 140w, 80w-90, 80w-140, etc., and should be used regardless of any old requirements for a straight mineral lubricant. Prior research indicated that 85w-140 will extend the life of our equipment.

In Fuller transmissions the use of an SAE 50 viscosity grade lubricant is recommended. An **exception** to this may be 1990 and later GMC trucks which may have a synthetic transmission lubricant. Refer to the Truck Equipment Management Bulletin GMC number 91-7B-121 which states that only approved synthetic lubricants can be used in the Topkick/Kodiak medium duty truck.

Starting in 2008 all dump trucks are purchased with factory filled synthetic fluids in transmissions and rear ends. Refer to the operator's manual for proper selection of oil grade and type.

Fleet Management recommends a change interval of 75,000 miles or 4 years whichever occurs first (synthetic). For non synthetic check the operator's manual to ensure proper selection of lubricant recommended by the manufacturer. Service intervals shall follow manufacturer's recommendation or Fleet Management's guidelines.

Highway Fleet Manager

Number 2.06 January 1, 2011

Subject: All Turbo Charger Equipped Engines

IMPORTANT: To assure adequate cooling of the turbo-charger, idle the engine for approximately three minutes before stopping the engine. Do not “race” the engine during the three minute cooling off period. After a three minute cool down, shut the engine off, and apply the parking brake.

Hauling of equipment with turbo-chargers is outlined in section 8.08.

Operators of equipment shall be instructed in this procedure for the following reasons:

1. The turbo-chargers are lubricated from the engine oil system and depend on engine oil pressure for both oil and bearing cooling.
2. The turbots store a lot of heat at high power output, and the turbots turn at about 30,000 RPM’s at high power output.
3. The three minute idle (3 minutes should be considered a minimum) does three things:
    a. Allows turbo to cool down.
    b. Supplies lubrication and cooling.
    c. Allows turbo to coast down to minimum RPM before shut down.

The results of not following these procedures and the operator carelessly and repeatedly shutting the engines down from high power output will result in damage to the turbo charger and possibly to the engine.

Highway Fleet Manager

Number 2.07 January 1, 2011

Subject: Multi-Purpose Hydraulic and Transmission Fluid

The Operations Division stocks a multi-purpose hydraulic and heavy equipment transmission fluid which is purchased according to NDOR specifications. It meets or exceeds all requirements for John Deere Hy-Gard or 303, IHC Hy-Tran, Case TCH, and similar combination transmission and hydraulic system fluids. This oil is not to be used in place of Dextron III and it should not be mixed with Dextron III.

Hydraulic oil with an ISO 32 rating is not to be used in transmission applications. ISO 32 hydraulic fluid is a 10w oil and is recommended for stand alone hydraulic systems only as it does not contain the anti-wear additives needed for transmission gear and bearing protection.

Highway Fleet Manager

Number 2.08 January 1, 2011

Subject: Transmission Fluid in Motorgraders

Due to a change in the formula of Dextron II fluid, Champion Motorgrader no longer recommends using Dextron II fluids in any Gearco 8400 or Dominion 9135 grader transmissions. The formula change reduces the static friction modifiers thereby making a softer (slippery) gear change which could reduce friction by as much as 30 percent, especially under heavy loads.

The following action is to be taken. All Champion motorgraders with the Gearco 8400 or Dominion 9135 transmissions must be drained of Dextron II fluid at the next service interval or if slippage is excessive, change the fluid immediately. Refill with 10w-30 motor oil, API service CD or CE. Allison C-3 and Caterpillar TO-2 oils also meet specification. It is not necessary to flush the Dextron II from the lines. Our engine oil in stock will meet these requirements. If you buy motor oil from a local vendor make sure it meets these requirements.

For newer motorgraders that do not fall into the above category you will need to check in the operator's manual and service manual for correct oil selection for the make and model that you have.

Highway Fleet Manager

Number 2.09 January 1, 2011

Subject: Multi-Purpose Grease

A lithium base grease with molybdenum and polyethylene should meet most Original Equipment Manufacturer (OEM) requirements. The operator's and or service manuals should be checked for actual recommendations and grease interval schedules.

Grease is to be applied according to OEM recommendations without fail. Grease is designed to push out older grease at each application carrying away dirt, water, and other contaminants, leaving fresh grease to provide adequate lubrication during the next work period.

Supervisors are to monitor and make certain that equipment and vehicles are being greased according to recommendations. All NDOR fleet equipment will be greased according to OEM requirements. On service intervals of 10 hours or less the grease location should be greased daily prior to use. An example of this type of location would be the pivot points of a loader bucket. In addition, the entire unit should be lubed at each engine service interval.

Highway Fleet Manager

Number 2.10 January 1, 2011

Subject: Disposal of Used Oil Filters and Oil Containers

For the purpose of this Equipment Management Bulletin, “oil filter” shall mean any engine oil filter, hydraulic oil filter, transmission oil filter, etc…

Disposal shall be in accordance with the Spill Prevention Control and Countermeasure (SPCC) plan for that location.

Highway Fleet Manager

Number 2.11 January 1, 2011

Subject: Oil Sampling Procedure for Motorgraders

Within the motorgrader specifications and purchase, oil sampling may be required for the engine and power train warranty. Oil sampling may also be required during extended warranty periods for the engine and power train. The following procedures are to be followed in taking these oil samples.

The vendor will supply Fleet Management with an adequate supply of sample kits on all future motorgrader purchases if required. Fleet Management will send kits to the District Mechanic indicating which motorgrader(s) to be sampled.

The sample will be collected in the pre-addressed sample kit in accordance with the instructions supplied with the kits at NDOR's regularly scheduled preventive maintenance intervals. The sample will be mailed to the address shown on the sampling kit. For your convenience and to make sure samples are taken at the proper times, the Department of Roads preventive maintenance schedule is shown:

1. Every 150 hours or annually, whichever comes first for engine oils.

It is very important the samples are taken while the oil is warm. Caution must be used to avoid burning oneself. Taking the sample while warm should ensure that the particulates are still suspended. Care must be used as not to contaminate the sample.

The results of these tests will be sent to Fleet Management in Lincoln. In turn the reports will be forwarded to the District Mechanic. If a problem is detected during the sample testing, the testing lab will telephone Fleet Management with the results. Fleet Management will then call the District Mechanic to inform him/her of the results and what action should be taken to rectify the problem.

Sending the results to Fleet Management is twofold.

To record oil samples to make sure samples are taken on a regular schedule.

To make certain action is taken on a unit of equipment where the sample shows a problem.

Highway Fleet Manager

Number 3.01 January 1, 2011

Subject: Tandem Tire Matching

Tire Matching:

Unmatched tires on tandem drive units will cause tire wear, scuffing and possible damage to the drive units. Consequently, it is recommended tires be matched to within 1/8 inch of the same rolling radius, ¾ inch of the same rolling circumference.

Tandem Units:

The four largest tires should never be installed on one driving axle or the four smallest tires on the other driving axle. Such tire mounting will cause an inter-axle "fight", unusually high axle lubricant temperature that results in premature lubrication breakdown and possible costly axle service.

In addition to matching individual tire rolling radii or rolling circumference, it is recommended matching, as near as possible, the total tire circumference on one driving axle to the total tire circumference of the other driving axle. This will usually result in satisfactory tandem axle lubricant temperatures that lengthen drive unit service with higher tire mileage.

How to Match Tires – Tandem Units:

The vehicle should be on a level floor, carrying a correctly distributed rated capacity load. Be sure all tires are the same size. Measure new tires to be sure they will be correctly matched.

1. Inflate all tires to the same pressure.
2. Carefully measure the rolling circumference of each tire with a steel tape.
3. Mark the size on each tire with chalk and arrange them in order of size, from largest to smallest.
4. Mount the two largest tires on one side of one axle and mount the two smallest on the opposite side of the same axle.
5. Mount the four other tires on the other axle in the same manner.

Highway Fleet Manager

Number 3.02 April 12, 2012

Subject: Tire Pressure and Replacement Criteria

Maintain proper tire pressure to maximize tire life and for safety reasons. Currently all tires are filled with nitrogen by Fleet Management before equipment is released to the acquiring District/Division.

Take regular tire pressure readings on vehicles carrying heavy loads. We all know that a little preventive maintenance checking tells a lot about the expected service life of a tire. Not as widely known, is the fact that even frequent air gauge readings do not tell the whole story, unless they are made regularly and at the right time.

Experts point out that tire pressure is not the big factor to watch. Pressure build-up is. So you have to take two readings. One before the vehicle goes out on the job and again as soon as it stops after carrying a load.

Any build-up that exceeds 20 psi deserves a quick look at the tire loading, inflation pressure, or dual matching. Tandem (dual) matching is covered under Section 3.01. You should expect some pressure rise. In fact, some build-up is desirable, resulting in reduced flexing.

Something to watch for is excess pressure. Tires get hot as plies rub against each other in flexing. Some heat is lost to the air and road surface. If the tire size and air pressure are correct for the load the vehicle handles and the speed it travels, heating will not cause the pressure rise over 20 psi.

WARNING: Do not bleed tires to correct pressure build-up. (You will just create more heat.) Instead, slow down or inflate tires to correct pressure after they cool.

Effective with equipment purchased in FY88 (July 1, 1987) Fleet Management has indicated prior to assignment the required tire pressure on the vehicle near the wheel. The following points are to be accomplished by showing the tire pressures.

1. Assist operators in their daily preventive maintenance checks to assure the cold tire carries the proper pressure in each tire in accordance with the manufacturer's operation manual.
2. On trucks, if the tires are under inflated and the truck has a full load, the tire and consequently the truck may be overloaded because of the tire pressure. The truck could be detained by Carrier Enforcement until the tires are properly inflated and the operator may be subject to a citation.

3. With low tire pressure, the life expectancy of a tire can be shortened as well as weakening of the sidewall of the tire making it unsafe to operate. Fuel economy and tire life can be reduced according to the following chart:

By	Loss of Tire Life	Loss of Fuel Mileage
9% or 3lbs	5%	1.9%
16% or 5lbs	22%	3.1%
22% or 7lbs	28%	4.4%
31% or 10lbs	37%	6.25%

These calculations were obtained from the Rubber Manufacturer Association and American Society for Testing Materials.

Replacement Criteria:

Automobiles, Vans, Carryalls, and Pickups:

According to State Statutes 39-6, 131.09, all automobiles, pickups and vans, tire tread must be at least 2/32 inch in any two tread grooves at three locations equally spaced around the circumference of the tire. Tires that do not meet the 2/32 rule cannot be sold on the auction, so mount used tires that are available to meet the statute before bringing to Lincoln for surplus. Do not install new tires on units of equipment to be surplussed.

Medium and Heavy Duty Trucks:

Effective September 1, 1990, the steering axle on all medium and heavy duty truck must have 4/32 inch tread in every major groove. Tandems must have 2/32 inch treads. No Fabric should show through the tread or sidewalls. Regrooved tires will not be mounted on state equipment.

SAFETY NOTICE: Welding on rims is prohibited.

NOTE: Replacement tires need to have the white lettering advertising the manufacturer turned in. Mud flaps are to have the advertising facing forward (towards the tire).

Highway Fleet Manager

Number 3.03 January 1, 2011

Subject: Truck and Heavy Equipment Tire Repair Policy

This bulletin establishes the policy on repairing truck and heavy equipment tires.

Because of the safety hazard involved, tires will be repaired **ONLY** by the nearest local, commercial tire repair station. The Department is not adequately equipped to make such tire repairs in an entirely safe manner. Accordingly our own employees will not remove tires from split rims either in our shops or by attempting to do so at any other facility. All employees will be advised of this policy.

No truck or heavy machinery tire repair equipment will be ordered.

Highway Fleet Manager

Number 3.04 January 1, 2011

Subject: Compact Spare Tire and Wheel

The operator's manual for all cars purchased after 1983 will refer to compact spare tires and their use. You are instructed to become familiar with the use and limitations of this compact tire.

Read these instructions.

Keep the compact tire inflated to 60 psi.

Do not drive over 50 mph should you have to use this spare.

Drive only as far as the nearest NDOR shop or local service station to have your standard tire repaired and remounted.

Highway Fleet Manager

Number 3.05 January 1, 2011

Subject: Rims on Heavy Duty Trucks

The Department has experienced some rims breaking on both the B25 and the B24 GVWR dump trucks. Lugs not being tightened on a regular interval contribute to this. It is important that these rims and lugs be checked regularly to avoid an accident from broken rims. Lugs shall be checked and torqued according to manufacturer's requirements at the following intervals to assure a safe and dependable driving truck.

1. Torque properly to manufacturer's specification in operator's manual when installing a wheel on the truck and then 50-100 miles later.
2. At the time preventive maintenance is performed on the truck which is every 150 hours, or once a year.
3. After each snowplowing operation where the wing and one way have been used.
4. At the time the plows are mounted for winter operations and again when the plow has been removed.

Another concern is the use of wheels from the rear of tandems, that have a lesser tire rating, on the front axle of a truck that requires a higher rating. The rims have a different rating in most cases and attention should be given to using the proper or higher rim rating on the front with the higher tire rating. The practice of using tires from the tandems on the front must be scrutinized very closely and used only in an emergency (flat tire) and the correct tire be returned to the front as soon as the truck returns to the yard.

The spare tire purchased for these trucks is of the higher rim and tire rating and should be reserved for use on the front axle.

Highway Fleet Manager

Number 3.06 January 1, 2011

Subject: Foam Filled Mower Tires

If a District is unable to fill with foam locally, send the rim with tire installed, if applicable, to Operations via the supply truck or you may deliver the rim/tire to Lincoln along with a DR Form 124 (Shop Work Order). Operations will contact the vendor to have tires mounted on the rim sent in and refilled with foam and then return to the requesting District via the supply truck. The expected turn-around time will be about 5-7 days.

The new tire installed on your rim will be a light duty truck tire.

This process may be done locally if the service is available.

Highway Fleet Manager

Number 4.01 January 1, 2011

Subject: Lugging of Engines

Lugging of the engine occurs when the transmission is not shifted to a gear low enough to allow the engine to turn efficient revolutions per minute (RPM). This can cause overheating and excessive mechanical stresses which can damage engines. This type of damage is not directly apparent but is a major cause of premature engine failures. Each engine has an RPM where it develops the maximum torque or pulling power. For the average truck engine, this is about 70 percent of the engine's maximum RPM. On truck engines, the torque curve has a sharp hump for maximum torque which drops off rapidly as the engine RPM decreases or increases. In tractor engines, the torque curve is flatter and shows that the engine is efficient over a wider range of engine RPM. Always refer to the Original Equipment Manufacturer (OEM) manual for proper procedures and operation guidelines.

Operators of equipment that is equipped with an engine RPM indicator (tachometer) have a visual guide of shifting to lower gears; however, in those trucks not having a RPM indicator, the operator must depend on the sound and feel of the engine to indicate when a shift to a lower gear should be made.

*Idling of engines – See Section 4.02.

Highway Fleet Manager

Number 4.02 January 1, 2011

Subject: Idling of Engines

It shall be the Department's policy that an engine shall not idle more than three minutes on any automobile, pickup, truck, or other similar type of equipment. This policy is especially important at this time due to high fuel prices and the consideration of engine wear and damage caused by excessive idling. If an engine must idle for more than three minutes, this unit must be identified to Fleet Management or the District Mechanic for justification to idle longer. If approved, special preventive maintenance must be performed on this unit. It shall be the responsibility of the operator to make sure this vehicle is serviced according to the special preventive maintenance guidelines for that unit. The District Mechanics/Fleet Manager will establish these guidelines based on the time required for idling.

Highway Fleet Manager

Number 4.03 January 1, 2011

Subject: Emergency Release Cable Mechanism

Most fuel metering systems for controlling injectors have a common injector control tube mounted alongside a bank of injectors for controlling the injectors in unison. Should one of the injector racks become frozen, the common control tube becomes immobilized, holding the other racks in the same position. If the rack is frozen in a full throttle position, then all of the injectors will feed maximum fuel to the engine. The end result is over-speeding and destruction of the engine. It is not impossible that the flywheel may disintegrate with disastrous results

NOTE: These have been most commonly found on the Detroit brand engines.

Highway Fleet Manager

Number 4.04 January 1, 2011

Subject: Coolants and Supplemental Coolant Additives

Purpose: To establish procedures for testing to assure vehicle coolant has the proper balance and freeze point.

In a study completed by Fleet Management concerning our anti-freeze usage, anti-freeze alone cannot do the job without additives in heavy duty equipment. Along with anti-corrosive additives we will also need to add supplemental coolant additives.

The purpose of these Supplemental Coolant Additives (SCA) is to prohibit liner pitting by forming a protective microscopic film on the coolant side of the liner and throughout the whole coolant system. Ferric oxide (rust) which is soft is transformed into a very hard film. This film resists damage from implosions of air bubbles.

SCA's can be added to the system through the help of a coolant filter, but you cannot always depend on the proper amount of additive being at the proper ratio. Testing is necessary to keep your coolant system in balance. Test kits are available from numerous manufacturers and are varied in their composition and methods of testing.

Heavy Duty Coolant:

Too much SCA will gel and cause "green goo" corrosion or solder bloom. All OEM's recommend testing and balancing and production of a heavy duty coolant which is made up of low silicate anti-freeze, quality water, and SCA's in proper proportion. This is to be mixed outside of the unit, test for the freeze point and units of SCA's protection. Once the coolant meets all the requirements, it becomes a heavy duty coolant and can be used safely.

The correct ratio of virgin coolant and water should be 50/50. This will give you a -34 degrees Fahrenheit freeze point. When the proper quantity of supplemental coolant additive is added, the finished product is considered heavy duty coolant.

Anti-freeze freeze point testing is to be done with a refractometer which is a very accurate and reliable instrument when kept clean and used properly.

The procedure to use in taking a reading of the coolant in an engine is to take a sample from the overflow tank or radiator. Be careful when opening a cap, because of buildup of pressure even if the engine is cool.

1. In taking your freeze point reading, be familiar with the refractometer and know how to read the graphs.
2. At that time take the nitratic test with test strips and compare colors to determine the status of the coolant. If the strips show an imbalance, take corrective measures to bring the coolants to the proper readings.

If the coolant has not been changed within the last two years, dump the coolant in used anti-freeze barrels for recycling at the next preventive maintenance scheduled after the two years has lapsed. If reclaimed anti-freeze is not used, mix fresh heavy duty coolant according to coolant capacity of the vehicle. Add one unit of SCA per gallon of coolant. Before you do this, it is necessary to flush and clean the coolant system. Follow the manufacturer's recommended procedure and location of drain plug on engines for draining fluid from the vehicles.

It is recommended to test the coolant at every service interval and if virgin anti-freeze is used, add SCA's as required either by bulk or a 4 unit maintenance water filter.

When coolant is lost through hose breakage, water pump leakage, overheating, etc… it is necessary to return the status of coolant to the original specifications.

If the freeze point reading is lower than -34 degrees Fahrenheit, which is ideal, then drain some coolant and add water to raise the freeze point. **IMPORTANT:** Any reading below the -34 degrees Fahrenheit is actually inhibiting to effective coolant and could cause heating problems.

Supplemental Coolant Additives for All Wet Sleeve Diesel Engines:

This test must be performed in accordance with the instructions furnished in the test kit on testing materials every time the engine is serviced. Results on the test will determine what procedure should be followed to bring the coolant into compliance.

1. If SCA test low, the maintenance filter should be changed and enough additives added to bring coolant up to specification.
2. If SCA test high, the maintenance filter will not be changed at this time. Test again at the next preventive maintenance schedule and if it is found to be within tolerance, then just replace the coolant filter.
3. If there is no maintenance coolant filter on the unit, then balance will be maintained with additive only.
4. Additives will normally deplete between scheduled procedures, so follow instruction in number 3 above if test is too high.
5. When testing for freeze point of coolant, it is important that the refractometer is clean and free of all contaminates from previous testing. Always rinse tester after and before using.
6. Always use low silicate anti-freeze. Anti-freeze from Operations has been tested to be low silicate.

It is very important to know the coolant capacity of the unit in question to maintain proper additive ratio. All samples shall be kept as clean as possible for accurate testing.

Highway Fleet Manager

Number 4.05 January 1, 2011

Subject: Procedures for Reclaiming Anti-Freeze

Purpose:

Procedure on reclaiming anti-freeze and producing a product that is premixed to a freeze point of -34 degrees Fahrenheit with long-life inhibitors and additives added.

The Department had been notified that as of February 23, 1994 anti-freeze could no longer be dumped down sewer systems or on the open ground. To accommodate this mandate, you are instructed to capture this fluid in clean 55 gallon drums (with removable lid) for recycling. Collection of anti-freeze from heavy equipment is a very difficult situation; however, it is recommended that shops use a larger basin (drain pan). Every effort must be made to keep the used anti-freeze as clean as possible and free of dirt and oils. Cleanliness extends the life of the filters in the recycling unit thereby reducing the cost to recycle.

In the collection of used anti-freeze all maintenance facilities will requisition 55 gallon drums, Stock #12-00580, from Operations as deemed necessary. Replacement lids and gaskets will also be stocked by Operations. These drums will be used to store waste anti-freeze. Maintenance facility personnel shall be responsible for marking the contents of the barrel as "used anti-freeze". Decal VE14 will be available from Operations with the words "Used Anti-Freeze Only" printed on a 12 x 6 decal.

When the drums are full, they are to labeled using decal VE47, and then sent to Fleet Management in Lincoln for reclaiming. Labels are available thru Operations and can be viewed on dorimage1 by using the following link \\DORIMAGE1\Traffic\SIGN SHOP\DECAL BOOK\Decal Book.pdf. Maintenance facility personnel **WILL FILL OUT** the required information lines on the label as needed. DR Form 318 (Miscellaneous Shipping Document) shall also be filled out for this purpose. Personnel are also to make sure the drums are properly sealed before putting them on the supply truck for shipment. If the truck does not come to your area, it will be necessary to transport the drums to the nearest pickup point.

The supply truck will deliver the drums to Fleet Management for storage in the bulk tank. The drums will then be steam cleaned and made ready for use to store the reclaimed anti-freeze. The drums will be re-labeled with "Reclaimed Heavy Duty Long Life Anti-Freeze". Reclaimed anti-freeze is then returned to the maintenance facility for use.

Operations **WILL NOT** accept any used anti-freeze in any other type of drum (ie. paint, oil, etc…). Operations will return any contaminated drum of used anti-freeze and it shall be that District's responsibility to dispose of it as hazardous waste.

Highway Fleet Manager

Number 5.01 January 1, 2011

Subject: Engine and Drive Train Repair

It is the responsibility of the District Mechanic to make certain that the instructions herein are followed while attaining the necessary service consistent with a reasonable cost.

This bulletin applies to all vehicles and equipment.

It will be the responsibility of the District to overhaul or repair all vehicles and equipment **in the District**, or to purchase a rebuilt or new assembly.

Industrial and special engines should be repaired in the field if the parts, tools, and service are available. If not, they may be removed from the vehicle and replaced with rebuilt engines.

Highway Fleet Manager

Number 5.02 January 1, 2011

Subject: Towing of Vehicles

NOTE: Whenever possible have the downed vehicle hauled.

Unnecessary transmission damage has been associated with vehicles which have been towed.

Whenever a vehicle is to be towed with the driving axles on the ground one of the following steps shall be adhered to. Either remove the axle shafts on the driving axles and suitably seal the ends of the hubs and axle housing to retain lubricant and exclude contaminants, or disconnect the drive shaft to the driving axle or the forward tandem axle on trucks.

Highway Fleet Manager

Number 5.03 January 1, 2011

Subject: Transmission Clutch Brake Usage

The clutch pedal is to be depressed completely only when the truck is not in motion to stop the transmission in order to place the transmission in gear.

The clutch pedal will **NOT** be depressed completely when the truck is in motion, to prevent damage to transmission brake when transmission is shifted.

Daily inspection of the clutch adjustment will be done during the vehicle inspection, DR Form 116 (Vehicle Inspection (Checklist) Report). A minimum of one inch free play pedal travel will be acquired. For proper adjustment, see operator's manual.

Highway Fleet Manager

Number 5.04 January 1, 2011

Subject: Towing with Overdrive Transmissions

All vehicles equipped with an automatic transmission will be shifted out of overdrive or to a lower gear when driving in hilly areas, when heavily loaded, when towing or when towing into heavy winds. This will prevent excessive transmission wear and/or overheating and will provide better engine braking.

Some vehicles are equipped with a “TOW/HAUL” button. Press this or shift to a lower gear.

Vehicles used for towing will have a visible decal from the operator’s seat that states “**DO NOT TOW IN OVERDRIVE**”.

Highway Fleet Manager

Number 6.01 January 1, 2011

Subject: Air Brake Glad-Hand Covers

Glad-hand covers will be installed on glad-hands on both trucks and trailers when not in use to prevent dirt from entering the system and plugging the air lines.

Highway Fleet Manager

Number 6.02 January 1, 2011

Subject: Brake Fluids

All conventional hydraulic brake fluids have the characteristic of being able to readily absorb moisture. Because of this hygroscopic ability, special efforts should be made to protect our brake fluids from contamination.

It has been determined that with a 2 percent moisture content in brake fluid, the boiling point can drop 150 degrees Fahrenheit or more. The higher the initial boiling point, the greater the drop in boiling point as a result of the absorption of moisture. Vaporization of fluid in the high temperature wheel cylinder area can result in complete failure of the brake system.

Because of the above, it can readily be seen that hydraulic brake fluids used in service work must be stored in a clean, tightly capped or sealed container when not in use. Keep caps or closures tight and in place on all brake fluid containers between usage to safeguard against the entry of moisture from the air as well as contamination from other foreign materials. In climates where humidity prevails, moisture builds up on brake fluids exposed to the atmosphere at a particularly rapid rate.

Please check your brake fluid dispensing and storage procedures to make certain containers that have been opened have tight fitting covers and these containers are stored in a clean dry place.

DEFINITION:

In the United States brake fluid comes in a number of forms standardized by the United States Department of Transportation (DOT). DOT2 is essentially castor oil; DOT3, DOT4 and DOT5.1 are composed of various mineral oils, glycol esters and ethers; some are synthetic oil based, and DOT 5 is silicone-based. As of 2006, most cars produced in the United States use DOT 3. Usage is as follows:

DOT 4 – 100% Synthetic Brake Fluid
DOT 5.1 – Non-Silicone Synthetic Brake Fluid
DOT 5.1 – Non-Silicone Synthetic Brake Fluid (Extra Long-Life Version)

Product Description:

DOT 4 – 100% Synthetic Brake Fluid

- 100% synthetic fluid for hydraulically actuated-brake and clutch systems.
- DOT 4 fluid is suitable for up-grade from conventional DOT 3 or DOT 4.
- Fluidity specially designed for anti-locking brake systems (ABS).
- Fully compatible and miscible with conventional brake fluids.
- This version is clear and pale blue in color to distinguish it from conventional fluids which are clear to amber.

- No special procedures are required when bleeding and replacing conventional system fluids with *SynLube™ Stop-4-Life™* brake fluids.
- Typical service life 48 months for DOT 4 Formula.

DOT 5.1 – Non-Silicone Synthetic Brake Fluid

- LONG LIFE 100% synthetic fluid for hydraulically actuated-brake and clutch systems. (Based on Polyglycol chemistry)
- DOT 5.1 Non-silicone base suitable for up-grade from DOT 3 or DOT 4.
- Fluidity specially designed for anti-locking brake systems (ABS).
- Fully compatible and miscible with conventional brake fluids.
- This version is crystal clear and has extra solvency which has the ability to clean and put into suspension gum and sludge deposits formed by conventional system fluids with SynLube™ Stop-4-Life™ Brake Fluids.
- Typical service life 60 months for DOT 5.1 standard formula.

DOT 5.1 – Long-Life Non-Silicone Synthetic Brake Fluid

- Extra Long Life 100% synthetic fluid for hydraulically actuated-brake and clutch systems. (Based on Polyglycol chemistry)
- DOT 5.1 Non-Silicone Base suitable for up-grade from DOT 3 or DOT 4.
- Fluidity specially designed for anti-locking brake systems (ABS).
- Fully compatible and miscible with conventional brake fluids.
- This version has extra anti corrosion additives that protect ferrous white and yellow metal brake system components.
- This fluid is clear and golden yellow in color.
- No special procedures are required when bleeding and replacing conventional system fluids with SynLube™ Stop-4Life™ Brake fluids.
- Typical service life up to 10 years for DOT 5.1 Extra Long Life Formula.

Key Benefits:

- Long Life Formula has high wet boiling point (185° C/365° F), which is superior to DOT 4 and DOT 3 fluids, this enables use of this product for longer interval without drain.
- Specially designed to anti-locking brake system (ABS): its viscosity (820 CentiPoise at -40°c/-40°F) is lower than conventional DOT 4 and DOT 3 brake fluids. This allows easier cold fluid circulation in micro-valves and servo pumps of anti-locking systems.
- Chemically neutral with seals used in braking systems.
- Anti –corrosion.
- Anti-foam.

Specifications and Technical Ratings:

- Exceeds all following standards:
- FMVSS 116 DOR 5.1 (NON SILICONE BASE)
- DOT 4
- DOT 3
- SAE J 1703
- ISO 4925
- BOSCH ABS II

Minimum Operating Temperature: - 65°F (-54°C)
Maximum Safe Operating Temperature: +365°F (+185°C)

Highway Fleet Manager

Number 6.03 January 1, 2011

Subject: Trailer Brakes

The trailer brakes will be checked for proper operation before the trailer is to be used. This check will be done during the vehicle inspection, DR Form 116 (Vehicle Inspection (Checklist) Report).

There are three different kinds of trailer brakes that the State uses: air brakes, surge brakes, and electric brakes.

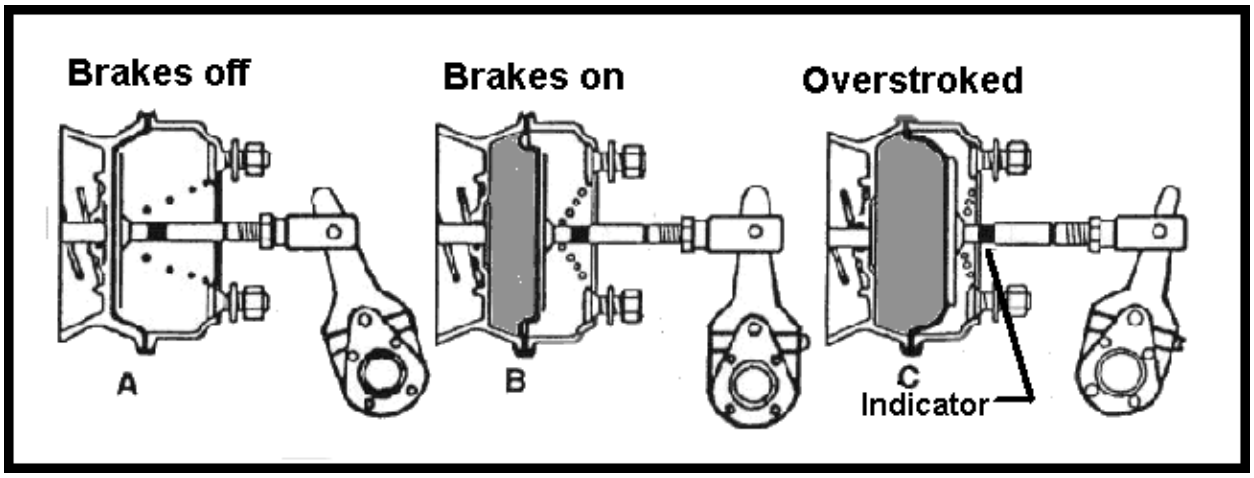
Air Brakes:

The air brakes are operated by air being supplied by the truck that the trailer is being towed by. The park brakes on the trailer are released when the trailer valve is applied (pushed in) and set when pulled on in the cab of the truck. The release of the park brakes should occur in a matter of seconds. If not, there could possibly be some contamination in the line blocking the flow of air. The service brakes should apply at the same time as the brakes on the truck when the brake pedal is depressed in the cab of the truck.

Some trailers have automatic slack adjusters and others have manual slack adjusters. The automatic adjusters sometimes need to be checked to make sure that they are adjusting properly. The manual adjusters need to be adjusted when the brakes become worn and out of adjustment.

Adjusting Air Brakes:

Air brakes should be adjusted in the shop with the wheels off the ground according to the manufacturer's instructions. See illustration below for proper adjustment.



See how far the adjusting arm will move with air pressure (80 psi or above) or by manually turning the arm with a pry bar. It should not go beyond the 90 degree point illustrated in Figure B. You may or may not have the visual over-stroke indicator on the pushrod that is

shown here. At the very least, adjust the slack until the stroke does not go beyond the 90 degree mark. Ideally you should bring the free play in the arm down to 3/8 inch and the adjusting arms should all be at the same angle with the same pressure applied. Do not over tighten. Bang the brake drum with a hammer with the pressure off. The drum should ring hollow if the shoes are clear of the drum. A dull thud means you still have lining-drum contact and you should back off the adjustment. When you bring the free play down to about 3/8 inch, the stroke should be well short of the 90 degree point.

Surge Brakes:

Trailer surge brakes consist of a hydraulic coupler or actuator, hydraulic brake tubing, backing plate assemblies or foundation brakes, and brake drum and hub assemblies. A more recently available alternative to drum and shoe systems are the marine grade disc brake assemblies.

Surge braking is accomplished by replacing a trailer's standard tongue coupler with an actuator and adding hydraulic brake assemblies. The "surge" or "push" of the trailer toward the tow vehicle during deceleration automatically synchronizes these trailer brakes with the tow vehicles brakes. As the trailer pushes against the vehicle, the actuator telescopes together and applies force to its master cylinder, supplying hydraulic pressure to the trailer brakes.

Surge actuators of this type provide a service life of approximately five years with proper installation, usage, and maintenance. However, a well cared for actuator can often exceed this estimate. To get the most benefit from your surge actuator, follow the instructions given in your manual and use common sense in caring for your entire trailer brake system.

Electric Brakes:

Electric brake systems consist of components mounted both on the tow vehicle and the trailer. For these systems to operate properly, the trailer wiring end plug on the trailer must match the wiring pattern of the mating plug on the tow vehicle. The type of plugs that the State uses on electric brake trailers are 7 pin-pole connectors. **An electronic brake controller will be properly mounted at the dash area of the designated tow vehicle.** The brake controller allows for adjustment of braking strength and also offers a manual brake control for emergency braking. Some controllers are available with a pre-wired quick connect plug for easy installation on select late model vehicles that have a factory tow prep package. Be certain to follow the installation instructions and to use the proper gauge wire and circuit breaker size when installing a brake controller on the tow vehicle.

The trailer side of an electric brake system consists of left and right electric brake assemblies, drum and hub assemblies, emergency breakaway kit (battery with box, breakaway switch) and end plug connector.

Brake Controllers:

An electric trailer brake controller is a device that supplies power from a vehicle to a trailer's electric brakes. There are two types of electric brake controllers. Time Delay Activated (solid state) and Inertia Activated (pendulum style). Although the controllers' methods are different, both types of controllers are very similar. Both allow the user to adjust the output or braking

power. Both have a pressure sensitive manual override trigger that can be used to apply the trailer brakes independent of the vehicle brakes. Both have the same wiring configuration.

Time Delay Activated:

Solid State controllers are "enabled" by the brake pedal switch and apply a gradual voltage to the trailer's brakes using a time delay circuit.

Advantages: Time delayed controllers are inexpensive, have a low profile, and can be mounted on any angle (very user friendly).

Disadvantages: When towing (in most applications) with hazard flashers on, the digital display will flash with the hazard flashers. If the brake control is set aggressively, pulsing may be felt in the trailer brakes. However the pulse preventer will isolate the brake control from the flashers and eliminate the flash/pulse situation.

Inertia Activated – Proportional:

Pendulum Style controllers are "enabled" by the brake pedal switch and "activated" by a pendulum circuit that senses the vehicle's stopping motion and applies a proportional voltage to the trailer's brakes. When properly adjusted the trailer will decelerate at the same speed as the tow vehicle. This increases braking efficiency and reduces brake wear.

Advantages: Pendulum style controllers operate well under adverse braking conditions and have a smooth braking action.

Disadvantages: Most inertia-activated controllers are bulky, more expensive, and must be mounted level and calibrated.

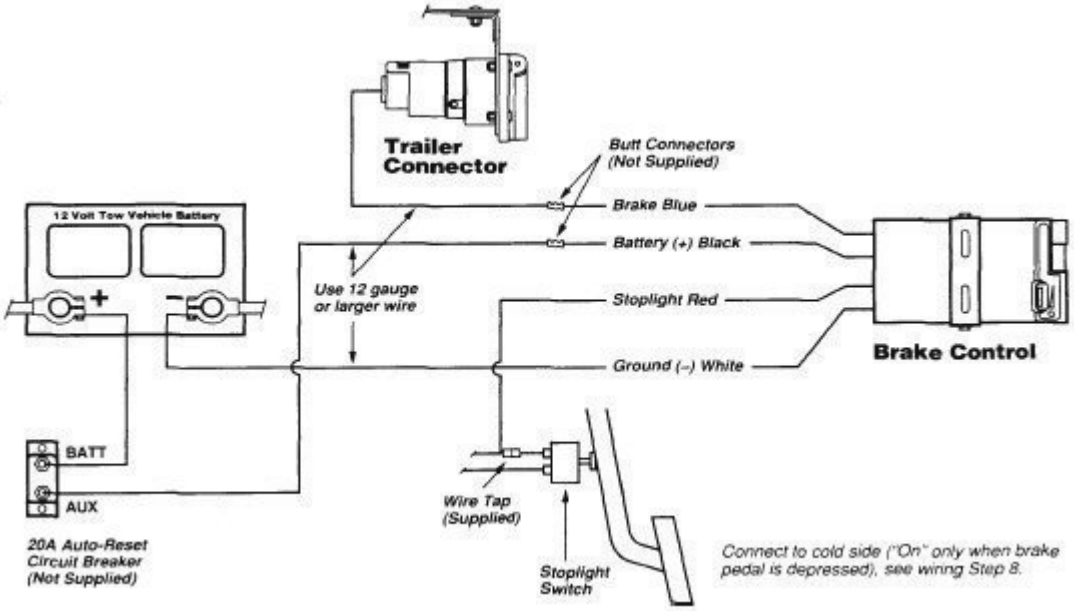
Wiring Configuration:

Hitch supplied brake controllers require 4 wire connections.

1. **Trailer Feed (usually blue)** - This is the wire that supplies brake power for the controller to the 7-way trailer connector at the back of the vehicle. Some vehicles with factory tow packages already have this wire ran from under the dash to the rear of the vehicle. Otherwise, the wire is run along the underside of the vehicle and through the firewall to the desired brake control mounting location. To get through the firewall, sometimes a hole must be drilled. However, grommets or pre-existing holes are often available.
2. **Ground (usually white)** - This wire is connected from the brake controller to any reliable ground source.
3. **Brake Switch (usually red)** - This can be found near the top of the brake pedal. There are wires extending from the switch and using a test light, the wire that has power when the brake pedal is pressed down can be found. This wire is tapped into.
4. **Battery Power (usually black)** - This is the connection that supplies power to the brake controller. Some vehicles with factory tow packages already have this wire ran from under the dash to the battery with some kind of circuit protection. Otherwise, a wire

must be run through the firewall and connected directly to the battery with an in line circuit breaker.

Generic Wiring Diagram



Recently vehicle manufacturers have started installing an OEM (Original Equipment Manufacturer) harnesses under the dash. Adapters are made that will connect to the brake controller and plug into the harness. If the tow vehicle is equipped with a tow package and has a factory installed 7-way trailer connector then a brake control adapter may be all that is needed.

Highway Fleet Manager

Number 6.04 January 1, 2011

Subject: Trailer Hitches

Trailer hitches will consist of a coupler to receive a 2 inch ball or a lunette ring for a pintle hitch. The size of the hitch will meet or exceed the weight limits of the trailer being towed.

Highway Fleet Manager

Number 7.01 May 1, 2011

Subject: Equipment Care and Cleaning

It the responsibility of all NDOR operators to properly care for equipment.

Salt or calcium mixtures readily absorb moisture when exposed to the air. This salt or calcium laden moisture rapidly corrodes and rusts most types of exposed metal. It shall, therefore, be a requirement that:

1. Sand and salt or calcium mixtures will not be stored or remain in the dump box or spreader hopper any time the equipment is not in use. The only exception will be the overnight storing in preparation for a predicted storm.
2. All trucks, plows, sanders, loaders, motor graders, pickups, cars, trailers, and any other equipment used during a snowstorm with metal surfaces in contact with the spreading mixture shall be thoroughly flushed and washed with water **after each storm** or whenever the temperature permits. At this time all greaseable spreader bearings and box hinges will be greased, and chains will be lubed.
3. At the end of the operating season, all rust must be removed from the spreader by either sandblasting or with sandpaper. After removing rust, all exposed metal should immediately be primed and painted. A rust inhibitor or a neutralizer may be used. If the spreader is stainless steel, painting is not required. The augers are not stainless steel, and they will need to be cared for.

Highway Fleet Manager

Number 7.02 January 1, 2011

Subject: Operation of Dump Body During Snow Removal Operations

The dump body shall not be raised except to shift the load and then returned to the down position.

Check the height limit switch or cable system annually before snow removal season.

Highway Fleet Manager

Number 7.03 May 1, 2011

Subject: Mounting of Carbide-Insert Snowplow Blades

Double snowplow blades will be mounted with the mild steel cutting edge in front of the carbide edge to protect the carbide from frontal impact. This of course requires a double-hole, punched blade. When installed, the mild steel edge will be about 3/8 inch too long and the carbide will not touch the plowing surface. The leading blade will wear down fast until the carbide touches the surface at which time the wearing of both blades will begin. The cutting edge should be about 10 to 15 degrees back from vertical. (See attached diagram 7.03A.) It is the responsibility of the operator to check the wear of the blades prior to and during plowing operation.

Important items are the bolts to be used with blades. The style of bolt to use is dictated by the hole type in the steel covered blade. If it is square, use a carriage bolt. If it is square and counter sunk, use a plow bolt. In all cases a Grade 8 bolt and locking nut is to be used and a Grade 8 washer is desired.

Carbide and steel blades are stocked by the Operations Division in various sizes.

Curb protectors for snowplows are in stock.

45-04850 - Plow Guard	5/8” X 6” X 15”, Carbide Right and Left Reversible
45-04855 - Plow Guard	7/8” X 6” X 21”, with Carbide Inserts, Center

The plow guards are to be mounted on the plow last over the carbide and the mild steel cutting edge. Longer bolts will be needed to install them. (See attached diagram 7.03B and 7.03C.)

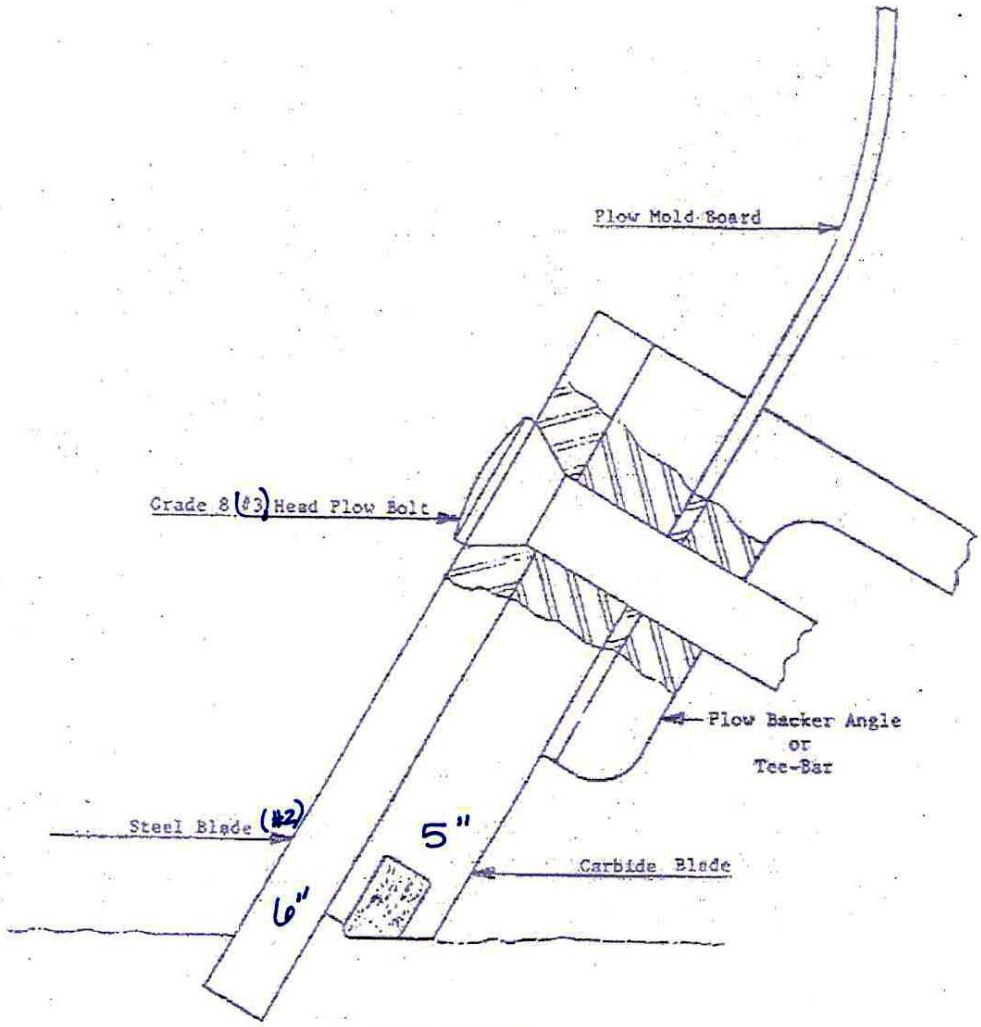
Plow markers for snowplows are in stock.

45-04450 – Plow Marker	3/4” X 28” Fluorescent Orange w/mt. hardware

Highway Fleet Manager

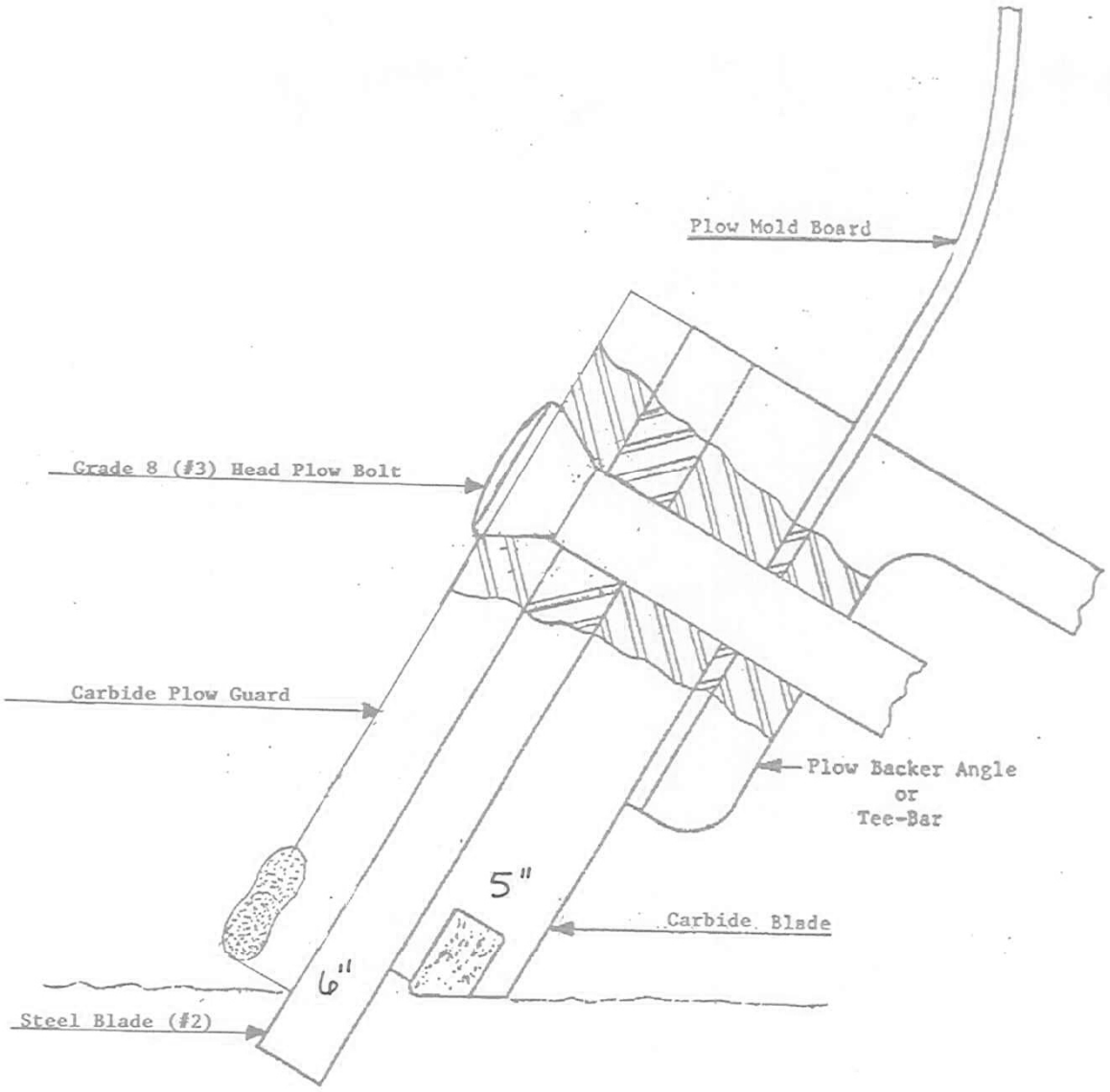
Attachment

7.03A – Double Blading
7.03B – Carbide Plow Guard
7.03C- Reversible Carbide Plow Guard



DOUBLE BLADING

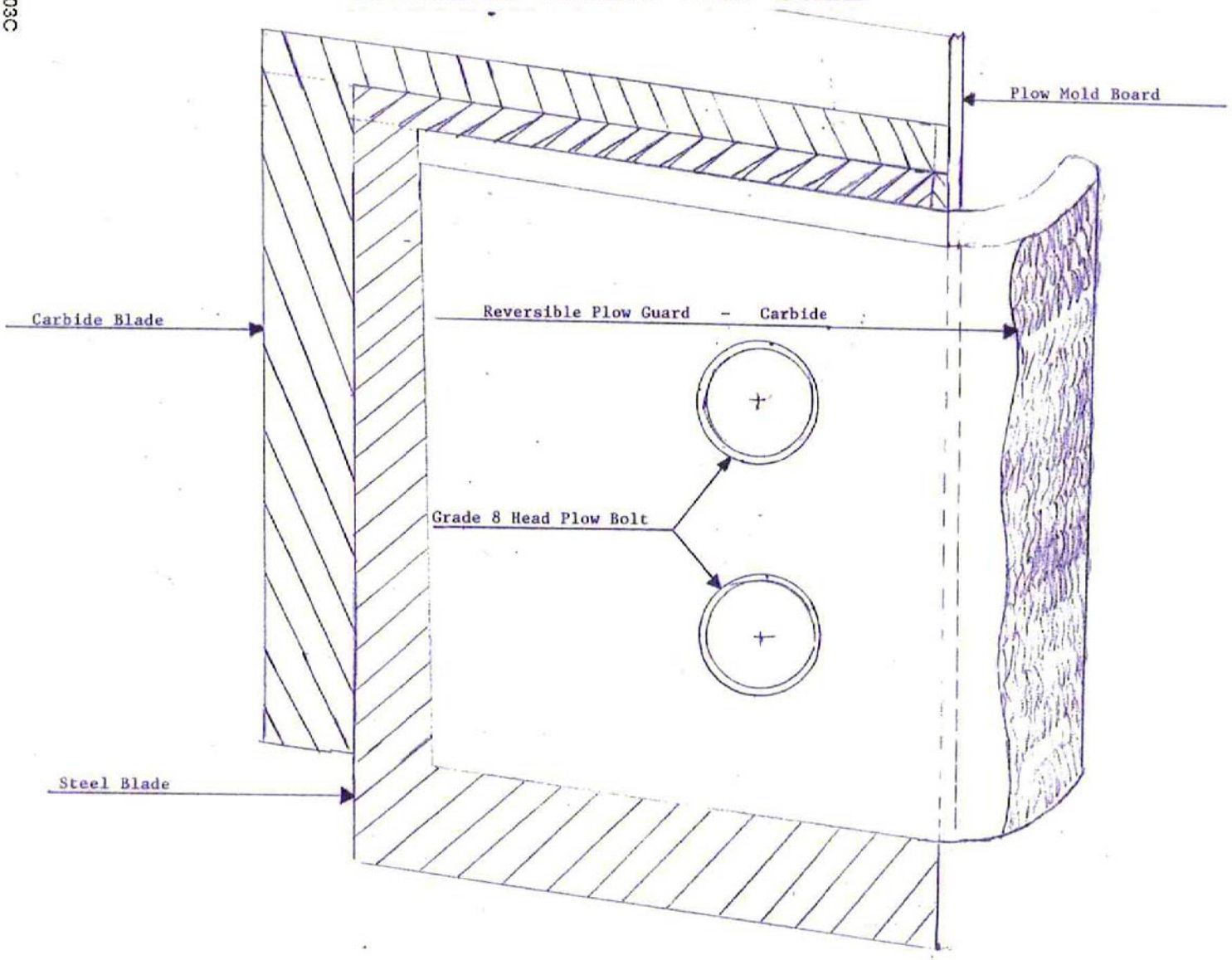
1. Double blading will prevent steel erosion in front of the inserts and increase blade life by 30 %.
2. The steel blade will take face-wear and absorb shock loading. Steel blade will wear to the carbide insert level and then last the life of the blade.
3. Re-enforce the plow mold board.



CARBIDE PLOW GUARD

7.03C

REVERSIBLE CARBIDE PLOW GUARD



Number 7.04 September 1, 2011

Subject: Reflective Tape and Strobe Lights on Equipment, Striping, Maintenance and Construction Vehicles

Use of strobe lights:

Blue – Winter operation snow removal equipment only (State Statute 60-6,230).

White – Poor visibility and emergency situations for maintenance operations only.

Amber – Year round use for all maintenance and construction operations.

All strobe lights need to be turned off when vehicles are traveling at highway speeds and are **NOT** in a maintenance or construction zone or operation.

Arrow sticks are NOT an approved traffic control device. They are not authorized for use or purchase.

Strobe lights shall not be incorporated into the vehicle's head light or tail light assemblies. All lighting must be approved and acquired through Fleet Management in the Operations Division.

In an effort to make our equipment more visible during snow removal operations, the Department is installing the following safety components on this equipment.

1. A Code 3 strobe light system was installed on all our snow removal trucks starting in 1997. This is the system where 2 amber strobe lights are installed on the rear of the truck box, and two blue strobes on the top front of the box. There are three 360 degree strobes on the front of the cab protector. There is a blue on the left, amber on the right, and a white in the center. The Code 3 light has a five year warranty. If the five years are up, throw the bulbs away. Then standard strobe light has a one year warranty.
2. Dump trucks will have 2 inch high intensity red and white reflective tape (Diamond Grade) installed on the tailgate in a pattern outlining the outside raised edge of the tail gate and across the top and middle. No tape is installed on the bottom since the sander covers up this area. Either a 2 foot by 4 foot "SNOWPLOW FLYING SAND" sign (W25-12) will be in place on the tailgate or a 48" x 36" (FW41-10A48) or 54" x 30" (FW41-10A54) "LIQUID DE-ICING STAY CLEAR" sign will be in place on the tailgate. Wind deflectors hanging from the top of the tailgate may be used to keep the tape and the sign clear of snow and dirt. Wind deflectors are built by Fleet Shop.
3. Any reflective tape added to these trucks will follow the above guidelines.
4. Motorgraders will have three 360 degree strobes on top of the cab, two ambers, and one white. One amber at front and center, and one left rear corner of the cab. They will have blue strobes on both rear corners of the cab, and will be visible from both sides and rear of the motor grader.

5. Motorgraders will have 2-inch high intensity reflective tape affixed to the rear side of the cab, bordering the outer and upper part of the cab, and on the rear engine cover if room permits.
6. Loaders need to have 360 degrees of visibility with strobe lights installed.
7. Reflective tape is stocked by Operations.
8. All striping vehicles will have 2 amber strobes on the top of the cab. Four amber rectangle strobes on the rear top and bottom corners of the dog house. A 360 low intensity amber strobe on each gun carriage. Headlight flasher for two lane roads. Two 360-amber strobes on all other vehicles in the train. The follow vehicle on the shoulder will have a 3-line message panel. The warning vehicle will have two high intensity amber flashing lights mounted on the rear. The attenuator vehicle will have 2 high intensity amber flashing lights mounted on the rear. All stripers may also be equipped with a wizard work zone alert radio that broadcasts on CB channels.
9. Effective September 1, 2011, all maintenance and construction pickups and carryalls shall have a mounted min-bar approved by Fleet Management on an approved mounting device. District Engineers, District Operations and Maintenance Managers, District Construction Engineers, and District Mechanics vehicles should have at a minimum a magnetic mount approved mini-bar available when in work zones. Fleet Management will provide guidelines for the Divisions. All mounting devices will be returned to Fleet Management upon surplus of the vehicle for reuse.

Highway Fleet Manager

Attachment

7.04A – Nebraska State Statute Section 60-6,230

60-6,230. Lights; rotating or flashing; colored lights; when permitted.

1. Except as provided in Sections 60-6,231 to 60-6,233 and Subsections (4) and (5) of this section, no person shall operate any motor vehicle or any equipment of any description on any highway in this state with any rotating or flashing light.

2. Except for stop lights and directional signals, which may be red, yellow, or amber, no person shall display any color of light other than red on the rear of any motor vehicle or any equipment of any kind on any highway within this state.

3. Amber rotating or flashing lights shall be displayed on vehicles of the Military Department for purpose of convoy control when on any state emergency mission.

4. A single flashing white light may be displayed on the roof of school transportation vehicles during extremely adverse weather conditions.

5. Blue and amber rotating or flashing lights may be displayed on vehicles used for the movement of snow when operated by the Department of Roads or any local authority.

Source: Laws 1969, c. 327, § 2, p. 1170; C.S.Supp., 1972, § 39-788.01; Laws 1979, LB 127, § 1; R.S. 1943, (1988), § 39-6,148; Laws 1993, LB 370, § 326; Laws 1995, LB 59, § 6; Laws 2008, LB196, § 3.

Annotations

The use of hazard lights while driving is proscribed by the plain language of subsection (1) of this section. State v. Warriner, 267 Neb. 424, 675 N.W.2d 112(2004).

Number 7.05 May 1, 2011

Subject: Memorandum of Understanding NDOR/NSP

Attachment 7.05A is an example of the form used for over width dump trucks with snow blades. This needs to be filled out and placed in the dump truck every year. This permit is sent out by the Rail and Public Transportation Engineer.

For hauling over width equipment such as chip spreaders, contact the Motor Carrier Permits Manager in the Rail and Public Transportation Division to complete permit application on line.

Highway Fleet Manager

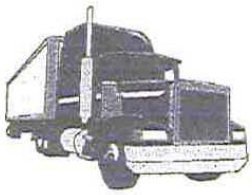
Attachment

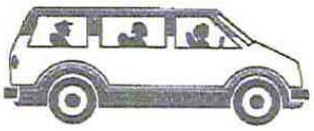
7.05A – Over Width Dump Trucks with Snow Blades

RAIL & PUBLIC

TRANSPORTATION DIVISION

FROM: Desk of Ellis Tompkins
Rail & Public Transportation Engineer





Date: September 28, 2009
To: Nebraska Law Enforcement Officers
Re: NDOR Dump Trucks with Blades

Special Permit:

Vehicle Make:_____ **Yr:**_____ **Plate:**_____**NE.**

Movement is allowed on all roadways within the State of Nebraska under the Department of Roads jurisdiction.

Movement is allowed from January 1, _____**to December 31,** _____.

Continuous travel allowed 24 hours a day, 7 days a week.

Any and all signage requirements are waived.

When blade is not in actual use, its width must be reduced to as close to legal as possible.

Ellis Tompkins, P.E.
Rail and Public Transportation Engineer

Number 8.01 January 1, 2011

Subject: Servicing Equipment and Daily Inspection

Numbered road equipment is a major investment by the Department of Roads. All employees have been delegated the responsibility to see that all equipment receives proper care and maintenance.

The District Mechanic is charged with the overall responsibility for ensuring appropriate servicing procedures for automotive and heavy road equipment with instruction below.

1. In a given area, it is the direct responsibility of the Maintenance Supervisor to assure that trucks and equipment used by their employees are properly serviced according to instructions given by the District Mechanic in reference to guidelines established by Fleet Management.
2. Servicing of cars, pickups, carryalls and special equipment permanently assigned shall be the responsibility of the operator, whether or not they actually service the equipment.
3. All supervisors will be held accountable for the servicing of all equipment in their area even though the operators are assigned the actual task.
4. All fluids and overall condition of the equipment will be checked daily prior to use.

NOTE: Any conflict between this Equipment Management Bulletin, the Maintenance Manual and NDOR Operating Instructions will be brought to the attention of Fleet Management.

Federal and State laws require inspection by the operator of any truck with a GVWR (Gross Vehicle Weight Rating) of 26,001 pounds. A daily walk around inspection is part of that law. DR Form 116 (Vehicle Inspection (Checklist) Report) shall be filled out by the vehicle operator. This procedure should assist supervisors in carrying out their responsibilities as stated above.

The operator must sign the form daily after each inspection which indicates he/she has physically inspected the vehicle and checked each item on the report that is applicable. The walk around inspection shall be done at the beginning of each shift.

If a problem arises during the daily inspection that will not allow that unit to pass, it must be brought to the attention his/her supervisor. The supervisor in turn will review the report and determine if the unit is safe to operate. If it is safe to operate, the supervisor will sign the report and indicate this in the appropriate box. If it is not safe, the supervisor will indicate this in the appropriate box and red line the unit until it has been repaired. The supervisor will schedule the unit for repair.

After the operator has all the necessary signatures, a copy will be given to the supervisor and the original will be left in the truck. The original left in the truck will be used for the operator to initial after he has drained the air tanks at the end of the work day and the operator to check the

next day to make sure the air tanks have been drained. (Refer to Equipment Management Bulletin 8.15 for draining of air tanks.) After this has been checked, the previous day's Vehicle Inspection (Checklist) Report can be destroyed; however, if the previous day's operator did not drain the tanks, this should be brought to the attention of the operator's supervisor. The copy for the supervisor must be retained for a period of three months. **NOTE:** This is the minimum requirement for retaining these reports however supervisors may choose to retain these reports for a longer period of time.

The report is required for trucks but can be used for other heavy equipment by marking the "NA" box if not applicable. The form has self explanatory instructions for completing the inspection and marking the report.

NOTE: DR Form 116 (Vehicle Inspection (Checklist) Report) is not available electronically. It must be obtained from Stock Control in Operations.

Highway Fleet Manager

Attachment - 8.01A – NDOR Vehicle Inspection (Checklist) Report – DR Form 116

Nebraska Department of Roads

Vehicle Inspection (Checklist) Report

Date of Inspection: *(Month, Day, Year)*	Headquarters: *(City)*
Equipment No.:	Driver's Name: *(Print)*

Instructions: **1.** Inspect each item. **2.** If item does not pertain, check NA *(Not Applicable)* column. **3.** If item is good, check G column. **4.** If item is bad, check B column. **5.** All defective *(bad)* items must be repaired before departing shop area.

Engine Compartment

	G	B	NA
Oil Level	☐	☐	☐
Coolant Level	☐	☐	☐
Power Steering Fluid	☐	☐	☐
Water Pump	☐	☐	☐
Alternator	☐	☐	☐
Air Compressor	☐	☐	☐
Any Leaks	☐	☐	☐

Engine Start

	G	B	NA
Clutch/Gearshift	☐	☐	☐
Air Buzzer Sounds	☐	☐	☐
Oil Pressure Builds	☐	☐	☐
Ammeter/Voltmeter	☐	☐	☐
Air Brake Check	☐	☐	☐
Steering Play	☐	☐	☐
Parking Brake	☐	☐	☐

	G	B	NA
Mirrors, Windshield	☐	☐	☐
Wipers	☐	☐	☐
Lighting Indicators	☐	☐	☐
Horn(s)	☐	☐	☐
Heater/Defroster	☐	☐	☐
Safety/Emergency Equip.	☐	☐	☐

Truck/Tractor

	G	B	NA
Front Suspension			
Spring	☐	☐	☐
Spring Mount	☐	☐	☐
Shock Absorber	☐	☐	☐
Front Wheel			
Rims	☐	☐	☐
Hub Oil Seal	☐	☐	☐
Tires	☐	☐	☐
Lug Nuts	☐	☐	☐
Front Brake			
Slack Adjuster	☐	☐	☐
Chamber	☐	☐	☐
Hoses	☐	☐	☐
Drum	☐	☐	☐
Driver/Fuel Area			
Door, Mirror	☐	☐	☐
Fuel Tank	☐	☐	☐
Leaks	☐	☐	☐
Rear Wheels			
Rims	☐	☐	☐
Tires	☐	☐	☐
Axle Seals	☐	☐	☐
Lug Nuts	☐	☐	☐
Spacers	☐	☐	☐
Rear Suspension			
Springs	☐	☐	☐
Spring Mounts	☐	☐	☐
Torsion, Shocks	☐	☐	☐
Rear Brakes			
Slack Adjuster	☐	☐	☐
Chamber	☐	☐	☐
Hoses	☐	☐	☐
Drum	☐	☐	☐

	G	B	NA
Front of Vehicle			
Lights	☐	☐	☐
Steering Box	☐	☐	☐
Steering Linkage	☐	☐	☐
Under Vehicle - Rear of Tractor			
Drive Shaft	☐	☐	☐
Exhaust System	☐	☐	☐
Frame	☐	☐	☐
Tractor/Towing Vehicle Only			
Air/Elec. Lines	☐	☐	☐
Catwalk	☐	☐	☐
Frame	☐	☐	☐
Coupling System			
Mounting Bolts	☐	☐	☐
Pintle Hook	☐	☐	☐
Safety Latch/ Cotter Key	☐	☐	☐
Safety Chain *(Secured)*	☐	☐	☐
Platform/Frame	☐	☐	☐
Release Arm	☐	☐	☐
Kingpin/Apron	☐	☐	☐
Sliding 5th Wheel			
Locking Pins	☐	☐	☐
Lights, Reflectors	☐	☐	☐
Splash Guards	☐	☐	☐
Rear of Vehicle			
Lights, Reflectors	☐	☐	☐
Signal/Brake Lights	☐	☐	☐
Splash Guards	☐	☐	☐

Trailer

	G	B	NA
Trailer Front			
Air/Elec. Connect.	☐	☐	☐
Header Board	☐	☐	☐
Lights/Reflectors	☐	☐	☐
Deck Lock	☐	☐	☐
Side of Trailer			
Landing Gear	☐	☐	☐
Lights/Reflectors	☐	☐	☐
Doors, Ties	☐	☐	☐
Frame	☐	☐	☐
Wheels			
Rims	☐	☐	☐
Tires	☐	☐	☐
Axle Seals	☐	☐	☐
Lug Nuts	☐	☐	☐
Spacers	☐	☐	☐
Suspension			
Springs	☐	☐	☐
Spring Mounts	☐	☐	☐
Brakes			
Slack Adjuster	☐	☐	☐
Chamber	☐	☐	☐
Hoses	☐	☐	☐
Drum	☐	☐	☐
Rear of Trailer			
Lights/Reflectors	☐	☐	☐
Doors, Ties	☐	☐	☐
Splash Guards	☐	☐	☐

NOTE: ***Drain air tanks after each day's operation.***
Initial Here: .....

Comments:

I certify this equipment was inspected in accordance with Section 2 of the Commercial Driving Licensing and NDOR Equipment Regulations.

☐ Condition of the above vehicle is satisfactory.

☐ Above defects corrected.
☐ Above defects need not be corrected for safe operation of vehicle.

Driver's Signature: .....

Supervisor's Signature: .....

DR Form 116, Aug 02/

VEHICLE INSPECTION MEMORY AIDE

FRONT

Headlights, All Signal,
Clearance Lights and Reflectors

Steering
- Steering Box
- Steering Linkage

Front Suspension
- Spring
- Spring Mount
- Shock Absorber

Front Wheel
- Rims
- Hub Oil Seal
- Tires
- Lug Nuts

Front Brake
- Slack Adjuster
- Chamber
- Hoses

Cab/Driver Area
- Clutch/Gearshift
- Temperature Gauge
- Oil Pressure Gauge
- Ammeter/Voltmeter
- Heater/Defroster
- Steering Play
- Lighting Indicators
- Horn(s)
- Safety/Emerg. Equipment
- Mirror, Windshield Wipers
- Door(s)

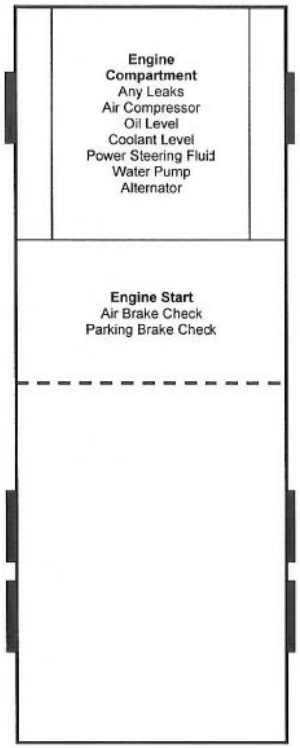
Fuel Tank Area
- Fuel Tank/Leaks

Rear Brakes
- Slack Adjuster
- Chamber
- Hoses

Rear Wheels
- Rims
- Tires
- Axle Seals
- Lug Nuts
- Spacers *(on some)*

Rear Suspension
- Springs/Torsion
- Spring Mounts
- Shocks

Trailer *(Attached)*
- Deck Lock
- Safety Chains
- Tongue Jack
- D-Ring *(Tie Downs)*



Straight Truck

Front Suspension
- Spring
- Spring Mount
- Shock Absorber

Front Wheel
- Rims
- Hub Oil Seal
- Tires
- Lug Nuts

Front Brake
- Slack Adjuster
- Chamber
- Hoses

Cab/Passenger Area
- Door
- Mirrors

Fuel Tank Area
- Fuel Tank/Leaks

Rear Brakes
- Slack Adjuster
- Chamber
- Hoses

Rear Wheels
- Rims
- Tires
- Axle Seals
- Lug Nuts
- Spacers *(on some)*

Rear Suspension
- Springs/Torsion
- Spring Mounts
- Shocks

Under Vehicle
- Drive Shaft
- Exhaust System
- Splash Guards

Towing Vehicle
- Air/Elec. Lines

Coupling System
- Mounting Bolts
- Pintle Hook
- Safety Chain *(Secured)*
- Safety Latch/Cotter Key
- Release Arm

VEHICLE INSPECTION MEMORY AIDE

FRONT OF VEHICLE

Headlights, All Signal and
Clearance Lights and Reflectors

Steering
- Steering Box
- Steering Linkage

Front Suspension
- Spring/Spring Mount
- Shock Absorber

Front Wheel
- Rims/Hub Oil Seal
- Tires/Lug Nuts

Front Brake
- Slack Adjuster
- Chamber
- Hoses

Check Cab Area/ Engine Start
- Clutch/Gearshift
- Temperature Gauge
- Oil Pressure Gauge
- Ammeter/Voltmeter
- Heater/Defroster
- Steering Play
- Lighting Indicators
- Horn(s)
- Safety/Emerg. Equipment
- Mirror, Windshield Wipers
- Door(s)

Saddle Tank Area
- Fuel Tank/Leaks

Coupling System

Rear Tractor Wheels
- Rims
- Tires
- Axle Seals
- Lug Nuts
- Spacers

Suspension
- Springs/Torsion
- Spring Mounts
- Shocks/Air Bags

Brakes
- Slack Adjuster
- Chamber
- Hoses

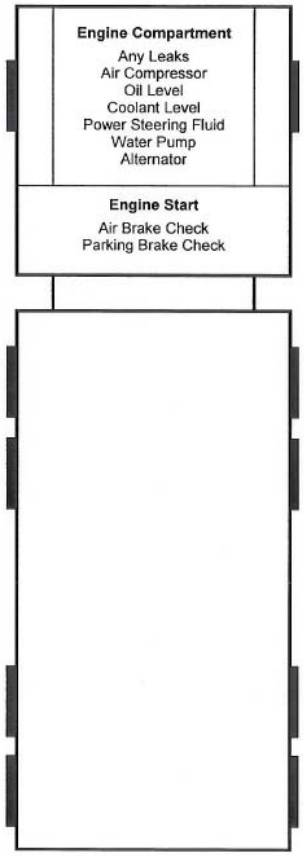
Rear of Tractor
- Drive Shaft
- Exhaust System
- Splash Guards

Side of Trailer
- Landing Gear
- Doors, Ties
- Frame
- D-Rings

Trailer Wheels

Suspension

Brakes



Tractor-Trailer

Front Suspension
- Spring/Spring Mount
- Shock Absorber

Front Wheel
- Rims/Hub Oil Seal
- Tires/Lug Nuts

Front Brake
- Slack Adjuster
- Chamber
- Hoses

Saddle Tank Area
- Fuel Tank/Leaks

Front of Trailer
- Air/Electrical Connections
- Header Board

Coupling System
- Fifth Wheel
- Mounting Bolts
- Safety Latch
- Platform
- Release Arm
- Kingpin/Apron/Gap
- Sliding Fifth Wheel
- Locking Pins

Rear Tractor Wheels
- Rims
- Tires
- Axle Seals
- Lug Nuts
- Spacers

Suspension
- Springs/Torsion
- Spring Mounts
- Shocks/Air Bags

Brakes
- Slack Adjuster
- Chamber
- Hoses

Rear of Tractor
- Exhaust System
- Splash Guards

Side of Trailer
- Landing Gear
- Doors, Ties
- Frame
- D-Rings

Trailer Wheels

Suspension

Brakes

8.01A continued

Number 8.02 January 1, 2011

Subject: Dump Box Reflectors

All dump boxes are required by the Federal Motor Carrier Safety Regulations to have a reflector on the left side of the widest part of the box. An amber reflector visible from the front and a red reflector visible from the rear. Reflectors placed at the front and rear in the lower corners (at sloping rub rails ends) will be in compliance.

Check all dump boxes, regardless of age and order reflectors for those not presently equipped. Be aware that some of your boxes are in compliance and some are probably not.

Order and replace locally.

Highway Fleet Manager

Number 8.03 January 1, 2011

Subject: Oil Distributor and Crack Sealer Operation

Only trained employees using an approved lighter (see operator's manual) are authorized to ignite burners.

When working with such equipment that is used to heat liquid asphalts, a **20 pound** fire extinguisher (ABC type) must be immediately available.

Prior to lighting the burners, ensure all flues are covered with at least 6 inches of material the full length of the tank.

On tanks having "High-Low" flues, it is necessary to cover only the lower flue with 6 inches of material when using the lower (inside) burner.

Open covers on heat exhaust stacks.

Check that the hand valve at the burner is closed. Open the valve on the supply tank only a quarter of a turn. Check for leaks.

Always try to park the distributor so that the vapors flow away from the heat at the rear of the distributor. Remember that sometimes there is no air movement when wind switches.

You must have another co-worker present when you perform the heating operation with a co-worker monitoring the heat process a distance away in case of a fire. Park the distributor cross wind to downwind when operating burners and park away from any building or combustibles. Same applies for the crack sealers.

Light the burner and open the hand valve to the full position.

Open supply tank valve fully and regulate pressure to between 25 and 40 psi or between 20 and 25 psi for shorter tanks.

Adjust fire with hand valve at burner.

Employee shall be at the distributor at all times after ignition has occurred.

Never heat material beyond manufacturer's recommended temperatures. Refer to the Material Safety Data Sheet (MSDS) for heating temperatures for material being used.

Do not remove material from tank while burners are operating or automatic burner controls are engaged.

To shut down, close valve at the supply tank. Burners will continue to burn until the fuel has been consumed.

When the burner is operating correctly, the first two coils or bottom side of burners and all feed lines will frost over. If this does not occur, shut down immediately or damage to the burner will occur.

If frosting does not occur, it shows that vapor rather than liquid is being used.

When burners are not in use, close covers of heat exhaust stacks to prevent heat loss and to keep water from entering stack opening.

Do not maintain an open flame during transportation or in an enclosed building/premises.

Refer to operator's manual and safety manual for more detailed instructions.

Crack Sealers:

Refer to the operator's manual for more complete instructions and precautions.

Never attempt to move a heated hose before the machine has reached operating temperature. This can cause the heating element to fail prematurely.

If a unit has been sitting idle for some time (ie. several weeks or months) slowly raise the oil temperature to 250 degrees Fahrenheit and hold for 20-30 minutes. This will help get rid of any condensation that may have accumulated in the oil chamber.

Never leave the machine unattended while running.

Never exceed the recommended temperatures of the heat transfer oil.

Change the heat transfer oil every 200 hours or annually according to the manufacturer's operating guidelines. At the time the oil is changed be certain that all vents and pipes are **removed** and **cleared of all deposits and/or any restrictions**.

Highway Fleet Manager

Number 8.04 January 1, 2011

Subject: Servicing Verification – All Wheel Drive (AWD) Vehicles

It is the responsibility of the Maintenance Supervisor to verify that the instructions contained in this bulletin are followed. Each equipment operator and mechanic is also charged with the responsibility to verify that the routine lubrication of equipment operated or stored is done in accordance with the manufacturer's servicing manual.

This bulletin applies to all AWD snow removal vehicles.

Due to the nature of our snow removal operation, it is becoming evident that we have a serious problem with moisture accumulation in the equipment gear cases. The moisture primarily enters as a result of condensation and therefore, there is little or nothing we can do to stop it. This moisture is causing bearings and gears to corrode and pit, resulting in eventual untimely breakdowns. The majority of these breakdowns are very severe resulting in a considerable loss of both time and money.

Therefore, all lubricants in transmissions, transfer cases and rear and front differentials are to be changed annually. Normally the correct weight of oil to use is a multi-weight 85W-140 to use in both winter and summer. Compliance with the equipment manufacturer's lubrication guide is recommended.

Highway Fleet Manager

Number 8.05 January 1, 2011

Subject: Mower Blade Policy

Do not sharpen blades. See attached examples taken from Schulte Manufacturer and Alamo Manufacturer.

Always follow manufacturer's guidelines and procedures for mower maintenance.

Highway Fleet Manager

Attachments

8.05A – Schulte Manufacturer Example
8.05B – Alamo Manufacturer Example

MAINTENANCE

DANGER!

INSTALL TRANSPORT PINS FOR WINGS AND CENTER FRAMES BEFORE DOING ANY SERVICE OR REPAIR WORK ON THE CUTTER.

Failure of a hydraulic hose or cylinder seal could cause the wings or center section to drop rapidly causing injury or death. Refer to the "Operation - Transportation" section of this manual for transport pin locations.

Blades

Inspect blades daily. Blades should be free of deep chips, cracks or abnormal bends.

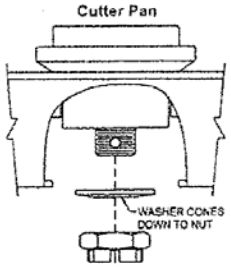
DANGER!

Blades should always be replaced in pairs. Blades of different weights may cause serious imbalance which can result in damage to the gearbox. Damage caused by unbalanced blades can make the machine dangerous to operate, increasing the risk of a broken gearbox lower shaft. Never weld or modify blades. Welding and other modifications such as straightening the blade after it has been bent can severely reduce the strength of the blade, increasing the likelihood that a piece breaks and can be thrown from the machine.

DANGER!

DO NOT SHARPEN BLADES. Sharpening blades can reduce the strength of the blade, increasing the likelihood that a piece breaks and can be thrown from the machine. Should the blades become dull, replace them. Blades should always be replaced in pairs.

Cutter Pan Retaining Nuts



Castle nuts and cotter pins are used to tighten the cutter pans to the splined shaft on the cutter gearboxes. A cone washer is used between the nut and the gearbox main shaft. The washer must cone down towards the nut. Refer to the illustration.

It is important that the retaining nut be checked periodically and retightened if necessary.

Install new cotter pins when retightening these nuts. Nut size is M30 x 2 metric. A 1-13/16" socket can be used to tighten the nut, 750 Ft/lbs dry assembly.

Hydraulics

Periodically clean dirt and debris from the bottom side of the depth stop ring.

MAINTENANCE

B. BLADES

Inspect the Blades closely each morning before start-up (fig. 8). The Blades should be free of deep chips, cracks, or abnormal bends. Sharp Blades require less mowing power. Replace worn or deformed Blades.

NOTE: Blades should always be replaced in pairs. Blades of different weights can cause serious imbalance and damage to the machine and personnel. When replacing the Blades, also replace the Blade Bolts and hardware. Once the nut has been removed from the Blade Bolt, it will not fasten tightly on the bolt again.

Never weld or modify Blades. The Blades are made of high-strength, heat-treated steel for maximum strength and resistance to chipping and wear. Welding and other types of heat-produced surface treatments can severely reduce the strength of the Blades and cause failure. Should this occur, a segment of a Blade could be thrown at high speeds from the machine.

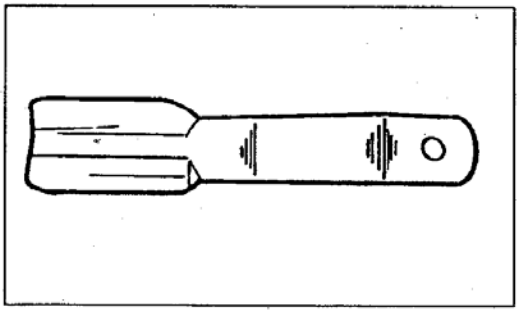


FIGURE 8

Number 8.06 May 1, 2011

Subject: Installation of Private Equipment in State Vehicles Policy

Personal radios, AM, FM, CB's or any other type of personal equipment shall not be mounted in or on any State equipment, or carried loosely with connections to the vehicle power supply.

State approved cell phone equipment is allowable.

Executive Order No. 90-2 issued by the Governor on March 21, 1990 prohibits the use of portable radio earphones while operating State equipment since it has the potential of impairing the operator's hearing during operation of vehicles and represents a potential highway hazard. Refer to NDOR Operating Instruction 20-06

Executive Order No. 90-2 also prohibits the use of portable radar detectors in State owned vehicles which represents an effort to circumvent State speed limits and a potential highway safety hazard. Refer to NDOR Operating Instruction 20-06.

Highway Fleet Manager

Attachment - 8.06A – Executive Order No. 90-2

FILED

MAR 21

SECRETARY OF STATE

STATE *of* NEBRASKA
EXECUTIVE OFFICE

LINCOLN

EXECUTIVE ORDER

No. 90-2

WHEREAS, it is incumbent upon an employer to take actions to ensure compliance with applicable laws during the operation of employer owned motor vehicles, and to protect its employees from dangerous practices in the workplace; and

WHEREAS, the use of portable radar detectors in State owned vehicles represents an effort to circumvent State speed limits and also represents a potential highway safety hazard; and

WHEREAS, the use of portable radio headphones has the potential of impairing a driver's hearing during the operation of a State vehicle, and represents a potential highway safety hazard;

NOW, THEREFORE, I, Kay A. Orr, Governor of the State of Nebraska, do hereby order as follows:

Every agency of State Government is directed to develop and implement a policy which ensures that State employees within their jurisdiction shall not use portable radar detectors while operating State owned motor vehicles.

Every agency of State Government is directed to develop and implement a policy which ensures that State employees within their jurisdiction shall not wear portable radio headphones while operating State owned motor vehicles.

Due to the importance of the safety concerns involved in violations of this Executive Order and the necessity for State employees to set a positive example for the general public, it is recommended that first time violators of this Order be subject to a written warning, second time violators to disciplinary probation; and third time violators to more serious discipline, up to and including termination.

This Executive Order shall take effect immediately.

Given under my hand and the Great Seal of Nebraska, in the City of Lincoln, Nebraska, this 21 day of MARCH, 1990.

Kay A. Orr, Governor

Attest:

Allen Beermann,
Secretary of State

Number 8.07 January 1, 2011

Subject: Hauling Any Units Having Turbo-Charged Engines

Hauling any units having turbo-charged engines need the exhaust covered.

Turbo-chargers are a precision, costly constructed piece of machinery and must be treated with proper care to prevent premature failure or destruction.

Highway Fleet Manager

Number 8.08 January 1, 2011

Subject: Fastener (Nut/Bolt/Stud/Etc…) Hardware Grade Identification and Torque Value

Ensure the proper grade fastener is used for the proper situation. Grades of fastener are determined by the markings on the head. Manufacturer guidelines should be followed for correct selection of fastener grade. Charts are available for identification of markings in your service manual or at your local fastener supplier.

All hardware shall be torqued to proper value and according to manufacturer's specifications.

You should be aware that a designated torque is only an approximate method of achieving the required objective, which is bolt tension. Dry or lubricated threads, plain underside or washer hand bolts and the use of hardener or mild steel washers will all cause variations in tension developed in the bolt or stud. However torque applied to a fastener is the larger of the variables and the mechanic should closely follow any recommendation available.

In many cases the words "clean and dry" will appear in your manuals or if not, "clean and dry" is the usual assumption and the only safe assumption. Do not apply lubricants to bolt threads or nuts unless the shop manual indicates the use of lubricant.

Always use recommended torque figures and sequential procedures. Every shop is supplied with torque wrenches. Use them when a torque requirement is given or whenever the situation seems to you that tightening a fastener would approach a maximum allowable tension.

Highway Fleet Manager

Number 8.09 January 1, 2011

Subject: Modifications or Changes of Numbered Equipment

No modifications or changes of appearance will be made to numbered State owned equipment without written approval of the Fleet Manager and the District Mechanic. Unauthorized modifications can void the warranty of the unit modified. These modifications or changes can cause damage to a unit of equipment, personal injury to an operator, be a potential safety hazard to the public, and generate unnecessary cost.

All authorized modifications or changes to numbered equipment need to be made on DR Form 37 (Conversion of Equipment from One Class Code to Another) as well as be identified in the Enterprise Asset Management System (EAMS) to satisfy inventory requirements.

No unapproved advertising, decals, stickers, logos etc... are to be visible on State owned equipment. Dealer names on mud flaps or any other advertising must face the tires of the equipment.

Highway Fleet Manager

Attachment - 8.09A – DR Form 37 – Conversion of Equipment from One Class Code to Another

Nebraska Department of Roads
Fleet Management

Conversion of Equipment from One Class Code to Another

On _____, Equipment Number _____ was converted from a
(Date) *(Equipment Number)*

_____ Class Code _____ to a
(Description) *(Class Code)*

_____ Class Code _____ .
(Description) *(Class Code)*

_____
(District Mechanic Signature)

_____
(Date)

DR Form 37, October 2010

Number 8.10 January 1, 2011

Subject: Trailer Towing Safety and Load Binding

It is the operator's responsibility to secure the hitch. Also it is the operator's responsibility to check the brakes, lights and safety chains to ensure they are in operating condition before leaving the yard. The operator must also drain the air tanks daily.

To establish a standard of load binding equipment and a procedure to be utilized by employees securing a load, the following guidelines shall be adopted as Fleet Management Policy.

1. **Chain:**

   Chain to be used for binding/securing loads shall be Grade 70 (transport/binding chain) not smaller than 3/8 inch.

   Any chain not Grade 70 or better and smaller than 3/8 inch shall not be used for securing loads. Replacement through normal wear will be to Grade 70, 3/8 inch or larger and shall meet the National Association of Chain Manufacturer's (NACM) Specification System 7 with at least 6600 working load pounds and 26,400 breaking force pounds.

Chain used for hoisting/lifting equipment or material shall be of Grade 80 and of appropriate size (3/8 inch or larger).

2. **Binders:**

   a. **Ratchet Type Binders (Stock Number 24-44400):**

      i. This type binder shall be rated at not less than 9,200 working load pounds and at least 27,600 breaking force pounds. Any other size binder shall not be used. Maintenance upkeep of this type of binder shall be accomplished monthly, at minimum and must include cleaning, greasing and inspection of cogs and release mechanisms.

      ii. Ratchet binders are already provided with a handle which will achieve the working load "holding capacity" when operated by an average sized person. Extension bars shall not be used on ratchet binders.

   b. **Break Over Binders SHALL NOT BE USED.**

3. **Load Security:**

   The tie down or security of a load is the responsibility of the operator. The total static breaking strength of all chain/binder tie down assemblies used to secure an article against movement in any direction shall be at least one and one-half times the weight of that article. Binders are to be placed as low as possible and in a manner which will allow the operator to tighten/release it with both feet on the ground. Cinch down

position of the handle must be clear of any obstacles which will prevent full seating. Other items to be observed during tie down are as follows.

a. The operator must position himself/herself so that he/she is not in the path of the binder in either the tightening or releasing operation.

b. The load must be tightened down to the point where one person (operator) can pull the binder shut, closed or to maximum tight cog.

c. As much chain slack as possible must be taken up before installing the binder.

d. Tie down of equipment shall have a minimum of 4 tie points which could require binders on both sides. Individual binders shall be used at each tie point, where appropriate. An additional center tie will be used if the type of equipment permits.

e. A safety chain shall be installed on round material loads (pipe, logs, etc...).

f. Short chains should be used for better security and ease of handling. Excess chain shall be wrapped around the binder handle.

g. For individual cross-over ties, the binders shall be located on the left (operator's) side of the load.

h. The chain and binder tension as well as the load shall be checked at a maximum of 15 miles from starting point. The operator should use discretion for performing this initial check sooner and the frequency thereafter. Factors are – type of load, road condition, etc…

4. **Inspection:**

a. All tie down equipment (chain, binders, blocks, etc…) shall be inspected by the operator before each use.

b. Pertinent supervisors and Safety shall be cognizant of the contents of this policy. Noted procedural or equipment violations will be brought to the attention of the appropriate management.

c. Defective, unsafe or unauthorized equipment noted during inspection shall be removed from service.

Regulations copied from the Federal Motor Carrier Safety Regulations

393.130

What are the rules for securing heavy vehicles, equipment and machinery?

(a) *Applicability.* The rules in this section apply to the transportation of heavy vehicles, equipment and machinery which operate on wheels or tracks, such as front end loaders, bulldozers, tractors, and power shovels and which individually weigh 4,536 kg (10,000 lb.) or more. Vehicles, equipment and machinery which is lighter than 4,536 kg (10,000 lb.) may also be secured in accordance with the provisions of this section, with 393.128, or in accordance with the provisions of 393.100 through 393.114.

(b) *Preparation of equipment being transported.*

(1) Accessory equipment, such as hydraulic shovels, must be completely lowered and secured to the vehicle.

(2) Articulated vehicles shall be restrained in a manner that prevents articulation while in transit.

(c) Securing of heavy vehicles, equipment or machinery with crawler tracks or wheels.

(1) In addition to the requirements of paragraph (b) of this section, heavy equipment or machinery with crawler tracks or wheels must be restrained against movement in the lateral, forward, rearward, and vertical direction using a minimum of four tie downs.

(c)(2) Each of the tie downs must be affixed as close as practicable to the front and rear of the vehicle, or mounting points on the vehicle that have been specifically designed for that purpose.

[67 FR 61234, Sep. 27, 2002]

Highway Fleet Manager

Number 8.11 January 1, 2011

Subject: Inspection of Roll Over Protection Structure (ROPS)

Districts will immediately and every six months hereafter inspect all their ROPS's.

This inspection will consist of a visual inspection of each structure for cracks that may have developed, loose fasteners and the recording of any modifications to the original structure such as weld-ons, drilling of holes etc…

NO modification to the ROPS shall be made.

If a modification has been previously made, this must be brought to the attention of the District Mechanic and Fleet Management.

Highway Fleet Manager

Number 8.12 January 1, 2011

Subject: Traffic Violations/Overloading of Trucks

NDOR Operating Instruction 20-6 Section 2.5 states in part “It is the responsibility of the employee to notify their Division Head or District Engineer and submit a DR Form 380 to Human Resources within three working days of the occurrence of any moving violation when a citation is issued to them while operating a state-owned vehicle.”

It is the operator’s responsibility to determine and know the capacity of the truck being operated. State Statutes 39-6: 39-6, 137 and 39-6, 180 cover the above mentioned requirements.

Highway Fleet Manager

Attachment - 8.12A – DR Form 380 – Traffic Violation

NDOR
Nebraska
Department of Roads

Memorandum

DATE

TO Human Resources Division

FROM

THRU , District Engineer/Division Head

THRU , Immediate Supervisor

SUBJECT **Traffic Violation**

I, _____ , have been cited and/or convicted
*(employee name – **PLEASE PRINT**)*

(or paid a fine by waiver) for a traffic violation in a _____ vehicle
(state or personal)

on _____ . The citation was for _____ , and
(date) *(speeding, reckless driving, D.W.I., etc.)*

was issued in _____ .
(county or state)

_____
(signature)

_____
(title)

_____
(district/division)

DR Form 380, Jul 03

Number 8.13 January 1, 2011

Subject: Senotex/Nextel Suede Coated Rotary Snowplows

NOTE: Senotex has been discontinued by Weilburger Coatings but has a replacement called Nextel Suede by Mankiewicz.

Several rotary snowplows have either the Senotex or Nextel Suede coating on the blower. Proper procedure must be followed when welding Senotex or Nextel Suede products.

The proper recommended procedures are as follows.

1. Senotex/Nextel Suede coatings should be removed from the affected are before welding.
2. If Senotex/Nextel Suede is heated above its decomposition temperature (about 500 degrees Fahrenheit), hazardous combustion products will be emitted. These combustion products include low molecular weight hydrocarbons, carbon monoxide and nitrogen oxides. In unusual situations, the decomposition products of polyurethanes, like Senotex/Nextel Suede, may include hydrogen cyanide gas which is considered to be a poison.
3. Worker protection against potentially harmful vapors or dust must be assured through the use of good ventilation with dust/organic vapor cartridge masks or self-contained breathing apparatus. Avoidance of harmful conditions is the best protection.

Specification Recommendations – Procedures Equipment:

1. **Coating Removal:**

   Remove all Senotex/Nextel Suede from metal area to be affected by welding. A four inch square is suggested to start. A larger area may be required if extensive welding is required.

   a. **Equipment:** An orbital grinder with 20/40 silicon carbide or alumina oxide grit can be used to remove the Senotex/Nextel Suede. A variable speed grinder is recommended at 1500-2000 RPM. Speeds up to 4000 RPM have been used successfully.

   b. Intensive grinding generates frictional heat build-up. The coating will liquefy prior to decomposition. If liquefaction occurs, reduce the grinder speed and allow the coating to cool.

   c. **Protective Equipment:** While grinding, a face mask designed to remove dust and organic vapors should be used. The appropriate masks or cartridges for respirators are available from 3M.

2. **Welding:**

   a. Minimize heat build-up of the metal. Short durations of welding to prevent excessive heat up are highly recommended. The liquefaction of the surrounding coating is an early warning sign that the metal is becoming too hot.

   b. If the coating is ignited during welding, immediately remove the source of ignition. The coating will normally self-extinguish if the area of flame is small. If the flame persists, use fire fighting measures.

   c. Protective Equipment: Good ventilation is essential to remove any vapors generated. Localized exhaust at the point of welding is recommended. Care must be taken to ensure the ventilation will take any vapors away from workers breathing passages.

   d. An organic vapor mask or respirator cartridge is adequate protection if care is taken to avoid generating vapors. Self contained breathing apparatus will avoid vapor exposure problems.

3. **Reapplication of Senotex/Nextel Suede:**

   The Senotex/Nextel Suede can be reapplied to the welded area after the welding operation is complete. The metal surface must first be prepared by grinding or sandblasting. A hand repair kit (SN 3004) can be used for small areas. Larger areas should be applied by a qualified spray applicator.

Highway Fleet Manager

Number 8.14 May 1, 2011

Subject: Loading and Unloading of Tilt Bed Trailers and Towing of Tilt Bed Trailers

Loading of Tilt Bed Trailers:

Loading or unloading of tilt bed trailers from stationary platforms/docks is prohibited.

DO NOT attempt, under any circumstances, to load or unload a tilt bed trailer from a loading dock. Damage to or failure of the deck lock could occur as well as damage to the pintle eye and/or the vehicles pintle hook. The possibility of raising the tow vehicle's rear tires off the ground also exists. This would create a very dangerous situation in that the tow vehicle's parking brake system would not be functioning which could allow the entire rig to move away from the dock while the load is being driven onto the trailer. This, in turn, could result in the loss of control of the machine being loaded or unloaded and create the possibility of an accident causing injury and/or death. The addition of blocking or supports under the back of the trailer **DOES NOT** overcome the above possibilities. They may shift, slip or fall out resulting in all of the above possibilities. Therefore it is repeated, **DO NOT ATTEMPT** under any circumstances, to load or unload a tilt bed trailer from a stationary loading dock. Doing so may result in damage to the equipment, serious injury and/or death.

Fleet Management is applying safety decals on the trailer at three locations. One at the front on the frame face near the deck lock and one on each side of the trailer near the rear on the side beam. Replacement decals can be obtained from Fleet Management as they become worn.

Towing of Tilt Bed Trailers:

Tilt bed trailers are to be towed by vehicles with enough weight, hitch and stopping capabilities to handle these trailers.

Safety Chains:

Safety chains complete with hooks are to be used any time the trailer is used. Do not use a chain that has been welded. Breaking strength must conform to DOT Title 49, Section 393.70, Paragraph D, Subchapter 3 which in part states the breaking strength must equal the gross vehicle weight (trailer and payload). It is recommended that at least a Schedule 7 ½ inch chain be used with compatible hook. Allow enough slack in the chain to permit executing turns without pulling the chain taunt.

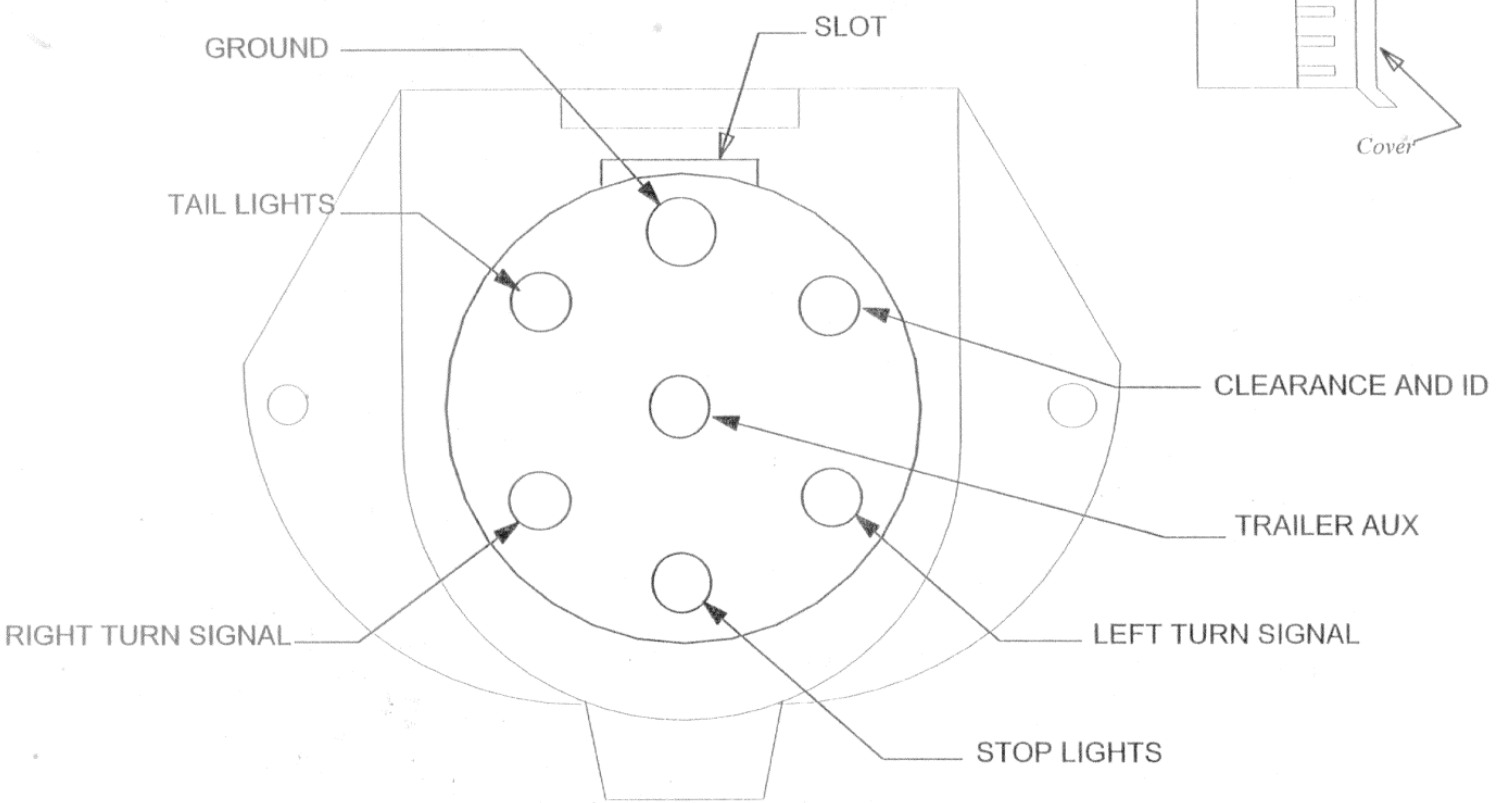
Hook-up of chains shall be installed in such a matter that they crisscross under the tongue and fasten in the truck eyelets on the opposite side the chain attached to the trailer.

The operator is responsible for the daily walk around including lights and brakes before leaving the yard. If problems arise with light system, see the attached wiring diagram for lights for reference.

Highway Fleet Manager

Attachment:
8.14A – Wiring Diagram for Lights

END VIEW
RECEPTICLE WITH PINS



RECEPTICLE SIDE VIEW

NEBRASKA DEPT. OF ROADS
STANDARD TRAILER CONNECTOR
WIRING DIAGRAM

DRAWN BY: CLIFF THEGE	DATE: 1-10-97

8.14A

Number 8.15 January 1, 2011

Subject: Draining of Air Tanks on Trucks and Trailers

The Department has a large inventory of equipment using air systems. Compressed air usually generates moisture in the tanks used with these air systems. This moisture can freeze in colder weather causing the brake system to fail. Since this moisture collects in the bottom of the tank, they need to be drained at the end of the day to remove this moisture.

NOTE: Draining a tank means releasing enough air to remove any moisture in the tank. This does not mean draining the tank completely of air.

There are two methods of draining these tanks.

1. By manually turning a drain valve a quarter turn.
2. By pulling of a cable (lanyard).

Each truck operator will be required to drain these tanks at the end of each day and record this on the DR Form 116 (Equipment Inspection (Checklist) Report) and leave it in the truck for the next day's operator to check.

Water content drained from tanks should be checked for signs of oil. If oil is present, the air dryer may need servicing and the mechanic should be notified of this condition. The air dryer's desiccant cartridges should be changed every year.

Cable type drain systems can be installed on the trucks to assist in the daily draining of these tanks.

Highway Fleet Manager

Number 8.16 January 1, 2011

Subject: Inspection of Basket/Sign Truck and Grade-All

This equipment must be inspected according to the operator's manual recommendations.

Fall Protection:

Safety harnesses, lifelines and lanyards may be required to protect you from falling while working at heights of six feet or more where you are not protected by standard guardrails or safety nets or as required when working in confined spaces.

1. You will wear NDOR approved safety harness as the job requires.
2. Safety belts will not be used.
3. You must be trained in donning, doffing and using safety harnesses.
4. Harnesses must be used with approved lanyard, which must be anchored on an approved anchor point.
5. Equipment must be inspected twice a year.
6. If used in a fall, the equipment cannot be used again until inspected and approved for use.

Highway Fleet Manager

Number 8.17 January 1, 2011

Subject: Windshield Replacement Criteria

The general rule is, “If it bothers the operator’s view, it shall be considered for replacement/repair”.

The criteria for replacement/repair of a damaged windshield is defined below.

1. Damage consisting of scratches or cracks within the area defined above that are ½ inch wide and at least 6 inches long or has an intersection crack.
2. Any star damaged area which cannot be covered by a disc ¾ inch in diameter or within three inches of any other defined damaged area is the basis for replacement.
3. Windshield repairs can be made on those stars that are less then ¾ inch in size.
4. No motor vehicle may be operated with any labels, stickers, decals, or other vision reducing items that cover any portion of its windshield or windows at either side of the driver area except those stickers required by law which may be affixed to the bottom of the windshield so long as it does not enter into the area defined above for damage windshields.

Tinting:

All windshields shall be free of discoloration except as defined by State Statutes. Tinting on windshields must be factory installed according to State Statutes. **NO** additional tinting of the windshield shall be allowed.

After market sun screening shall **not** be installed on vehicles.

Highway Fleet Manager

Number 8.18 January 1, 2011

Subject: Lifting Chain and Fittings

According to the Occupational Safety and Health Administration's (OSHA) guidelines, only Grade 80 chains with comparable hooks and other attachments will be used for overhead lifting. Overhead lifting is considered to be anything that is lifted at least 1 inch or more from its resting surface. The proper chain and attachments capacity must be used for the load to be lifted. It must be recognized that certain factors in the usage of chain and attachments can be abusive and lessen the load that the chain or attachments can withstand. It is necessary to inspect chains and attachments on a regular basis. Items to check during inspection are:

1. Marks, nicks gouges or cracks.
2. Wear, especially excessive wear at bearing points.
3. Twists or bends.
4. Stretch.
5. Distortion.

Operations stocks $^{5}/_{16}$, $^{3}/_{8}$ and ½ Grade 80 log chains. Any chain needed beyond these sizes will be purchased locally through normal purchasing procedures. Use the following table to determine the size of Grade 80 chain needed.

Chain Size	General Wk Load Limit -Pounds-	Weight Per 100 Feet -Pounds-
$^{5}/_{16}$	4,500	94
$^{3}/_{8}$	7,100	148
$^{1}/_{2}$	12,000	256
$^{5}/_{8}$	18,100	383
$^{3}/_{4}$	28,300	605
$^{7}/_{8}$	34,200	732

Clevis grab hooks and repair links could also be stocked.

Refer to Equipment Management Bulletin 8.10 for chains used in tie downs or load binding. It will be permissible to use Grade 70 chains for tie down as long as the chains are in good condition and do **NOT** have repair welds and meet the requirements outlined in Equipment Management Bulletin 8.14.

Be aware that various chain manufacturers will identify their chains by a different name than "Grade". Some use "Spectrum" others use "System". When ordering chains or attachments, reference should be made to "Grade" of chain. Grade 80 = Grade 8 and Grade 70 = Grade 7.

Highway Fleet Manager

Attachment

8.18A – Specifications for NACM Grade 80 Transport Chain
8.18B – Specifications for NACM Grade 70 Transport Chain

Department of Roads Material Stock Identification Numbers:

24-15200-5/16" chain, 24-15400-3/8" chain, 24-15800-1/2" chain

STATE OF NEBRASKA
DEPARTMENT OF ROADS

SPECIFICATIONS FOR OVERHEAD LIFTING, BINDING, TOWING AND LOGGING CHAIN
NACM Grade 80 Alloy Steel

September 28, 2006

MATERIAL SPECIFICATIONS

High strength Grade 80 Alloy Steel bulk chain used for overhead lifting, binding, towing and logging shall be of the length and size specified on the order.

ALL CHAIN MUST BE PERMANENTLY EMBOSSED INDICATING GRADE 80 CHAIN.

All chains shall be domestically produced and meet the NACM specification for Grade 80 Alloy Steel Chain and they shall have the following minimum safe working load limit and minimum proof test:

NOMINAL CHAIN SIZE	WORKING LOAD LIMIT	PROOF TEST
5/16" (8.0 mm)	4500 lb (2000 kg)	9000 lb (40.3 kN)
3/8" (10.0 mm)	7100 lb (3200 kg)	14200 lb (63.0 kN)
½" (13.0 mm)	12000 lb (5400 kg)	24000 lb (107.0 kN)

The manufacturer shall furnish a Certificate showing the working load limit and proof test for each size of chain furnished and identify the place of production.

NOTE: THE REQUIRED CERTIFICATE MUST ACCOMPANY THE SHIPMENT. FAILURE TO COMPLY WILL RESULT IN SHIPMENT REFUSAL AT DESTINATION.

OE 390

Department of Roads Material Stock Identification Numbers:
24-15200-5/16" chain, 24-15400-3/8" chain,
24-15600-7/16" chain, 24-15800-1/2" chain

STATE OF NEBRASKA
DEPARTMENT OF ROADS

SPECIFICATIONS FOR NACM GRADE 70 TRANSPORT CHAIN

September 20, 2001

MATERIAL SPECIFICATIONS

High strength steel chain for binding, towing and logging shall be of the length and size specified on the order.

All chains shall meet the NACM specification for Grade 70 – Transport Chain and they shall have the following minimum safe working load limit and minimum proof test:

WORK LOAD LIMIT	PROOF TEST
5/16" (8.7mm) chain	4700 lb. (2130 kg) 9400 lb (41.8 kN)
3/8" (10.0mm) chain	6600 lb. (2990 kg) 12,400 lb (55.0 kN)
7/16" (11.9mm) chain	8750 lb. (3970 kg) 17,500 lb (77.7 kN)
½" (13.0 mm) chain	11,300 lb. (5130 kg) 20,900 lb (92.9 kN)

The manufacturer shall furnish a certificate showing the Working Load Limit and Proof Test for each size of chain furnished.

NOTE: THE REQUIRED CERTIFICATE MUST ACCOMPANY THE SHIPMENT. FAILURE TO COMPLY WILL RESULT IN SHIPMENT REFUSAL AT DESTINATION.

SPECIFICATION APPROVED

Stan Kasel
Signature

9-26-01
Date

Number 8.19 January 1, 2011

Subject: Slow Moving Vehicle Emblems on Portable Numbered Road Equipment

In years past, selected portable numbered road equipment was purchased with slow moving emblems installed such as air compressors, welders, etc... The slow moving emblem must be removed when traveling in excess of 25 miles per hour.

It is requested that all existing equipment that fall under the above situation be fixed with a method of removing this emblem while transporting on the roadways. This can be done with the use of a wing nut and bolt or a fabricated bracket that would allow you to remove the emblem readily.

One situation that would require the emblem to be in place while transporting is pulling an air compressor behind a tractor.

Highway Fleet Manager

Attachment - 8.19A – Nebraska State Statute Section 60-6241

60-6,241. Vehicles; slow moving; emblem required; when used.

(1) It shall be unlawful for any person to operate on the roadway of any highway any slow-moving vehicle or equipment, any animal-drawn vehicle, or any other machinery, designed for use at speeds less than twenty-five miles per hour, including all road construction or maintenance machinery except when engaged in actual construction or maintenance work either guarded by a flagperson or clearly visible warning signs, which normally travels or is normally used at a speed of less than twenty-five miles per hour unless there is displayed on the rear thereof an emblem as described in and displayed as provided in subsection (2) of this section. The requirement of such emblem shall be in addition to any lighting devices required by law. The emblem shall not be displayed on objects which are customarily stationary in use except while being transported on the roadway of any highway.

(2) The emblem shall be of substantial construction and shall be a base-down equilateral triangle of fluorescent yellow-orange film with a base of fourteen inches and an altitude of twelve inches. Such triangle shall be bordered with reflective red strips having a minimum width of one and three-fourths inches, with the vertices of the overall triangle truncated such that the remaining altitude shall be a minimum of fourteen inches. The emblem shall comply with the current standards and specifications for slow-moving vehicle emblems of the American Society of Agricultural Engineers. Such emblem shall be mounted on the rear of such vehicle at a height of two to six feet above the roadway and shall be maintained in a clean, reflective condition. This section shall not apply to an electric personal assistive mobility device.

Source: Laws 1965, c. 210, § 1, p. 618; Laws 1967, c. 230, § 1, p. 607; R.R.S.1943, § 39-723.10; Laws 1977, LB 211, § 1; R.S.1943, (1988), § 39-6,125; Laws 1993, LB 370, § 337; Laws 1993, LB 575, § 26; Laws 2002, LB 1105, § 462.

Number 8.20 January 1, 2011

Subject: Nebraska State Statute Sections 81-1021 and 81-1023

Nebraska State Statute Section 81-1021 requires that all State owned motor vehicles and road machinery display the following:

1. Each side of the vehicle/machinery: **State of Nebraska Department of Roads**
2. The back side of the vehicle/machinery: **State of Nebraska**

These must be in contrasting color or reflective material, obvious and permanent. Any one operating a State owned motor vehicle or machinery lacking the above shall be guilty of a Class II misdemeanor per Nebraska State Statute Section 81-1023.

For purposes of this statute, loaders, motor graders and tractors are considered to be road machinery and must follow statute.

These decals are available from Fleet Management upon request.

Maintenance can and will most likely be a problem with the decals. Pressure washers and normal wear and tear do not mix well with the decals. The District Mechanics will all be provided with a supply of decals for replacement when necessary. It will be everyone's responsibility to make sure that all the proper decals are on the equipment that they will be operating. Checking for proper decals will become part of the walk around.

Highway Fleet Manager

Attachments

8.20A – Nebraska State Statute Section 81-1021
8.20B – Nebraska State Statute Section 81-1023

81-1021. Identification requirements; exceptions.

(1) All motor vehicles acquired by the State of Nebraska shall be indelibly and conspicuously lettered, in plain letters of a contrasting color or reflective material:

(a) On each side thereof with the words State of Nebraska and following such words the name of whatever board, department, bureau, division, institution, including the University of Nebraska or state college, office, or other state expending agency of the state to which the motor vehicle belongs; and

(b) On the back thereof with the words State of Nebraska.

(2) This section shall not apply to motor vehicles used or controlled by:

(a) The Nebraska State Patrol, the Public Service Commission, the Game and Parks Commission, deputy state sheriffs employed by the Nebraska Brand Committee and State Fire Marshal for state law enforcement purposes, inspectors employed by the Nebraska Liquor Control Commission, and persons employed by the Tax Commissioner for state revenue enforcement purposes, the exemption for state law enforcement purposes and state revenue enforcement purposes being confined strictly to the seven agencies specifically named;

(b) The Department of Health and Human Services or the Department of Correctional Services for the purpose of apprehending and returning escaped offenders or parole violators to facilities in the Department of Correctional Services and transporting offenders and personnel of the Department of Correctional Services and patients and personnel of the Department of Health and Human Services who are engaged in off-campus program activities;

(c) The Military Department;

(d) Vocational rehabilitation counselors and the Department of Health and Human Services for the purposes of communicable disease control, for the prevention and control of those communicable diseases which endanger the public health, or used by the Department of Health and Human Services in the enforcement of drug control laws or for other investigation purposes;

(e) The Department of Agriculture for special investigative purposes;

(f) The Nebraska Motor Vehicle Industry Licensing Board for investigative purposes; and

(g) The Insurance Fraud Prevention Division of the Department of Insurance for investigative purposes.

Source: Laws 1939, c. 94, § 2, p. 409; C.S.Supp.,1941, § 60-1201; R.S.1943, § 60-1001; Laws 1951, c. 202, § 1, p. 758; Laws 1951, c. 203, § 1, p. 759; Laws 1957, c. 278, § 1, p. 1008; Laws 1959, c. 300, § 1, p. 1127; Laws 1965, c. 390, § 1, p. 1247; Laws 1969, c. 512, § 1, p. 2099; Laws 1969, c. 513, § 1, p. 2100; Laws 1972, LB 1295, § 1; Laws 1973, LB 201, § 1; Laws 1973, LB 563, § 5; Laws 1975, LB 253, § 1; Laws 1984, LB 933, § 1; R.S.1943, (1988), § 60-1001; Laws 1993, LB 370, § 484; Laws 1993, LB 575, § 47; Laws 1996, LB 1044, § 862; Laws 1996, LB 1155, § 79; Laws 1999, LB 326, § 11; Laws 2007, LB296, § 753.

81-1023. Identification or marking; violation; penalty.

Any employee or officer of the State of Nebraska who operates or has under his or her control any state-owned motor vehicle or unit of road machinery, not numbered, lettered, or marked as required by section 81-1021, or who violates any of the other provisions of sections 60-3,105, 60-3,106, 81-1021, and 81-1022 shall be deemed guilty of official misconduct in office for a palpable omission of duty and upon conviction thereof shall be guilty of a Class II misdemeanor, and the court shall have the power to add to the judgment that any officer so convicted shall be removed from office or employment.

Source: Laws 1939, c. 94, § 4, p. 411; C.S.Supp.,1941, § 60-1203; R.S.1943, § 60-1004; Laws 1978, LB 748, § 34; Laws 1987, LB 22, § 3; R.S.1943, (1988), § 60-1004; Laws 1993, LB 370, § 486; Laws 2005, LB 274, § 282.

Number 9.01 January 1, 2011

Subject: Battery Charging

This bulletin establishes policy relating to the location of batteries when they are being charged with battery charging equipment.

Because of the fire-safety hazard involved, all batteries that are being charged with battery charging equipment will be located no lower than 18 inches from the floor in any enclosed repair shop containing gasoline powered equipment.

When gasoline powered equipment is within an enclosed shop there is the potential for gasoline fumes to collect within 18 inches of the floor. The use of battery charging equipment to charge a battery that is located in this lower 18 inches could provide a source of ignition which could cause the fumes to explode.

Flexible cords and connectors used for battery charging shall be suitable for this type of service. Their amperage shall be adequate for charging current.

Highway Fleet Manager

Number 9.02 January 1, 2011

Subject: Repair Shop Operations

This bulletin establishes a policy of operations and to reaffirm the insistence of cleanliness in all repair shops and other buildings.

With safety foremost in our minds the following topics will be addressed.

1. Daily inspections of all repair shops will be made and all hazardous situations that are found will promptly be corrected.
2. Floors shall be kept clean and free of oil, grease and fluids.
3. All buildings will be kept clean and trash containers must be emptied regularly.
4. Oil rags and other flammable or combustible wastes must be disposed of in metal containers with lids and the containers must be marked “Flammable Waste”. These containers must be emptied daily.
5. Combustible rubbish accumulated in the workplace must be disposed of in metal containers with tight fitting lids clearly marked “Trash Only”.
6. All materials shall be stored with regard to their fire characteristics.
7. Any storage should not obstruct exits.
8. Adequate aisles and clearance must be maintained.
9. Fire extinguishers must be clearly marked and conspicuously located and kept unobstructed with supplies or materials etc…. For more information on fire extinguishers refer to the Employee Safety Handbook Chapter 14.
10. Extension cords and air hoses must be kept in good condition and picked up when not in use. Regularly inspect the ends and the middle for cracks, cuts, bulging etc... Repair or replace as needed. Do not repair with tape.
11. **Care of shop air compressors:**
    a. Drain the moisture from the tank weekly. Change oil and air filter, and check proper operation of the safety relief valve at annual service or at recommended hourly interval.
12. **Parts washers:**
    a. Keep lid closer working properly, never leave items piled up in tub to prevent lid from closing in case of fire.
13. **Welding on equipment:**
    a. Unhook ground battery cable before welding on any piece of equipment.
        1. No parking of equipment in front of shop doors. Unattended equipment is a fire hazard.

2. Use “Do Not Start” tags whenever repairing or servicing of equipment.
3. All tools and equipment shall be put away and kept in good, safe working order after use.

INCLUDE SAFETY IN ALL ACTIVITIES.

Highway Fleet Manager

Number 9.03 January 1, 2011

Subject: Repair Shop Drainage System

Refer to the Spill Prevention Control and Countermeasure (SPCC) Manual for recommendations. All shops must be in compliance with the SPCC.

Highway Fleet Manager

Number 9.04 January 1, 2011

Subject: Smoking Policy

Smoking in state-owned or leased motor vehicles and equipment with enclosed cabs is prohibited. (Refer to NDOR Operating Instruction 20-06.) Smoking is prohibited in all buildings, and the area within ten feet of any entrance of such buildings, which are owned, leased, or occupied by the State.

NEBRASKA CLEAN INDOOR AIR ACT

§ 71-5716 Act, how cited

Sections 71-5716 to 71-5734 shall me known and may be cited as the Nebraska Clean Indoor Air Act. **Source:** Laws 2008, LB395, § 1.

§ 71-5717 Purpose of Act

The purpose of the Nebraska Clean Indoor Air Act is to protect the public health and welfare by prohibiting smoking in public places and places of employment. The act shall not be construed to prohibit or otherwise restrict smoking in outdoor areas. The act shall not be construed to permit smoking where it is prohibited or otherwise restricted by other applicable law, ordinance, or resolution. The act shall be liberally construed to further its purpose. **Source:** Laws 2008, LB 395, § 2.

§ 71-5729 Smoking in place of employment or public place prohibited.

Except as otherwise provided in section 71-5730, it is unlawful for any person to smoke in place of employment or a public place. **Source:** Laws 2008, LB 395, § 14.

§ 71-5733. Prohibited acts; penalties; act of employee or agent; how construed.

A person who smokes in a place of employment or a public place in violation of the Nebraska Clean Indoor Air Act is guilty of a Class V misdemeanor for the first offense and a Class IV misdemeanor for the second and any subsequent offences. A person charged with such offense may voluntarily participate, at his or her own expense, in a smoking cessation program approved by the Department of Health and Human Services, and such charge shall be dismissed upon successful completion of the program. **Source:** Laws 2008, LB 395, § 18.

Highway Fleet Manager

Number 9.05 January 1, 2011

Subject: Explosion Proof Wiring and Electric

This bulletin establishes policy on the use of explosion proof wiring and electric motors in enclosed equipment repair shops.

Because of the fire-safety hazard involved, all wiring and electric motors in use within 18 inches of the floor in any enclosed repair shop containing gasoline powered equipment will be of the explosion proof type.

When gasoline powered equipment is within an enclosed shop there is the potential for gasoline fumes to collect within 18 inches of the floor. The use of wiring and electrical motors that are not explosion proof in this lower 18 inches could provide a source of ignition which could cause the fumes to explode.

Highway Fleet Manager

Number 9.06 January 1, 2011

Subject: Automotive Two Post Stabilized Hoist

Refer to owner's manual for proper lifting of vehicles. Never exceed manufacturer's recommendations. Never leave any hoist in the up position for an extended period of time.

Highway Fleet Manager

Number 9.07 January 1, 2011

Subject: Purchasing of Shop Tools Under $1,500.00

Since it is now permissible for Districts to order non-tagged repair shop tools, it is requested that the tools have a lifetime warranty and that they are purchased from a reputable local dealer. It will be the District's discretion to determine the quality of shop tools at the various shop locations based on their needs.

Account Code is 4346.

Activity Code is 2904.

Highway Fleet Manager

Number 9.08 January 1, 2011

Subject: Abrasive Wheel Grinders

Abrasive wheel machinery is defined as floor and bench grinders. These standards do not apply to cut-off wheels.

1. The angular exposure of grinding wheels should not exceed 90 degrees or one-fourth of the periphery. This exposure shall begin at point not more than 65 degrees above the horizontal plane of the wheel spindle.

Whenever the nature of the work requires contact with the wheel below the horizontal plane of the wheel spindle, the exposure shall not exceed 125 degrees (See Figures O-6 and O-7 below.)

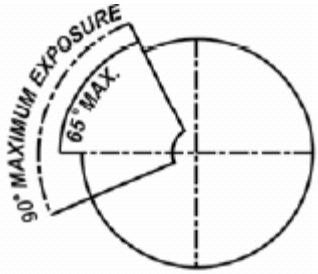


FIGURE NO. O-6

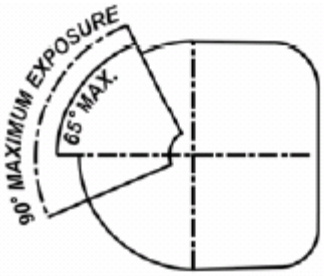


FIGURE NO. O-7

2. Sides shall be covered except when work needs to be performed for clearance purposes. At that time, the side member may be removed. Grinding on the side of the wheel is prohibited. (See Figures O-8 and O-9 below.)

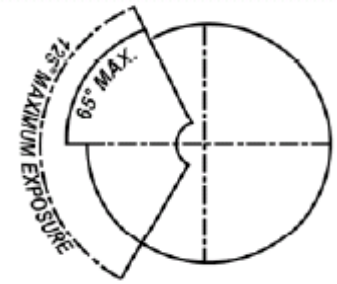


FIGURE NO. O-8

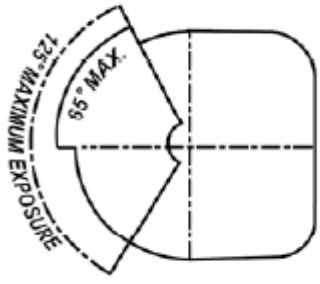


FIGURE NO. O-9

3. Grinders will have a tool rest and an adjustable safety tongue.
4. The tool rest shall be adjusted as the wheel wears. There will be no more than a one-eighth inch opening between the wheel and the tool rest.
5. An adjustable safety tongue will be located at the top of the grinder wheel opening. This tongue will be adjusted with the wheel wear and will not exceed one-fourth of an inch distance between wheel and tongue.
6. Specifications for guards shall meet the requirements of the attached sheet (See Figures O-36 and O-37.)

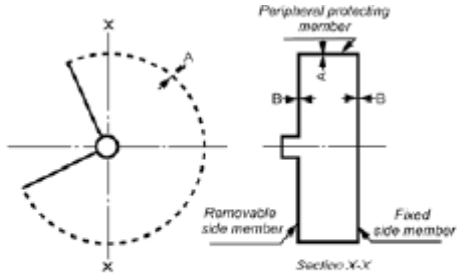


FIGURE NO. O-36

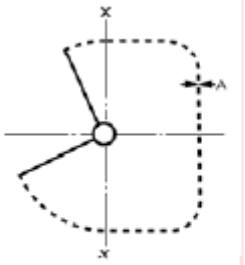


FIGURE NO. O-37

7. Cracked wheels shall be immediately removed from service and discarded.
8. New wheels shall be of the proper RPM rating and will be "RING TESTED" prior to installation.

Wheels will be tapped gently with a light nonmetallic implement such as the handle of a screwdriver for light wheels or a wooden mallet for heavier wheels. If they sound "dead" or cracked, they shall not be used.

Tap wheels about 45 degrees each side of the vertical centerline and about 1 to 2 inches from the periphery (See Figures O-25 and O-26 below.) Then rotate the wheel 45 degrees and repeat the test. If cracked, there will be a dead sound and not a clear "ring".

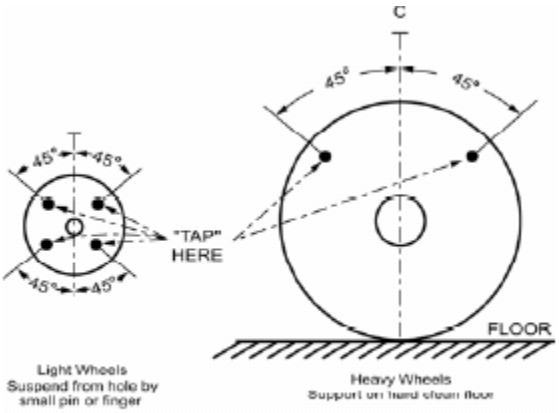


FIGURE NO. 0-25

FIGURE NO. 0-26

9. Bench grinders shall be permanently attached to the floor or bench. A sign shall be placed above the grinder "EYE PROTECTION REQUIRED WHENEVER OPERATING THIS EQUIPMENT". Hearing protection may also be needed.

Highway Fleet Manager

Number 9.09 January 1, 2011

Subject: Repair Shop Overhead

Purpose:

To provide a policy for charging common items of minimal dollar value used on a recurring basis in the repair of Department owned equipment as a repair shop overhead cost.

Procedure:

Equipment repair shops should consult with the District Mechanic for requisition or procurement of parts and supplies needed to repair Department equipment. Assemblies, subassemblies, major components and infrequently used repair parts are direct charges against the equipment on which they are placed. All charges must be entered in EAMS on a work order for the equipment it was procured for.

Overhead Items:

Common items of minimal dollar value used on a recurring basis in equipment repair operations will be charged as a repair shop overhead cost. These overhead items will be prorated to equipment and charged against the equipment on which they are expended. These charges will be entered in EAMS on a work order charging it to the equipment the item was used on. Examples of these overhead items are:

1. Nuts, bolts, washers and cotter pins.
2. Light bulbs and seal beam units.
3. Automotive type fuses.
4. Mechanic's wire.
5. Bulk, common used electrical and ignition wire. This does not include electrical harnesses and prefabricated sets of sparkplug wires.
6. Valve cores and replacement valve stems for tubeless tires.
7. Hot patches and expendable materials used to repair tubeless tires.
8. Tape (electrical and friction).
9. Radiator rust inhibitor and radiator cleaner.
10. Heater hose in bulk and heater hose clamps.
11. Gasket materials (sheet and plastic i.e. permatex).
12. Hydraulic brake fluid.

13. Windshield washer solvent and cleaner.

14. Grease fittings (zerk type).

Highway Fleet Manager

Number 9.10 January 1, 2011

Subject: Welding on Equipment

If the service procedure includes welding:

1. Remove battery cables.
2. Connect welder ground as close as possible to the work area.
3. Refer to operator's manual.

Highway Fleet Manager

Number 9.11 January 1, 2011

Subject: Solvent Parts Washers

This bulletin establishes policy relating to the use of solvent washers and recycling of solvent. Never store items in the tub to prevent the lid from completely closing in case of fire. Also keep the fuse link in place on the door closing mechanism.

Contact buyer in Operations for available replacement parts.

Follow Spill Prevention Control and Countermeasure (SPCC) guidelines for storage of solvent.

Send used solvent to Lincoln for recycling and it must have the proper sticker.

USED PETROLEUM DISTILLATE

CLASSIFIED AS USED OIL

NON-HAZARDOUS UNDER SECTION 40 CRF 261

Highway Fleet Manager

Number 10.01 January 1, 2011

Subject: Storage Tanks

Storage tanks are primarily used for used oils and liquid deicing chemicals. Most tanks are numbered assets and will be purchased by the Fleet Management Section of the Operations Division. Depending on the type of tank and its contents, certain safety and environmental regulations are applicable for installation, operation and record keeping.

Highway Fleet Manager

Number 10.02 January 1, 2011

Subject: Fuel Tanks

Fuel tanks are used for fuels such as diesel, gasoline, ethanol (E-85), propane and kerosene. These tanks (with the exception of propane and kerosene tanks) are numbered assets and will be purchased by the Fleet Management Section of the Operations Division. Propane and kerosene tanks that are used for the heating of facilities are purchased by the Capital Facilities Section of the Operations Division. Depending on the type of tank and its contents, certain safety and environmental regulations are applicable for installation, operation and record keeping.

Underground and above ground tanks used for fuel are regulated by the Nebraska State Fire Marshall and the Federal Environmental Protection Agency. Registration is required by the State Fire Marshal and will be completed by the Highway Fuel and Credit Card System Manager in the Operations Division Fleet Management Section.

Tanks are not to be removed, installed, changed or relocated without authorization by the Fleet Management Section so that inventory control is maintained and Nebraska State Fire Marshall Regulations are complied with. Tanks shall only be installed by a qualified installer as established by the State Fire Marshall.

Highway Fleet Manager

Number 10.03 January 1, 2011

Subject: Rules and Regulations for Fuel Tanks

Fuel tanks are used for fuels such as diesel, gasoline and ethanol (E-85) are numbered assets and will be purchased by the Fleet Management Section of the Operations Division. Depending on the type of tank and its contents, certain safety and environmental regulations are applicable for installation, operation and record keeping.

Underground and above ground tanks used for fuel are regulated by the Nebraska State Fire Marshall and the Federal Environmental Protection Agency. Registration is required by the State Fire Marshal and will be completed by the Operations Division Fleet Management Section.

All fuel tank projects for either relocation or new installation, regardless of funding, shall follow these guidelines and be brought into compliance with the most current applicable regulations.

Applications shall be coordinated and routed to the appropriate parties by the NDOR Highway Fuel and Credit Card System Manager.

Governing Rules and Regulations

1. Title 159 – Rules and Regulations Concerning Underground Storage Tanks in the State of Nebraska dated January 15, 1987
2. Title 158 – Above Ground Storage Tanks
3. Title 153 – Nebraska Administrative Code
4. National Fire Protection Association Pamphlet 30 and 30a – 1985 edition
5. National Electrical Code
6. Resource Conservation and Recovery Act Section 9002

As of January 1, 1986, the owner or operator of permanently located above ground storage tanks dispensing hazardous substances must register such tank with the Nebraska State Fire Marshall's Office. Storage tanks of 1000 gallons or less are exempt from this requirement.

Owners/operators of aboveground storage tanks storing petroleum products must obtain an installation permit to install new and replacement tanks and piping installations regardless of size or storage capacity. An application must be submitted to the State Fire Marshall's office and shall be accompanied by a detailed site plan (A drawing of the tank, pumps and field piping with the site drawing. If the tanks are assembled in Lincoln a picture of the system would explain how the tanks and dispensing systems are proposed.) and $50 inspection fee at least 10 working days prior to the proposed installation date. The fee is per installation regardless of the number of tanks to be installed (at the same time). Once the permit is issued, at least 72 hours notification of the date and time of installation must be given to the Fuels Division – Flammable Liquid Storage Tanks Section by the Highway Fuel and Credit Card System Manager.

Application Process:

1. Any new site requests must be approved by the Operations Division Manager and Deputy Director of Operations.
2. Justification and permanent fuel storage plan along with detailed site plan (to scale), including location of the emergency shut-off switch, shall be submitted in writing to the Highway Fuel and Credit Card System Manager Copies of the request shall also be sent to the Highway Environmental Programs Specialist for concurrent review.
3. Upon review, approval and signing of the request by the NDOR Deputy Director – Operations, the Highway Fuel and Credit Card System Manager shall submit the permit request to the State Fire Marshall – Fuel Safety Division.
4. Upon receipt of the permit, NDOR Highway Fuel and Credit Card System Manager shall retain one completed copy of the approved fuel tank installation package for their records and forward one copy to the District (scanned by the NDOR HFCCSM – the original will be sent to the District upon completion of inspection documentation by the Nebraska State Fire Marshall) and one copy to the Operations Division – Environmental specialist.
5. Once issued by the State Fire Marshall, the permit is valid for 180 days (6 months). The State Fire Marshall will issue a permit to the applicant within 10 days of receipt. Extensions are possible, but not encouraged.
6. In addition to issuance of the permit, the local Deputy State Fire Marshal is notified of permitting for prioritization of inspections.
7. Upon notification to the State Fire Marshall by the District Mechanic or responsible project representative of installation, the State Fire Marshall will schedule an inspection to occur within 72 hours.
8. Storage facilities may be inspected in phases but typically this is not the norm.
9. At no time shall storage facilities be filled or used prior to inspection and acceptance by the State Fire Marshall.
10. Copies of the State Fire Marshall's inspection and acceptance certificates shall be forwarded to the Highway Fuel and Credit Card System Manager for retention.

Funding:

1. For tank projects initiated by the District, all project costs, INCLUDING tank purchase and installation, site work (grading and surfacing), anchoring, etc… shall be funded solely by the District.
2. For tank projects performed in conjunction with Capital Facilities projects, all costs EXCLUDING tank purchase and installation, shall be funded as part of the capital project.

3. All tank purchase costs shall be funded from accounting code 4846 for Numbered Road Machinery and Equipment.
4. Purchase specifications shall be developed by the Operations Division – Fleet Management Section.
5. Purchasing shall be through NDOR Operations – Fleet Management Section.

Fuel Tank Relocation and Removal:

1. Relocating and/or removal of fuel storage tanks requires notification of the State Fire Marshall, NDOR Highway Fuel and Credit Card System Manager and the NDOR Environmental Specialist.
    a. Updated permanent fuel storage plan along with detailed site plan (to scale), including location of the emergency shut-off switch, shall be submitted in writing to the Highway Fuel and Credit Card System Manager and NDOR Operations Division, Environmental Specialist.
2. Specific requirements must be met to legally close or relocate existing fuel storage tanks. Specifically, above ground tank replacement only allows for use of double-wall fire rated tanks. Single wall containment tanks are no longer allowed by code.
3. Removal of underground storage tanks requires a closure permit from the State Fire Marshall prior to prosecution of the work. A Certified Closure Individual (a contractor certified and licensed by the State Fire Marshall) must be present during the entire underground storage tank removal process.

Utilization/Placement of Aboveground Fuel Storage Tanks:

1. Existing Yards with existing fuel storage facilities (tank addition or replacement). Tank replacement only allows for use of double-wall fire rated tanks.
    a. UL 2080, Fire-Resistant
    b. UL 2085, Protected
2. Single wall secondary containment tanks are not allowed by code.
3. Existing Yards without fuel storage facilities (new service).
4. New Yards requiring fuel storage facilities.
5. Other utilization/placement shall be addressed individually and with the review and approval of the Operations Division Manager and the Deputy Director – Operations.
6. Construction and installation of fueling pads, tanks, emergency shut-off, phone, etc… shall be in accordance with NFPA 30 and NFPA 30A.

Installation Distances				
	Min. Distance to Property Line	**Min. Distance to Major Building**	**Min. Distance to Dispenser**	**Min. Distance to Public Way**
Fire-Resistant UL – 2080	50’-0”	25’-0”	25’-0”	25’-0”
Protected UL-2085	15’-0”	5’-0”	25’-0”	5’-0”

All Installations Shall meet the following requirements:

1. 20 B:C Fire Extinguisher shall be located within 100’-0” of the fuel tank.
2. 4” min. dia. Bollards shall be placed at 4’-0” o.c. around the perimeter of the tank.
3. All tanks shall be grounded and bonded per NEC.
4. All electrical work shall be performed in accordance with NFPA 70 and NEC.
5. Emergency shut-off switch shall be installed in accordance with NFPA 30A.
6. Signage and Emergency Instructions shall be installed in accordance with NFPA 30A.

Tanks are not to be removed or installed without authorization by the Fleet Management Section so that inventory control is maintained. Tanks shall only be installed by a qualified installer as established by the State Fire Marshall.

Highway Fleet Manager

Number 10.04 January 1, 2011

Subject: Fuel Monitor Report Schedule

Underground tanks have an electronic monitoring system to monitor tank activity. The EMCO Wheaton Tank Level Monitor II is at all the underground tank locations. We will continue to specify the magnetostrictive principle system to have uniformity in these monitoring systems.

For operation of these monitoring systems, refer to your operators manual. This fleet manual will only outline the necessary reports generated from the console to replace the manual daily inventory sheets. The reports listed below are the minimum reports as required by the State Fire Marshal.

Inventory Control

Accurate daily inventory records shall be maintained and reconciled for **all liquid fuel storage tanks** for indication of possible leakage from tanks or piping. The records shall be kept on the premises or shall be made available to the authority having jurisdiction for inspection within 24 hours of a written or verbal request. The records shall include, as a minimum and by product, daily reconciliation between sales, use, receipts, and inventory on hand. If there is more than one storage system serving an individual pump or dispensing device for any product, the reconciliation shall be maintained separately for each system.

Methods of Release Detection for Tanks

Each method of release detection for tanks used to meet the requirement of the above must be conducted in accordance with the following:

1. Inventory Control: A daily product inventory control system (or another test of equivalent performance) must be utilized which is capable of detecting a release of at least 1.0 percent of flow-through plus 130 gallons on a monthly basis in the following manner.
    a. Inventory volume measurements for regulated substance inputs, withdrawals, and the amount still remaining in the tank are recorded each operating day;
    b. The equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest one-eighth of an inch;
    c. The regulated substance inputs are reconciled with delivery receipts by measurement of the tank inventory volume before and after deliver;
    d. Deliveries are made through a drop tube that extends to within one foot of the tank bottom;
    e. Product dispensing is metered and recorded within the local standards for meter calibration or an accuracy of 6 cubic inches for every 5 gallons of product withdrawn; and
    f. The measurement of any water level in the bottom of the tank is made to the nearest one-eighth of an inch at least once a month.

g. Inventory shall be reconciled on a monthly basis (DR Form 268 – Tank Inventory Record) and reconciled records shall be retained for five years.

[Note: Practices described in the American Petroleum Institute Publication 1621, "Recommended Practice for Bulk Liquid Stock Control at Retail Outlets," may be used, where applicable, as guidance in meeting the requirements of this section.]

Highway Fleet Manager

Attachment - 10.04A – Tank Inventory Record – DR Form 268

10.04A

STATE OF NEBRASKA
DEPARTMENT OF ROADS

TANK INVENTORY RECORD
(with Metering Pumps)

TANK NUMBER: | TANK CAPACITY: | FUEL: | MONTH OF:

1	2	3	4	5	6	7	8	9	10	11
DAY	BEGINNING INVENTORY *(Gallons)*			ROD READING INVENTORY			METER READINGS			
	OPENING ROD READING INVENTORY *(Gallons) Same as Col. 6 Previous Day*	DELIVERIES *(In Gallons)*	TOTAL GALLONS IN TANK *(Column 2) Plus (Column 3)*	CLOSING ROD READING INVENTORY *(Inches)*	CLOSING ROD READING INVENTORY *(Gallons) (From Charts)*	DISPENSED FROM TANK *(Column 4) Minus (Column 6)*	METER READING *(Accumulated Gallons)*	METER USAGE *(Gallons) (Column 8) Today Minus (Column 8) Previous Day*	NET DIFFERENCE *(Column 7) Minus (Column 9)*	WATER LEVEL *(To 1/8 Inch)*
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
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31										

Unusual Daily Shortages must be investigated *(recheck dips and calculations).*

Cumulative losses or gains for any product in excess of 130 gallons per month must be investigated. →

Water level should never exceed 1". Excessive water should be investigated. ► ► ► ► ► ► ► ►

DR Form 268, Jan 91

THIS FORM REPLACES DR FORM 268, JUN 88, PREVIOUS EDITIONS WILL BE DESTROYED.

printed on recycled paper

Number 10.05 January 1, 2011

Subject: Underground Storage Tanks Daily Inventory Procedures

Rules and regulations on underground fuel storage tanks are published by the State Fire Marshal in Title 159.

The sole purpose of the daily inventory is to detect a leaking underground fuel tank. This information should not be used in conjunction with the fuel credit card system inventory; however, it may help you in determining variations. The basic daily inventory procedure will consist of taking a rod reading (stick reading) of each underground tank and converting this reading to gallons as well as reading the meters on each dispensing pump. This information will be recorded on a tank inventory form for each tank. Thos locations that use an automatic electronic monitoring system are exempt from completing the form.

A recommended procedure is that the daily inventory be conducted each working day morning. This will give you more time on the report and the tanks should be settled to allow for a more accurate rod reading. The report period will then be for the previous day. If you elect to take the rod reading at the close of each working day, then record the data on the form for that day. At the time you take your inventory, you will need to change the date on the data recorder to the next business day. Pick up your completed fuel issue tickets and check for correct date to allow for proper recording in the Equipment Management Information System.

DR From 268 – "Tank Inventory Record" is divided into four categories of information. Please refer to the attached forms for examples of entries.

1. Beginning Inventory: These are the mathematical values used in computing the opening inventory each day.

   Column 2 – This will be the same data as in Column 6 for the previous day. This data represents the ending rod reading for the previous day and is the same as opening inventory for the current day.

   Column 3 – Any deliveries made by the truck operator for the current day's business is entered in this column. Since there is no issue ticked available from the truck operator for the tank operator, you may have to use the carbon sheet to record the fill amount.

   Column 4 – This is the accumulated totals from Column 2 and 3 and represents the total gallons available at the beginning of the business day.

2. Rod Reading inventory: These values represent the inventory taken from rod reading measurements.

   Column 5 – The actual physical rod reading inches as shown on the measuring stick. This value must be reported to the nearest 1/8 inch.

   Column 6 – Rod reading inches converted to gallons according to the calibration chart for that tank.

3. Dispensed from Tank: Column 7 is the calculated quantity of fuel used from the tank according to rod readings. Subtract column 6 from Column 4 to determine gallons issued during the business day according to rod readings.
4. Meter Readings: These columns are used to calculate the gallons dispensed according to the dispensing pumps.

   Column 8 – Accumulated gallons readings taken from respective pumps. If you have a twin pump or dual meter on a single pump, add the two accumulative reading together and enter in this column.

   Column 9 – This column is to determine the gallons dispensed for the business day as recorded on the fuel pump.
5. Net Difference: Column 10 – By subtracting Column 9 from Column 7 will determine the net difference from the rod reading issues and the fuel issues. This net difference should help determine if there is a leak in your fuel system. This net difference must be cumulative as a flow-through total for the month and recorded in the box at the bottom of the column. If you have a net difference of 130 or more, it must be reported to Fleet Management immediately by sending in a copy of that month's Inventory Record.
6. Water Level: Column 11 – At least weekly, a water level test must be taken and recorded. The reading shall be to the nearest 1/8 inch.

DR Form 269 – Tank Inventory Record – for tanks without metering pumps will be used for those tanks that dispense fuel without the use of a metering pump. Such tanks are the central tanks, heating oil tanks and used oil tanks. The main point of this form is to take a rod reading in the evening and then again the next morning to determine if there was a loss. The next difference must be recorded in Column 10 with the net gain or loss carried through to the bottom of the form.

DR Form 270 – Delivery Record – This form will generally be completed by the tank trailer operator. The intent of this form is to record the tank inventory both prior to a fill and immediately upon completion of a fill. IT WILL BE NECESSARY TO DISOCONTINUE DISPENSING FUEL FROM THE ISLAND PUMPS DURING THE FILL OPERATION. Please refer to the attached form for instructions on completion.

1. Column 2 – The rod reading prior to any delivery. If more than one type of fuel is being delivered, it may be necessary to use two measuring sticks or fill gasoline first and then diesel.
2. Column 3 – Mathematical conversion of rod reading to gallons by use of the calibration charts.
3. Column 4 – The gallons delivered as recorded on the trailer meter.
4. Column 5 – The rod reading immediately after the delivery of fuel into respective tanks. Use the same stick as used for reading prior to delivery if two sticks are used.

5. Column 6 – The mathematical conversion of rod reading in Column 5 to gallons by use of calibration charts.
6. Column 7 – Subtraction of Column 3 from Column 6. The net difference is then recorded in Column 10.
7. Column 10 – Results from “6” above is recorded here.

   NOTE: Do not concern yourself if the difference does not come out equal but should be close. For your information, temperature variation should not affect your rod reading when readings are taken immediately after filling.

All inventory records must be retained at the dispensing site (location) for a period of at least five years. These records must be made available for any State Fire Marshall inspector.

Exceptions to the above are:

1. If you have two tanks with one pump, the total gallons for both are calculated from the conversion charts with gallons added together and entered in Column 6 to determine total gallons according to rod readings.
2. If you have two pumps from a single tank, the meter reading must be added together for entering in column 8 to determine total gallons issued according to pump readings.
3. When calibration is made on a dispensing pump, the gallons pumped must be recorded as a memo on the inventory sheet. The Agriculture Department, Weights and Measures will leave a sheet showing the gallons pumped. This sheet or copy thereof must be filed with your inventory sheet.

Highway Fleet Manager

Number 10.06 January 1, 2011

Subject: Propane Tanks

National Fire Protection Association Publication 58 outlines the testing (requalifying) of propane tanks. All containers, including those apparently undamaged, owned by NDOR will be periodically requalified according to the following schedule. Requalification will be done by a competent person knowledgeable in requalifiying of propane tanks. Requalifying check shall be made each time a container is filled to make sure the requalification is current.

This service bulletin does not pertain to propane tanks connected to buildings. Capital Facilities must be contacted for these requalifications. See you Safety Manual for handling and storage of propane tanks (Chapter 15).

1. New containers shall be tested by the manufacturer and marked accordingly on the container.
2. The first requalification for a new container is required within 12 years after date of manufacture. Several methods may be used in requalifying containers within this first 12 years.
    a. Water jacket type hydrostatic test may be used to requalify a container for 12 years before the next requalification is due.
    b. The simple hydrostatic test may be used to requalify containers for 7 years before the next requalification is due.
    c. Visual examination may be used to requalify containers for 5 years before the next requalification is due provided the container has been used exclusively for LP gas free from corroding components. This method of requalification is recommended after the initial 12 years.

    In all cases, the requalification date and code must be recorded on the containers at the time of the requalification.

A careful examination must be made by the person doing the filling of every container prior to each time it is filled and must be rejected if there is evidence of exposure to fire, bad gouges or dents, seriously corroded areas, leaks or other conditions indicating possible weakness which might render it unsafe. Attention must be direct to the bottom of the container and if any rust is apparent, a leak test must be conducted on the bottom of the container.

Tanks filled by state personnel will need to verify the requalification date and code each time they are filled. If the container is due for a requalification, it must be taken to a competent person to perform the requalification. The same examination for damage as stated above must be made on each container.

Leased tanks shall be subject to the same requalification as tanks owned by the Department. Requalification codes must be current at the time containers are leased from a vendor.

Repairs of containers must be performed by the manufacturer or by an authorized repair facility.

Highway Fleet Manager

Number 10.07 January 1, 2011

Subject: Safety Signs

It is required to have proper safety signs and/or decals located or placed within all NDOR buildings, yards, and equipment. Signage shall be in accordance to Human Resources Safety Division and/or Occupational Safety and Health Administration guidelines (OSHA).

The Sign Shop (Nebraska Department of Correctional Services) has developed many signs and decals meeting proper size and color requirements for signage. The sign sizes are the standard sizes fabricated by the sign shop, however, larger or smaller signs can be requested but every effort must be made to utilize the standard size. The signs and decals can be obtained thru Operations Division Supply Base. The signs and decals may be view thru a PDF catalog located on the dorimage1 server at the following location \\dorimage1\traffic\signshop\decalbook\.

An exception is the “Caution –Equipment Being Repaired – Do Not Start” sign which is being printed by Fleet Management. These signs will be laminated and supplied to each District. These signs will be slotted and when used, the keys and the sign must be placed on the same ring and attached to the steering column. It is suggested that the plastic ties be used for this purpose. Reference is made in the Employee Safety Handbook. Additional sign needs must be requested from Fleet Management.

Highway Fleet Manager

Number 11.01 May 1, 2011

Subject: Travel Logs

As of March 1, 2008 travel logs shall be maintained daily to record usage of Fleet vehicles by employees per NDOR Director and State Statute 81-1025.

Attachment 11.01C is the instructions on how to access the user guide on “How to Create a Travel Log Entry”. The user guide gives the step by step procedures on how to create a travel log entry.

Highway Fleet Manager

Attachment

11.01A – Directive from Director John Craig

11.01B – State Statute 81-1025

11.01C – Instructions on how to access the “How to Create a Travel Log Entry” User Guide

John Craig/DOR/NEBRLN
02/13/2008 03:17 PM

To DOR-Central Complex, DOR-Districts
cc
bcc
Subject Mandating Enterprise Asset Management System (EAMS) Travel Log Usage

The Department has recently implemented an Enterprise Asset Management System (EAMS) to manage its fleet and equipment. Part of this system is designed to ensure that our fleet and equipment is being serviced and maintained appropriately. This planned maintenance is predicated on the amount of usage whether by miles or hours used. In order to facilitate this process, it is necessary to capture the daily usage of our fleet. Additionally, state law requires that the Department maintain a record of the daily usage and operator of each fleet item.

Contained in EAMS is a travel log function that requires operators to report daily usage of items in our fleet. For those who are not operating in EAMS, an external (to EAMS) web-based travel log has been created and installed on each NDOR computer. These tools should allow the Department to capture the daily usage of all fleet items.

In order to ensure appropriate maintenance of our fleet and to comply with state law, I am requiring that as of March 1, 2008 existing and available travel logs be utilized to capture the daily usage of fleet vehicles by employees. For the time being, usage of the travel logs will not replace the current requirement to enter information into PDS and crew cards. However, an NDOR team has been assigned to address the issue of duplicate data entry. That project is currently underway. The Department's travel log system will be monitored and managed by the Operations Division.

District staff having access to EAMS may use either travel log. Those Divisions without access to EAMS will find using the external travel log a simple and expedient way to meet this NDOR requirement. Use of the travel log system will be required when individuals use vehicles that are assigned to their respective Divisions and/or District. For those NDOR personnel whose vehicle use consists of checking out pool vehicles, the travel log activity will be handled by the Rail and Public Transportation (Motor Pool) staff.

I encourage those outside of EAMS to find the following icon in your favorites before its required usage on March 1, 2008. An orientation on the use of the web-based travel log will be scheduled in the near future.

81-1025. Reports; contents; filing; open to public inspection; exception.

(1) Each operator of a state-owned motor vehicle, except a special-use vehicle as prescribed in section 81-1011 or a motor vehicle in which a state agency holds the title, shall report the points between which the motor vehicle traveled each time used, the odometer readings at such points, the time of arrival and departure, the necessity and purpose for such travel, the license number of such motor vehicle, and the department to which such motor vehicle belongs.

(2)(a) Each operator of a special-use vehicle as prescribed in section 81-1011 or a motor vehicle in which a state agency holds the title shall follow the policy and use the travel report form which shall be established by the director or designated head of the state agency owning such vehicle. The form shall include, but not be limited to, the name of the operator, the license number of the vehicle, the total daily mileage or total hours of daily operation, and any other information the director or designated head deems relevant.

(b) State agencies leasing or renting motor vehicles from the transportation services bureau pursuant to sections 81-1008.01 and 81-1010 shall be required to report motor vehicle usage pursuant to subsection (1) of this section on travel forms prescribed by the chief of the transportation services bureau.

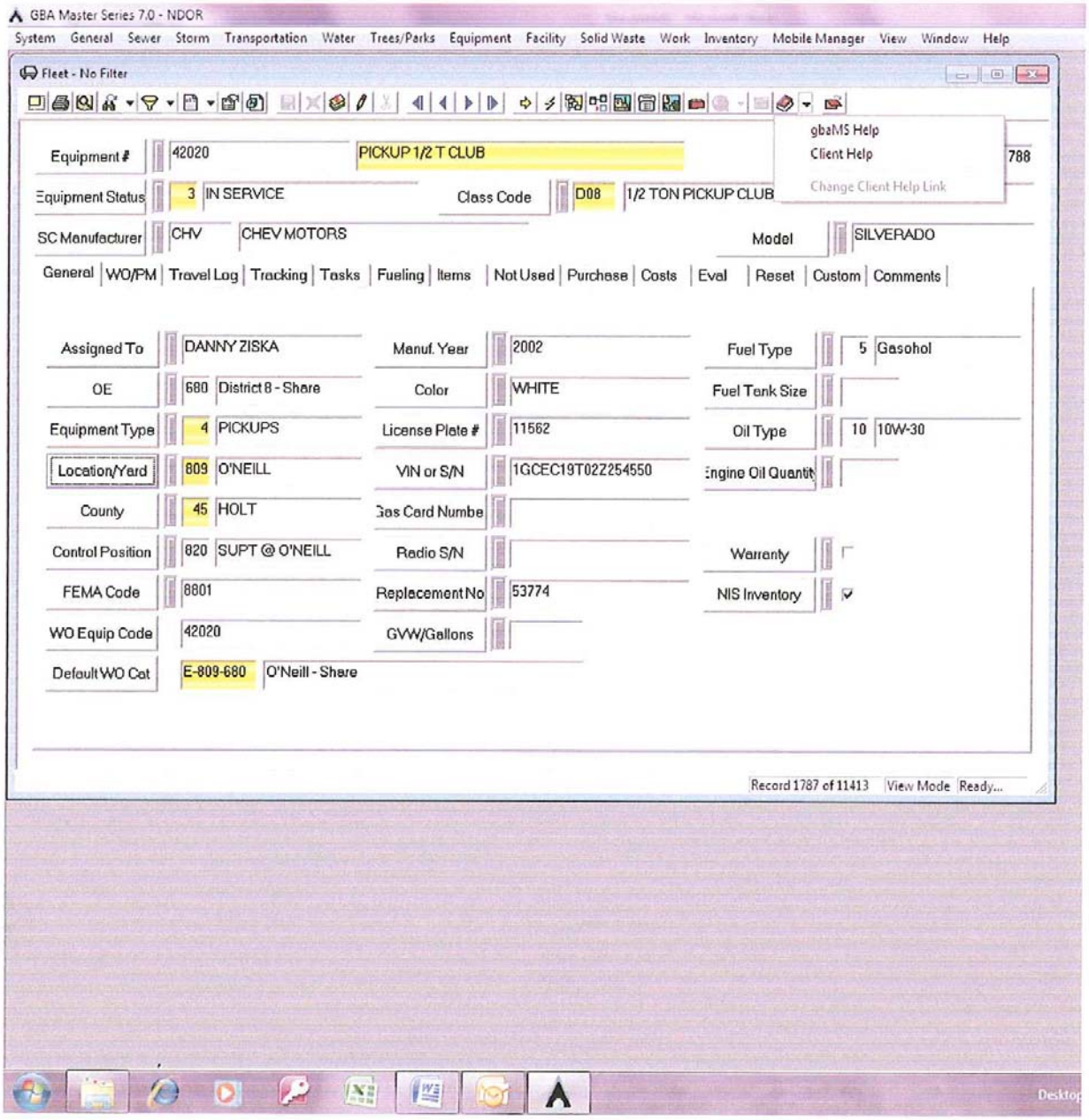
(3) Such travel reports shall be transmitted at the end of each month by every operator to the director or designated head of the operator's state agency, and such reports, after review by the director or designated head of the agency, shall be retained by the agency except the travel reports on motor vehicles leased or rented from the transportation services bureau. The travel reports on motor vehicles leased or rented from the transportation services bureau shall be transmitted to the chief of such bureau on or before the seventh day of the month following such use of a motor vehicle.

(4) Such travel reports shall thereafter be open to public inspection for a period of two years, after which they may be destroyed, except that when public inspection of a particular record would be detrimental to the investigation of a criminal case, such particular record shall be withheld from public inspection upon written certificate to that effect by the head of the law enforcement agency concerned.

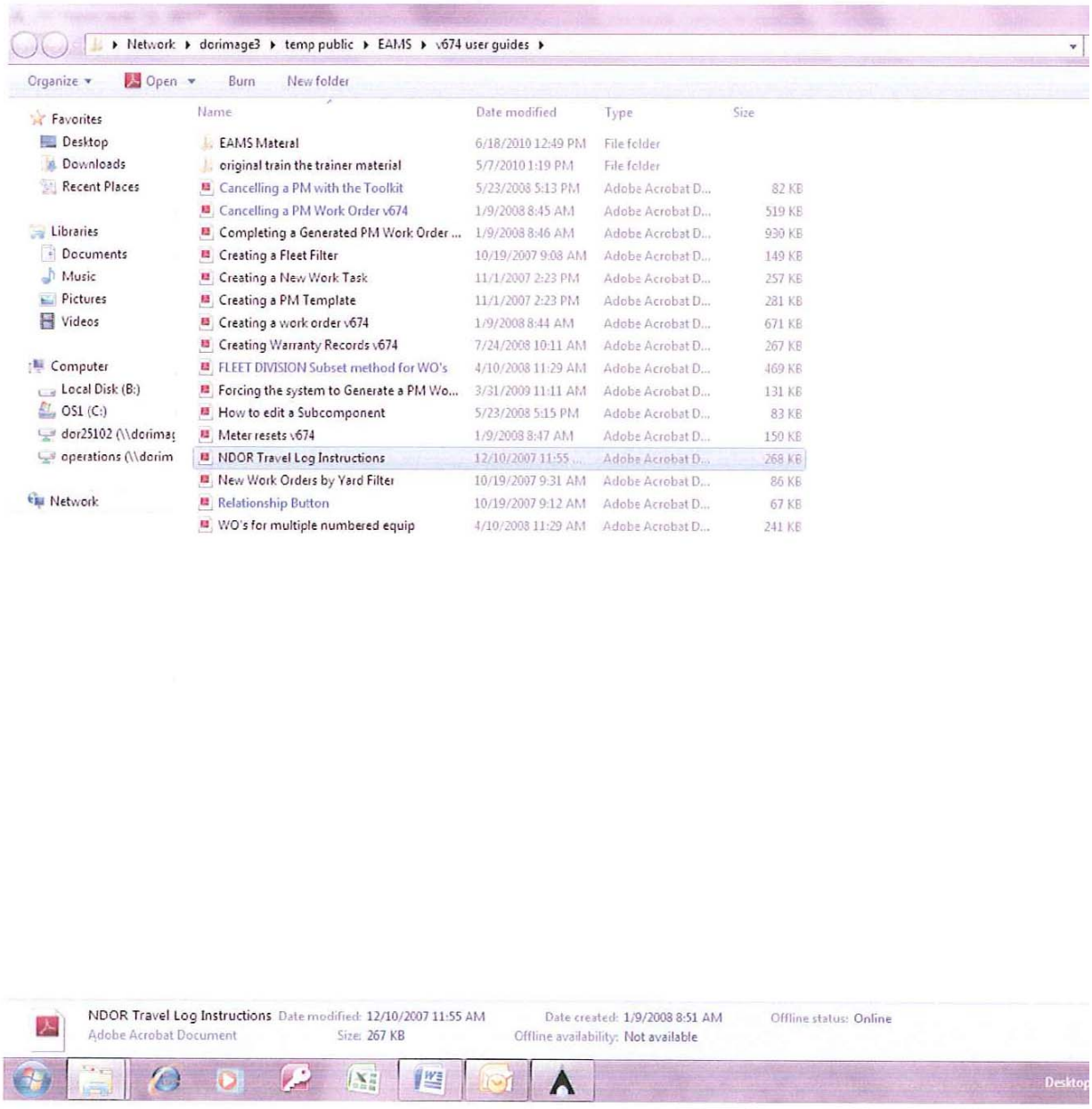
(5) For purposes of this section, state agency shall include an agency, department, board, bureau, or commission of the state except the transportation services bureau.

Source: Laws 1959, c. 301, § 1, p. 1129; Laws 1961, c. 181, § 10, p. 542; R.S.1943, (1988), § 60-1006; Laws 1993, LB 370, § 488; Laws 1993, LB 575, § 48.

Click on the arrow by the "Help" book
and select "Client Help"



Select NDOR Travel Log Instructions



Number 11.02 January 1, 2011

Subject: Creating a Work Order

All work completed on Fleet equipment shall have a work order created in EAMS to capture all costs associated with the work/repair.

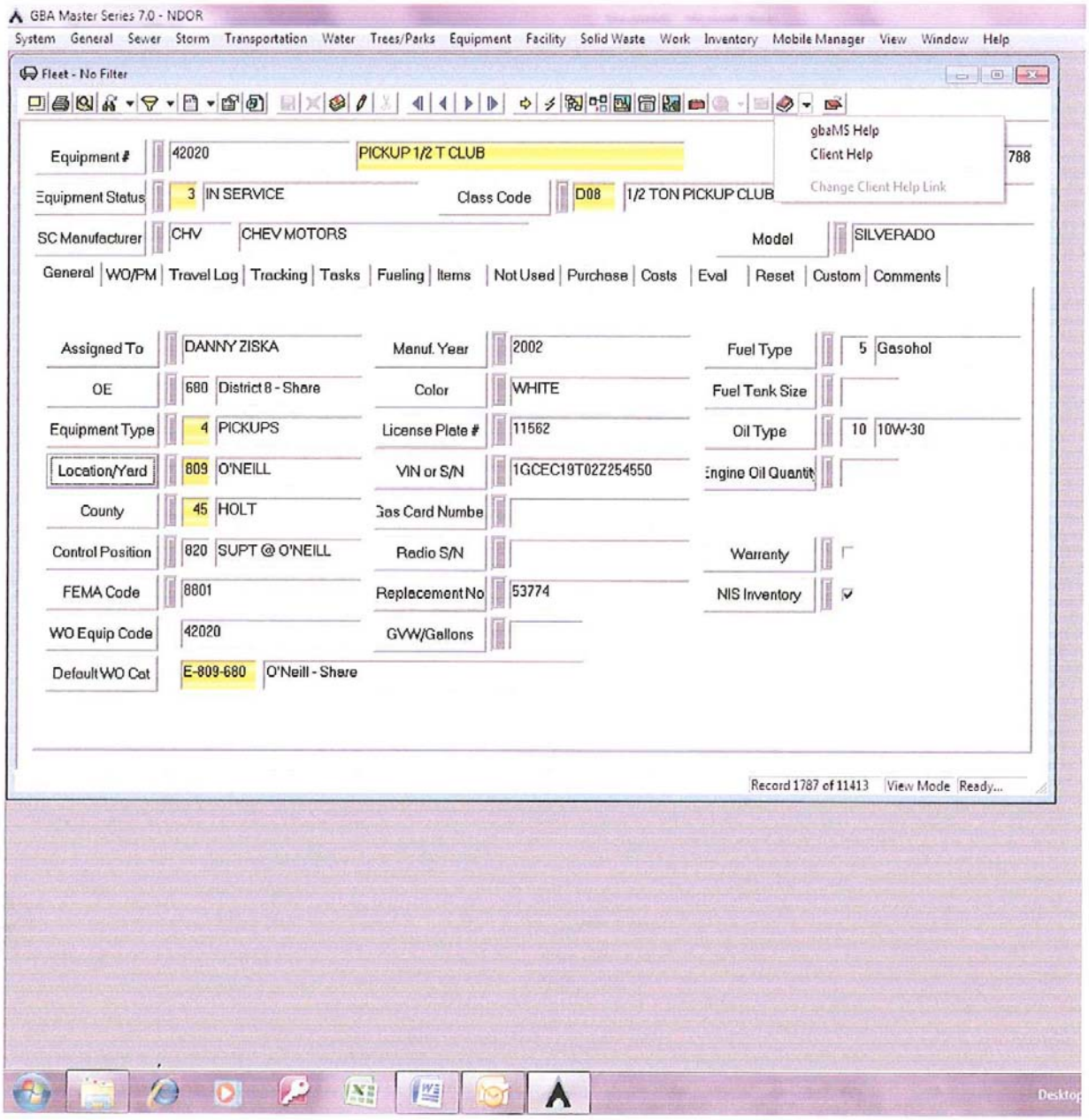
Attachment 11.02A is the instructions on how to access the user guide on “Creating a Work Order”. This gives the step by step procedures on how to create a work order.

Highway Fleet Manager

Attachment

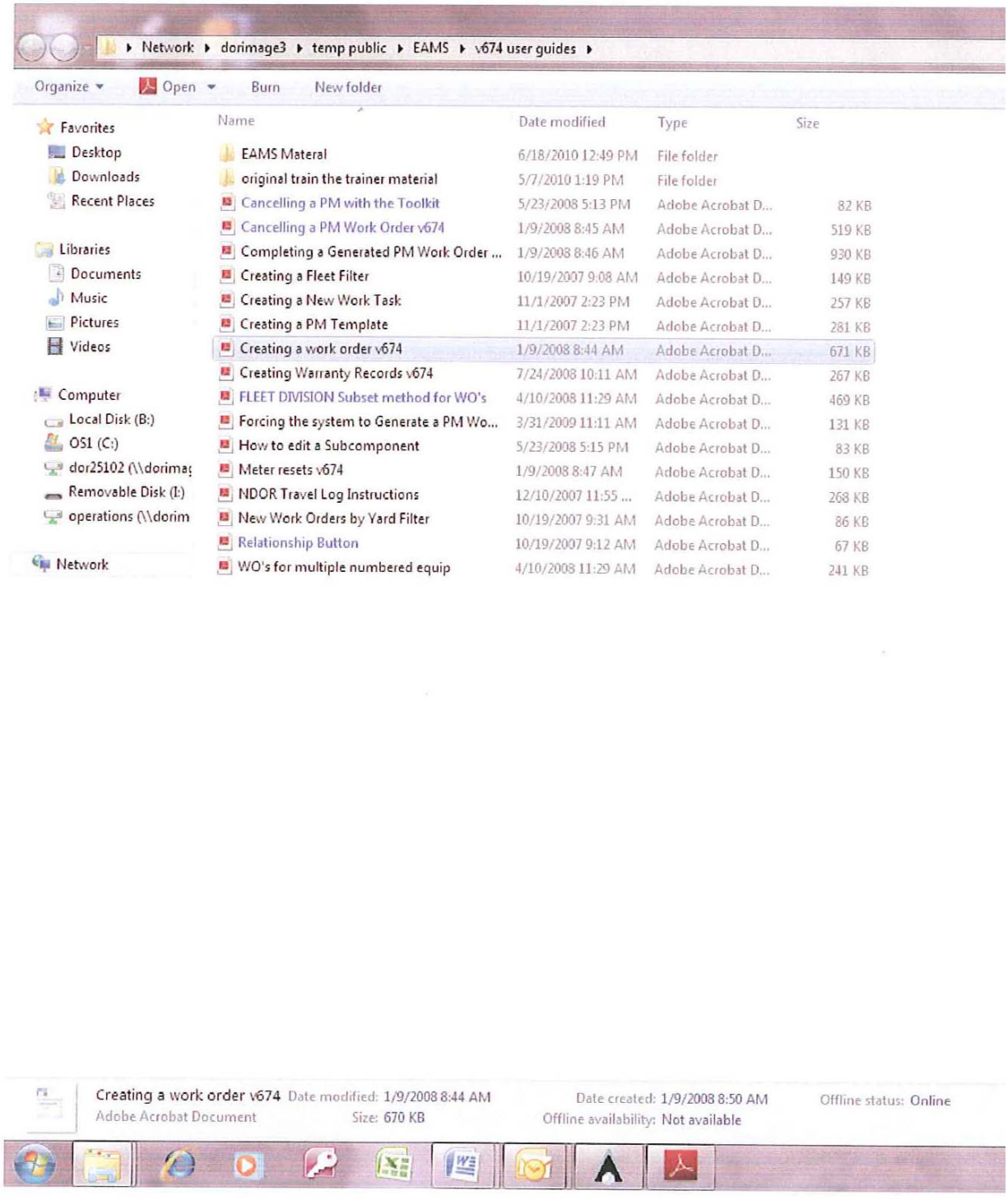
11.02A – Instructions on how to access the “Creating a Work Order” User Guide

Click on the arrow by the "Help" book
and select "Client Help"



11.02A

Select Creating a work order v674



Number 11.03 January 1, 2011

Subject: Falcon Document Management System

With the use of the Falcon Document Management System the ability is now there to go to a piece of equipment in EAMS and to be able to access all of the documents associated with it electronically for example specification sheets or line sheets.

Attachment 11.03A is the user guide on “Entering Documents into Falcon for Use in EAMS”. This gives the step by step procedures on how to enter documents into Falcon for use in EAMS.

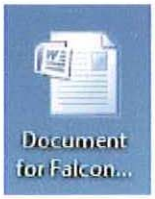
Highway Fleet Manager

Attachment - 11.03A – Entering Documents into Falcon for Use in EAMS User Guide

Entering Documents into Falcon for Use in EAMS

In order to get documents into EAMS by using Falcon, you will need to put the document(s) in a specific location so Falcon will see it.

1.) Locate the file you would like to put in EAMS. For this example, I will be using a Microsoft Word Document named "Document for Falcon"



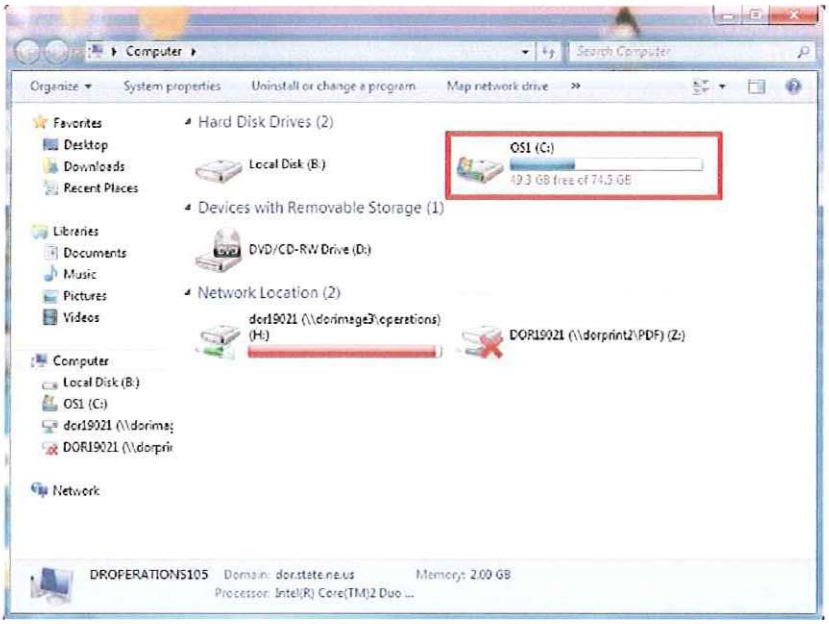
2.) After you have located the file you want in EAMS, browse to the path "C:\documents" by first double-clicking on "My Computer" (Icon below).

If you don't have this icon on your desktop, you can also get to My Computer by clicking on your start menu then clicking on "Computer" or "My Computer" depending on whether you have Windows 7 or Windows XP. See pictures on next page.

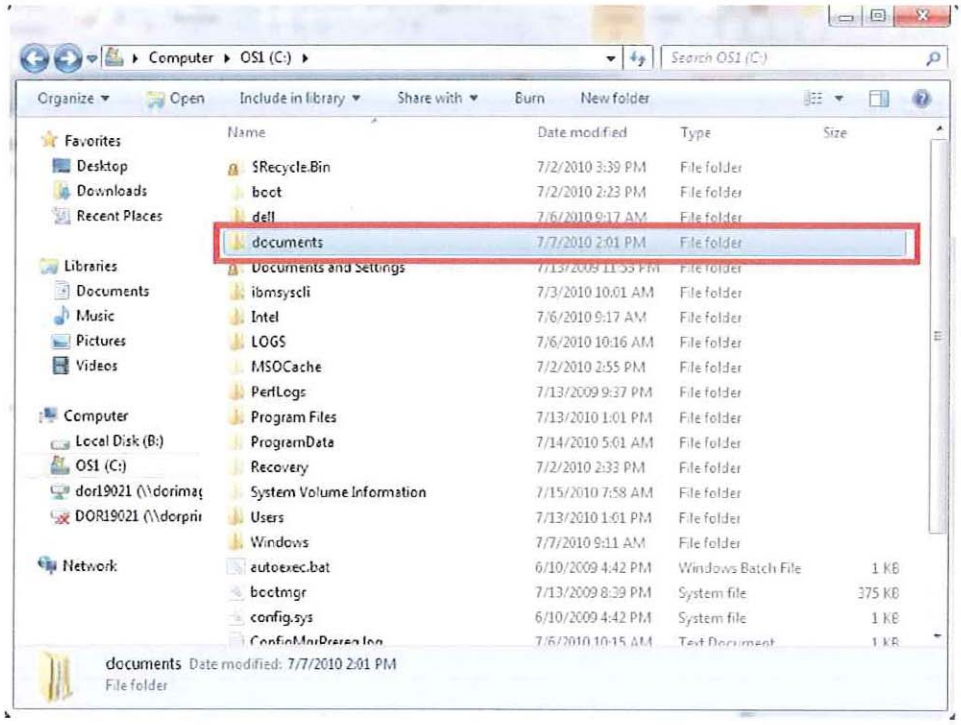
Windows XP:

Windows 7:

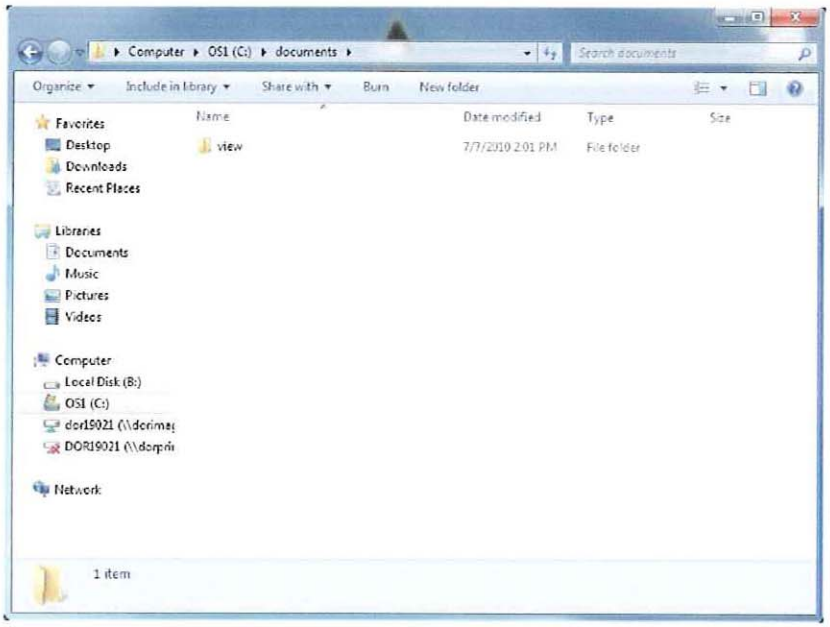
Once you have opened "My Computer", double-click on the "C:" drive;



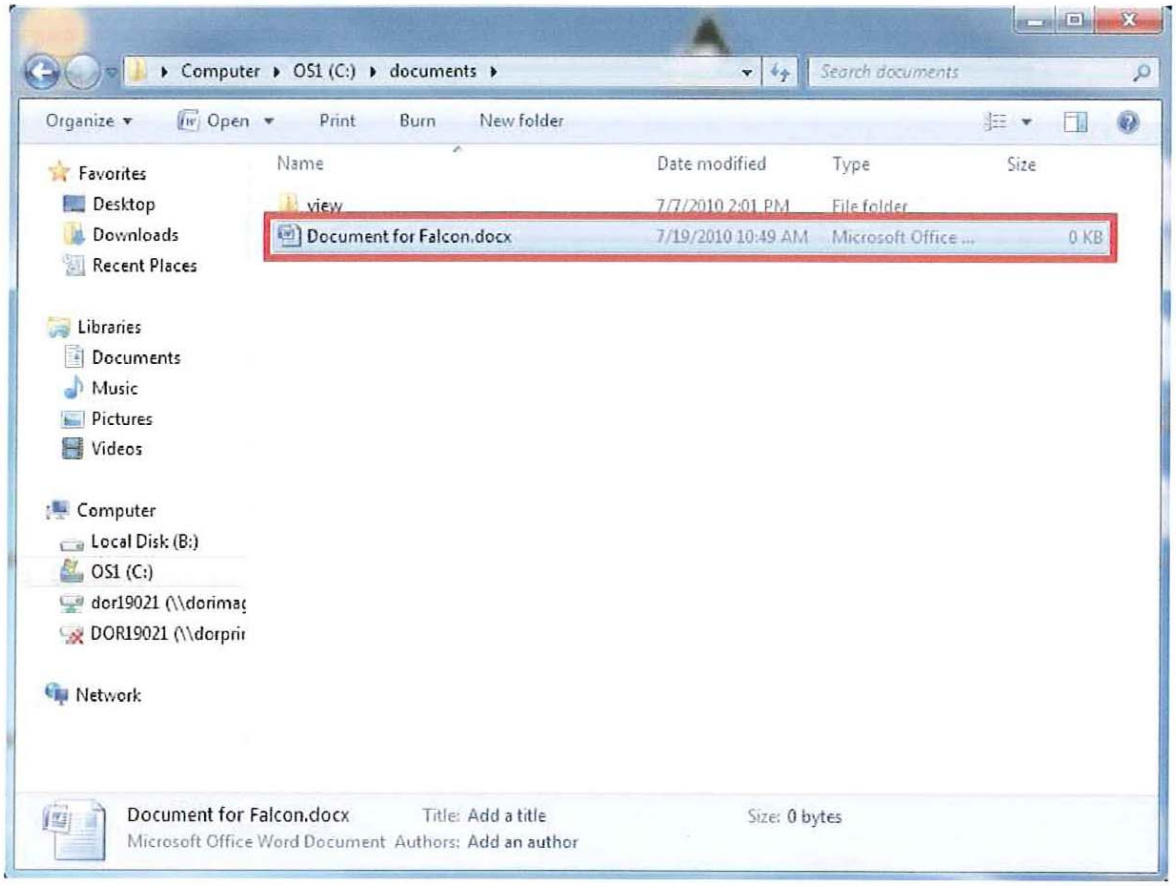
Locate the “documents” folder and double-click to open it.



You are now in the Falcon “documents” folder which may or may not look similar to the picture below depending on if you use Falcon for other activities.



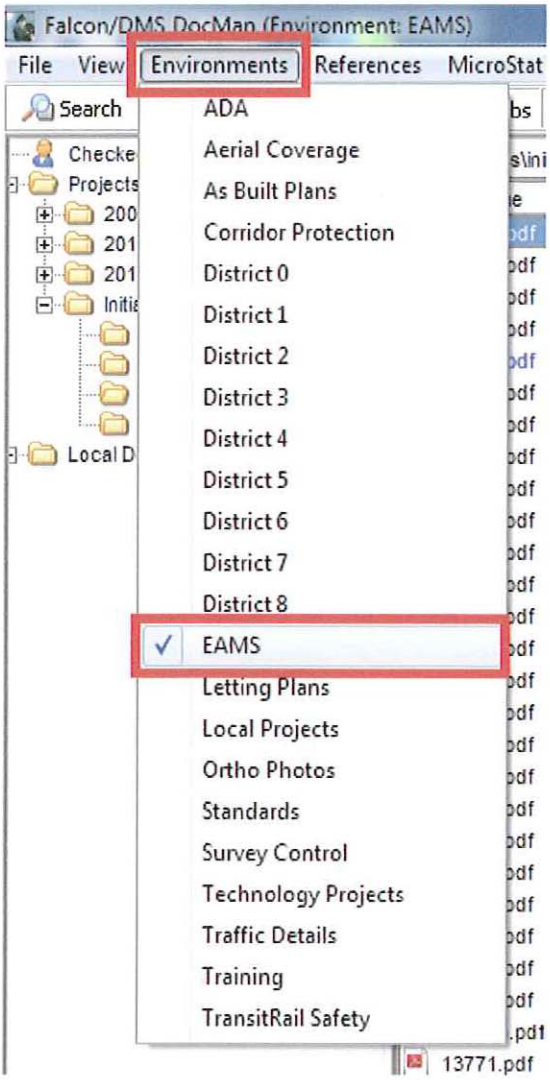
3.) Now that you have the "documents" folder open, drag the document you want in EAMS from its current location to the documents folder that you have open on your screen. You should be able to see the document in the folder like below.



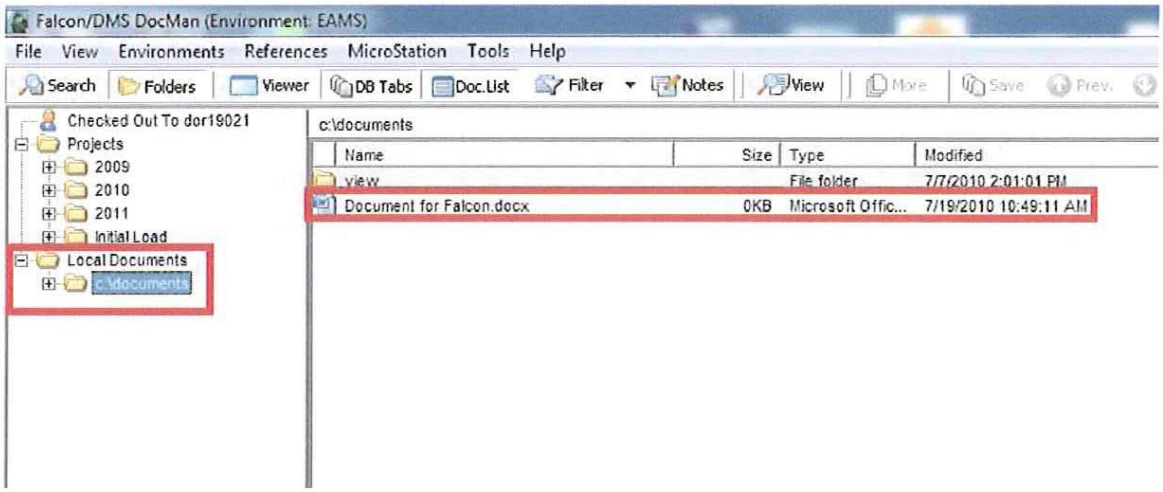
If you can see your picture/document in the folder, you can close it and go to Step 4 on the next page.

4.) Open Falcon by clicking on the "FalconDMS" icon which should be located on your desktop.

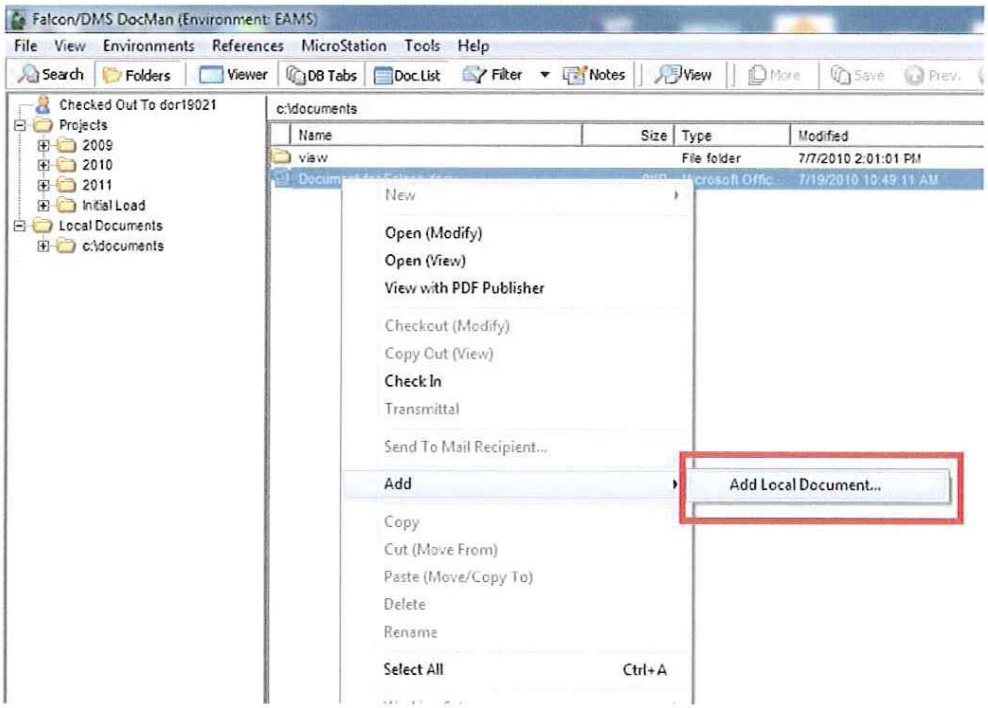
5.) Once Falcon has loaded you will need to make sure you are in the "EAMS" environment by clicking on the "Environments" menu and selecting "EAMS", see illustration below.



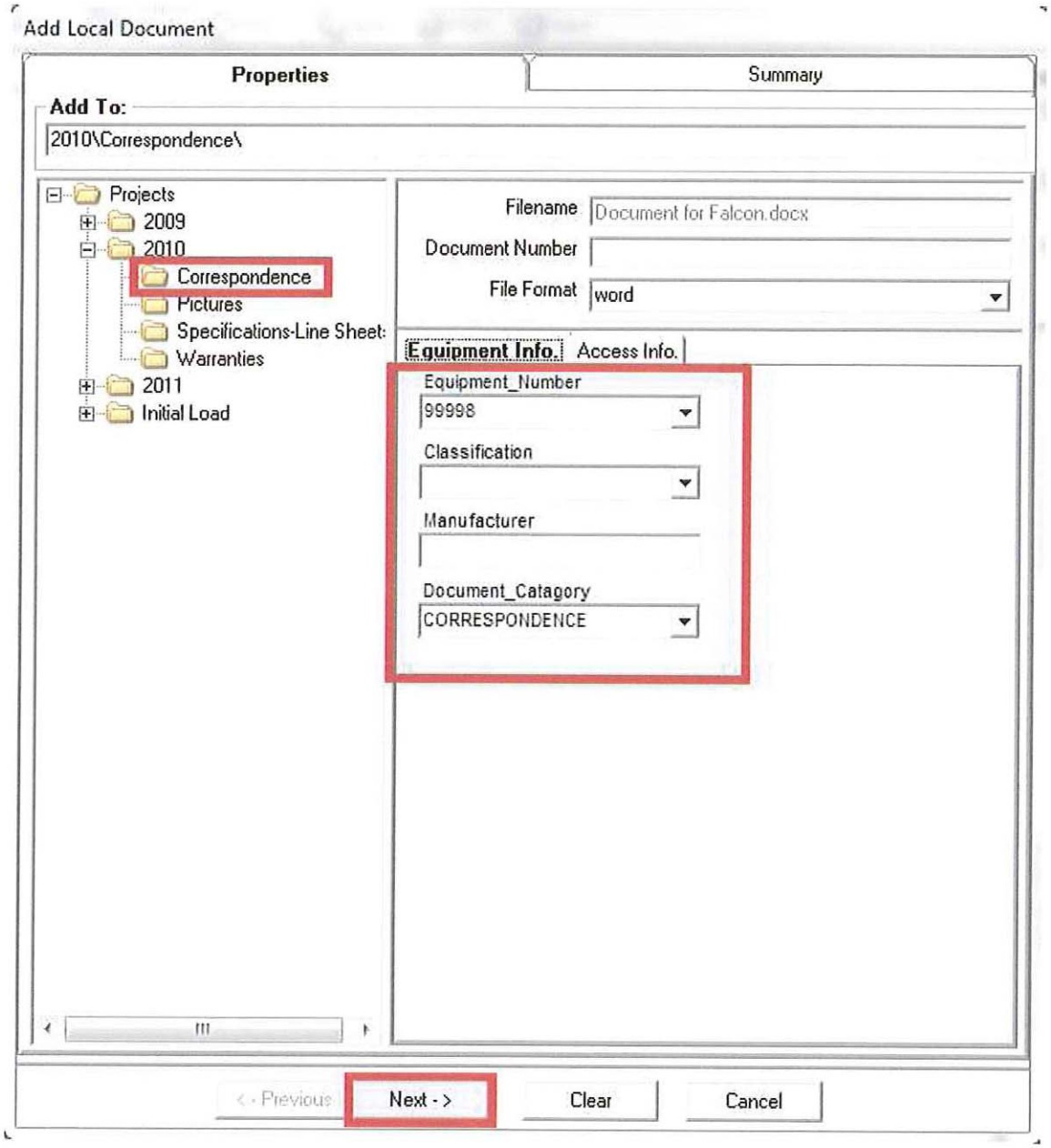
6.) After FalconDMS is open, you will see a folder tree on the left of the screen. Click on the plus sign (+) next to "Local Documents", then click on the "C:\documents" folder and your document will be displayed in the view pane just to the right. See the picture below for details.



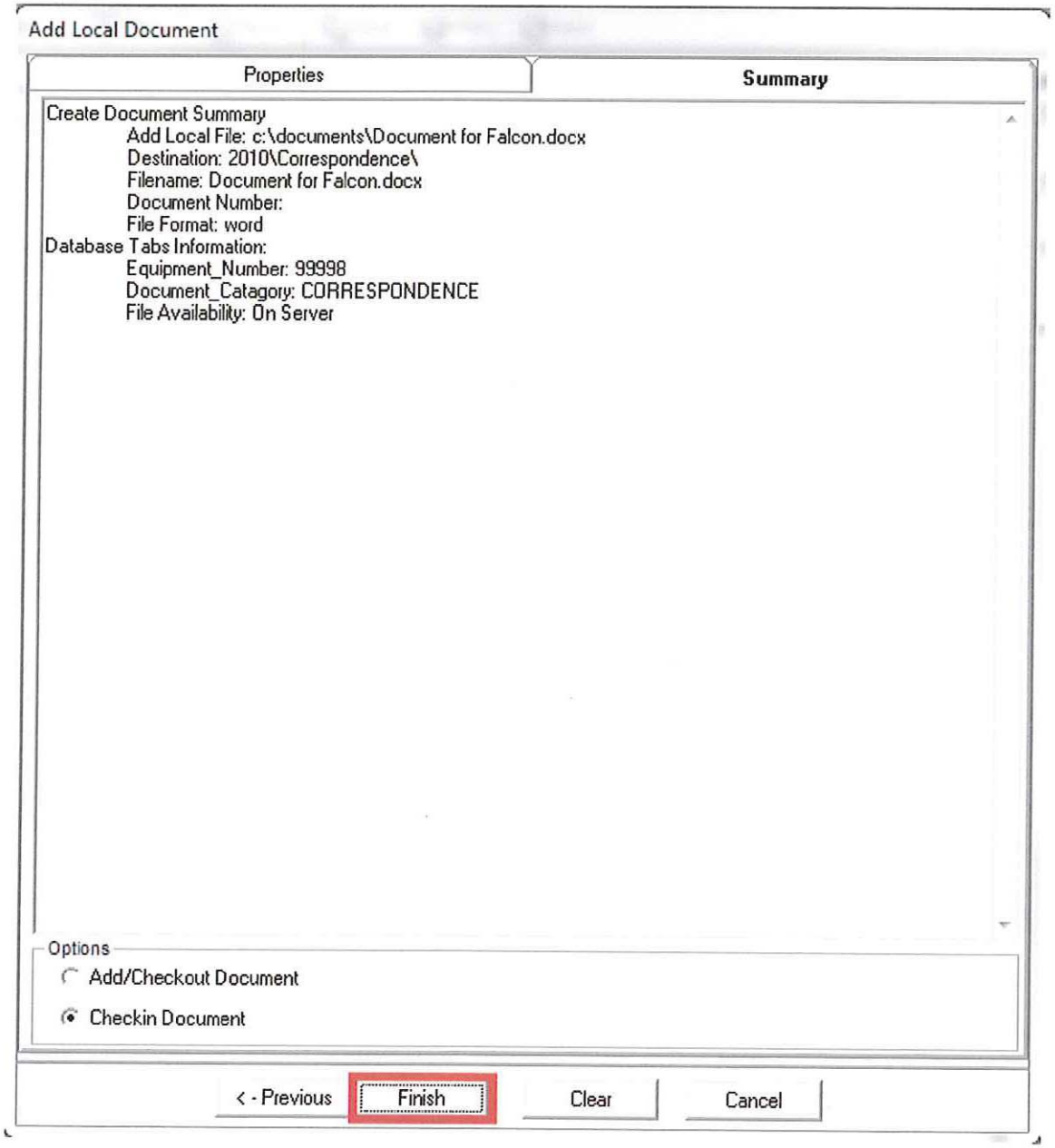
7.) To add your document to EAMS, you will need to right-hand click on the document, go to the add menu, and click on "Add Local Document..." like the example below.



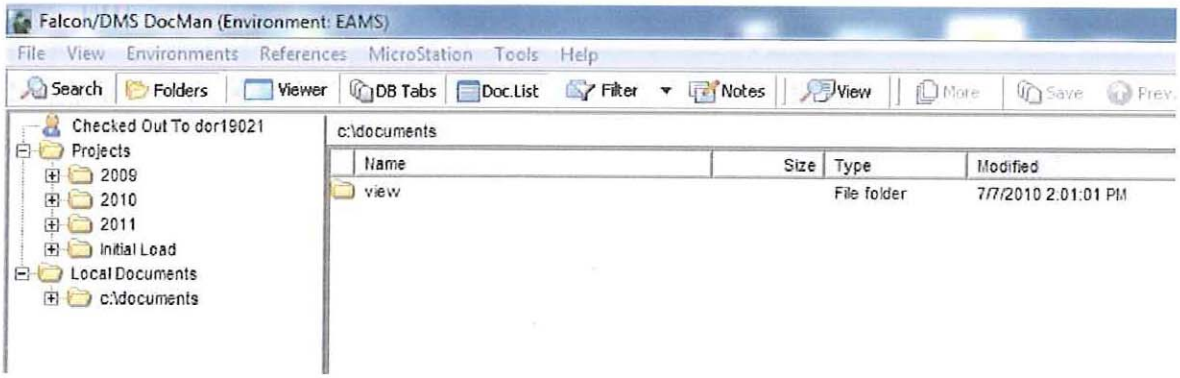
After you click the "Add Local Document..." menu option, the "add local document" dialogue box will open. Click the plus (+) sign next to the current year, select the appropriate sub-folder (Pictures, Correspondance, Spec-line sheets, Warranties) by clicking on it. Then fill in the equipment number from the pick-list in the middle of the window and fill in the document category from the pick list and click "Next". See example below.



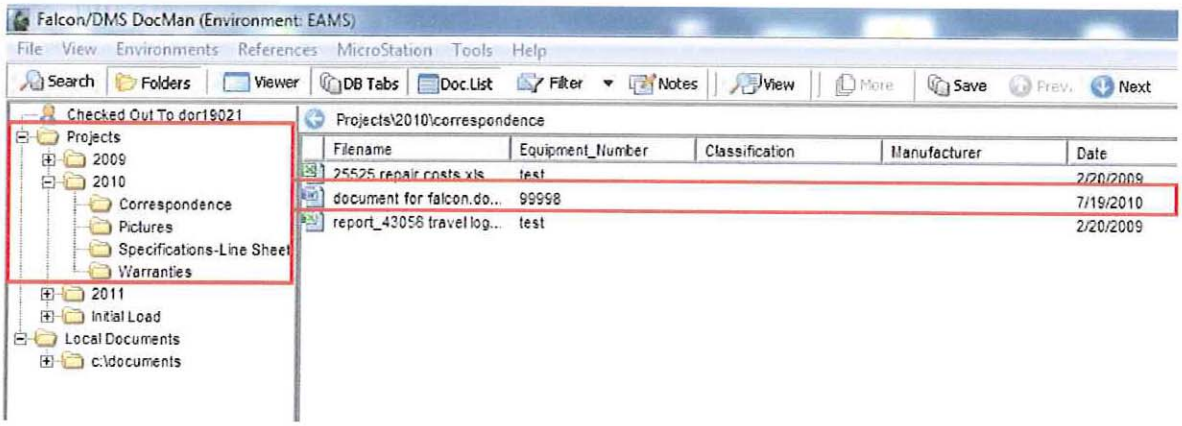
Review the summary, make sure "Check in Document" is selected in the options box, and click "Finish". See example below.



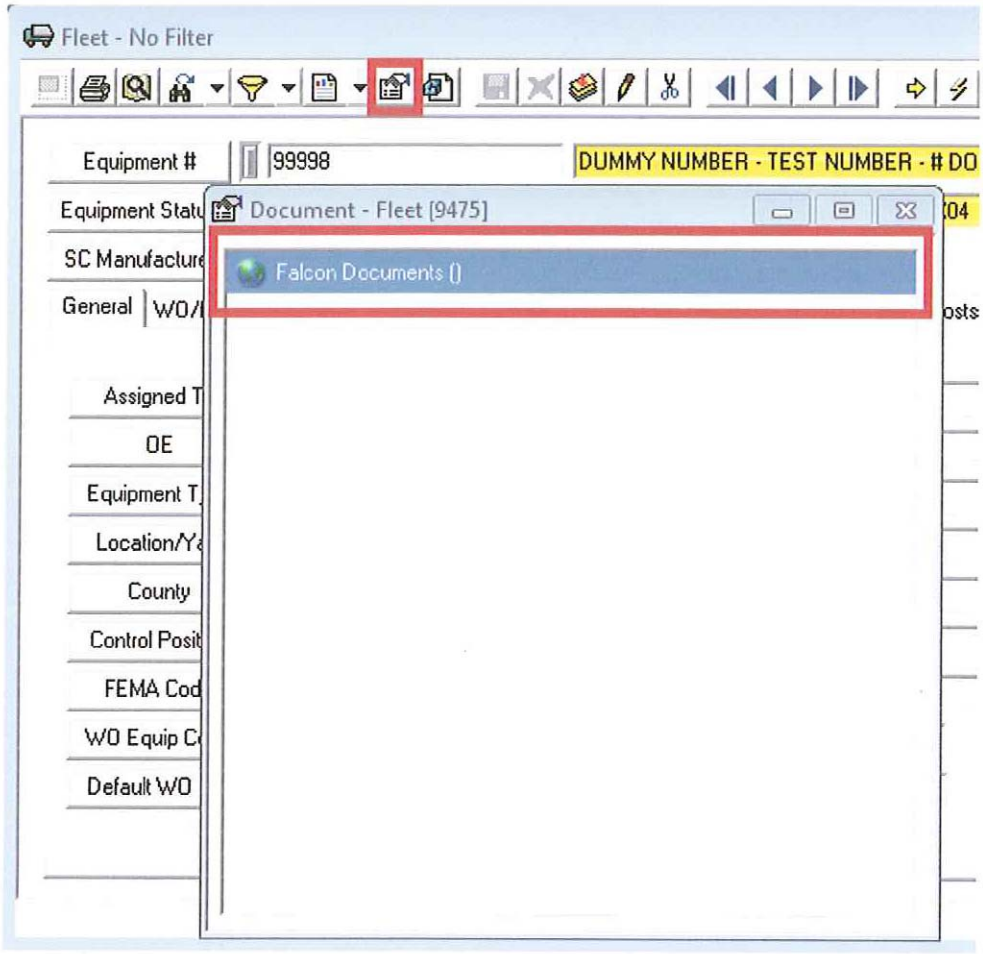
After the "Add Local Document" dialogue box goes away, you will see that the file is no longer on your local machine.



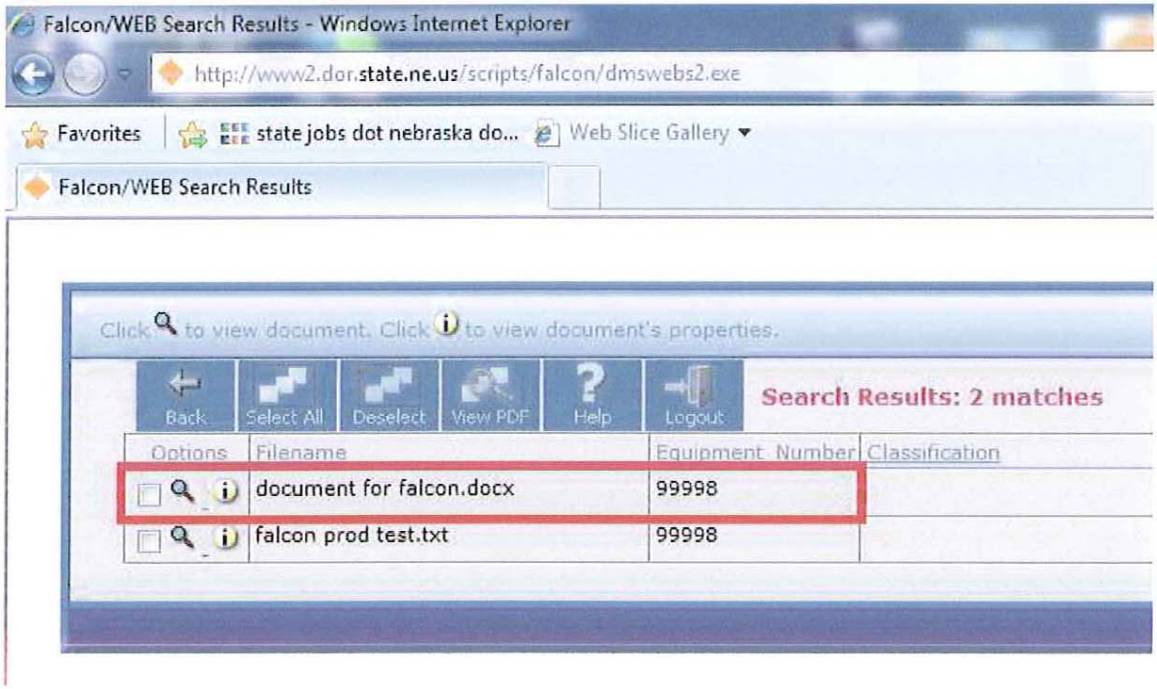
If you click on the plus (+) sign next to "Projects" then year you selected in the "Add Local Document" dialogue box, then select the same sub-folder as you did before, you will see the document that you just added. Please note you may have to scroll down to find it!



8.) To view the document in EAMS, log into EAMS, go to the fleet module, locate the piece of equipment, click on the "Open Document" button, and double-click the "Falcon Documents" line in the dialogue box that pops up.



All of the documents associated to the piece of equipment you selected will be displayed in your internet browser like the picture below.



Don't panic if you don't see your document right away. It may take a full 24 hours for the document to show up.

Number 11.04 January 1, 2011

Subject: EAMS Reports

A number of reports are available to monitor data integrity.

NDOR 3-Star Report - Report used to determine whether a specific piece of equipment is ready to be retired.

NDOR Equipment Justification Report - Displays the most recent travel logs and fueling data for each piece of equipment in your filter set.

NDOR Fleet Mileage Info - Shows current meter readings of all equipment by yard.

NDOR Fleet Travel Log Detail Report - A detailed report for a specific piece of equipments travel log history.

NDOR Planned and Unplanned Maintenance Cost - Shows the total and a breakdown of the planned and unplanned costs for a specific piece of equipment.

Quality Assurance Fleet Equipment Without PMs - Shows equipment that does not have any PMs created for it.

Quality Assurance Fleet Non Scheduled PMs - Shows equipment that does not have any scheduled PMs set up.

NDOR Work Order Aging Report - Shows Work Orders that are older than 60 days.

Highway Fleet Manager

Number 12.01 January 1, 2011

Subject: Use and Storage

Use of Equipment:

Equipment is used only for work on State and direct labor projects.

Equipment is used where it provides the most service to the Department.

Department equipment is not loaned to any agency without authority of the Operations Manager.

The District/Division will be responsible for monitoring usage of equipment. All transportation equipment (cars, pickups, vans) should be utilized at 5,000 miles annually. All other equipment should also be monitored for usage. It is the District/Division responsibility to relocate equipment to maintain proper usage. For your guidance there is a report in EAMS titled **NDOR Equipment Usage Totals by Years** to help you monitor usage.

Privately Owned Equipment:

Private equipment may be rented by the Department when needed or during emergencies. Use DR Form 5 (Operation and Equipment Rental Agreement).

Storage and Parking of Equipment:

1. Seasonal equipment will be stored at Department facilities and will be inspected and exercised monthly.
2. Department equipment may be parked on the highway right-of-way provided a minimum clearance of thirty (30) feet from the pavement edge is maintained. No parking of Department equipment shall be allowed within median areas.
3. Department equipment may be parked on private property only upon consent of the property owner.

Highway Fleet Manager

Number 12.02 January 1, 2011

Subject: Care of Equipment

Operation and Maintenance of Equipment:

1. Preventive maintenance inspections are performed before, during and after operation of Department equipment to prevent costly repairs and time lost due to breakdowns.
2. A piece of equipment will not be operated under conditions other than for which it was designed. Failure to do so may cause the manufacturer's warranty to become void.
   a. Overloading and general mistreatment are two reasons for a warranty being voided.
   b. Improper servicing and repairs may also void a warranty.
3. It is the responsibility of Fleet Management and the District Mechanics through the District Operations and Maintenance Managers and District Engineers to provide training for operators in the proper operation and care of equipment.
4. Manufacturers' manuals are to be used and understood thoroughly by all operators.
5. Equipment removed from storage is to be inspected and serviced prior to its utilization.

Equipment Inspection and Physical Inventory:

1. Fleet Management will send Districts/Divisions inventories annually.
   a. The District Mechanics are required to scan all NIS equipment with barcodes annually.
2. Inspections/inventories are made to determine the exact equipment condition and location at the time of inspection/inventory for defects or adjustments requiring attention.
3. The District Mechanic with the assistance of the Maintenance Supervisor will conduct the equipment inspections/inventory.
   a. Inspections/inventories are scheduled to minimize any disruption of operations.
4. The District Mechanic will notify the appropriate personnel for inspection/inventory of equipment.
   a. The Maintenance Supervisor reports known defects or necessary adjustments to the District Mechanic and assists during the inspection/inventory, if requested.
5. Headquarters' equipment will be inspected/inventoried at the main shop.
6. All Division equipment will be inspected/inventoried by the Division Head's designee.

Highway Fleet Manager

Number 12.03 January 1, 2011

Subject: Responsibility and Maintenance Instructions

Fleet equipment is a major item of property owned by the Department in addition to buildings, structures and the highways themselves. Supervisors will be delegated with the responsibility to see that each unit receives proper care and maintenance.

Responsibility:

The District Mechanic is charged with the overall responsibility for following appropriate servicing procedures for vehicles and equipment in accordance with Fleet Management guidelines.

1. In a given area it is the direct responsibility of the Maintenance Supervisor to assure that equipment used by his/her employees is properly serviced according to instructions given to the District Mechanic by Fleet Management guidelines.
2. Servicing of cars, pickups, carryalls and special equipment, permanently assigned, shall be the responsibility of the operator, whether or not he/she actually services the unit.
3. The Maintenance Supervisor will be held accountable for the servicing of all equipment in his/her area even though the operators are assigned the actual task.

Vehicle and Equipment Operation:

The following is the direct responsibility of the operator.

All Department vehicles or equipment should be fueled at the maintenance yard pumps, except for those units requiring special fuels. Those units requiring special fuels shall be refueled according to current directions. When obtaining motor fuel, operators shall record the information required. The Department has proper viscosity motor oils available in the vicinity of our fuel pumps. All oil used shall be entered in the data recorder unit.

Ignition keys shall be removed and the vehicle shall be locked when a unit is parked, except when locked in maintenance buildings. When unattended, always place the transmission in the “park” position and the parking brakes shall applied.

Tire pressure shall be checked during the pre-operation inspection. Inflation pressure information can be obtained from the operator’s manual or from maintenance shop personnel. Tire condition will also be checked during the pre-operation inspection.

Vehicles and equipment to be stored for an extended period of time are to be given to the mechanic in charge of a maintenance shop who will be responsible for its adequate protection and maintenance.

The vehicle equipment operator will call the mechanic’s attention to any fault or malfunction which he/she discovers in a unit. The DR Form 510 (Equipment Repair Order (ERO)) may be used (District/Division decision) and directed through his/her supervisor.

Vehicle Lubrication:

The following shall apply to any vehicle.

1. During the equipment warranty period, the manufacturer's recommendations must be followed as to procedures. Some lubricants may be stocked by Operations. Check Stock Control for availability.
2. Engine Lubrication Oil and Filter Change:
    a. Oil change intervals for engines will be 5,000 miles, annually or 150 hours whichever occurs first. Oil filters are to be changed with every oil change. Seasonal equipment such as snowblowers and lawn mowers are exempt from the three month guidelines during the off season. Seasonal snow removal equipment shall have the oil changed at the end of the season and the beginning of the season.
    b. Severe Duty Equipment: Where operating conditions are severe as the result of dusty or short-run conditions, more frequent changes (with special attention to the air filter) are recommended.
    c. With special emphasis on section assigned passenger cars and construction pickups, carryalls and panels, it is mandatory that equipment used regularly be given a preventive maintenance inspection daily.
    d. Engine oil level shall be checked daily and required additions made.
    e. Oil bath air cleaners are to be filled to the proper level with proper weight of motor oil and paper type air filters changed as labeled.
    f. Oil additions should be of the correct viscosity.
3. Chassis Lubrication:
    a. All equipment regularly used shall be lubricated at the time of an oil change or as recommended by the manufacturer's service recommendations. Sealed grease fittings are to be inspected for damage or loss at the time of the oil change. Manufacturer's recommended lubrication practices are to be followed on sealed lubrication fittings.
4. Automatic transmissions are to be filled with the proper type of fluid. Follow the manufacturer's recommendation. Operations does stock Dextron III. If a different type is needed, it will need to be purchased locally.

Equipment Lubrication:

The following procedures shall be followed.

1. During the warranty period the manufacturer's recommendations must be followed as to procedures. Some lubricants may be furnished by the Operations Division Special instructions may be given by Fleet Management or by the District Mechanic.

2. Hydraulic systems are to be filled with appropriate hydraulic oil. In all cases, consult the operator's manual and follow its recommendations. When in doubt, direct inquiries to the District Mechanic.

Maintenance Equipment Operators:

Equipment operators are responsible for the following care of assigned equipment and are responsible for ensuring that the work has been done.

1. Correct lubrication of the unit.
2. Proper care of tires.
3. Cleanliness and appearance of the unit. Seasonal activities involving the use of chemicals requires frequent flushing and re-oiling of all contaminated sander delivery mechanisms. Salt brush and scum accumulations are to be removed from the truck, sander hopper and dump body after each snow and/or ice removal period.
4. Check that the cooling system in good order and add antifreeze when required.
5. Check the fan and water pump belts.
6. Check the battery.
7. Check the air cleaners.
8. Check that all accessible chassis bolts and nuts are tight.
9. Operators shall make only minor adjustments to the equipment, and shall under no circumstances change governor settings or disassemble carburetors, distributors, generators, transmissions, or any other part or accessory assemblies.
10. The operator shall promptly report any other mechanical attention needed to the mechanic in charge, as well as to his/her supervisor so correct documentation is entered in EAMS.

Highway Fleet Manager

Number 12.04 January 1, 2011

Subject: Equipment Identification Number (5 Digits)

1st Digit as Follows:

1 – Tractors

2 – Heavy Trucks

3 – Motor Graders

4 – Light Trucks

5 – Automobiles

6 – Mowers

7 – Loaders

8 – Tanks

9 – Miscellaneous Equipment (not covered above)

2nd Digit – Year Equipment Manufactured

3rd, 4th and 5th Digits – Indicate the decade series and complete the 5-Digit Identification Number as follows:

3rd, 4th and 5th Digits	Decade Series
001-499	1925-1934
500-749	1935-1944
750-999	1945-1954
000-499	1965-1974
500-749	1975-1984
750-999	1985-1994
000-499	1995-2004
500-999	2005-2014

Highway Fleet Manager

Number 12.05 January 1, 2011

Subject: Surplussing Numbered Automotive and Heavy Road Equipment

Purpose:

To establish policy and procedures for selecting and processing numbered automotive and heavy road equipment for surplus. Numbered equipment selected for replacement will be disposed of in accordance with State Statutes.

Responsibility:

The Fleet Manager is the designated resource manager for numbered automotive and heavy road equipment. It shall be the responsibility of the Districts/Divisions/Fleet Management to whom the equipment is assigned to identify those units of equipment that meet the requirements for surplussing. The Fleet Management Section will receive all surplussed numbered equipment and inspect each unit and determine disposition. The Fleet Manager will send a notice to all District Mechanics when a piece of equipment is about to be surplussed that could be desired by another District/Division and purchased by that District/Division at a fair market price agreed upon by both Districts/Division.

Minimum Requirements for Surplussing Equipment:

1. Judgmental consideration in surplussing equipment may also be made in regard to the condition of the equipment and availability of parts for repairs and their related costs.
2. Replacement criteria guidelines as outlined in the approved 2008 FAST (Fleet Asset Study Team) Report are as follows.

Automobiles, Vans and ½ Ton Pickups	4 years and 75,000 miles
¾ Ton Pickups	6 years and 100,000 miles
¾ Ton Pickups Diesel	7 years and 150,000 miles
1 Ton Pickups	8 years and 125,000 miles
1 Ton Pickups Diesel	8 years and 150,000 miles
B24 Trucks	10 years and 100,000 miles
B25-27 Trucks	10 years and 150,000 miles
Motorgraders	15 years and 3,500 metered hours
Loaders	13 years and 4,500 engine hours

Procedures for Surplussing Equipment:

Districts/Divisions will list likely candidates of equipment for replacement on the annual budget request and submit their request in accordance with established budget guidelines.

When new equipment has been purchased and received, the Fleet Management Section will send the District/Division a “pick up letter” indicating that their equipment is ready for pick up. Prior to delivery of surplus equipment, the District will perform the following functions to prepare equipment for delivery to the Fleet Management Section in Lincoln.

1. Remove all Departmental identification. (IE. remove decals, grind off welded numbers, prime and repaint as close as possible to the original vehicle color for all filled, covered or sanded areas.) Equipment should be tagged with appropriate equipment number. Aluminum tags are available from the Fleet Shop.
2. Special assemblies and components, such as two-way radios, all strobe lights and winches will be removed.
3. Components of special assemblies (IE. snowplows, wings, etc…) are to remain with the equipment and accompany the unit to Fleet Management Section.
4. Appropriately cover all holes in the body caused by removing special assemblies to make sure the holes are water and dust proof.
5. Improve the equipment’s interior and exterior and engine compartment appearances by cleaning and/or washing.
6. Deliver equipment accompanied with credit cards, metal tags and other related items to the Feet Management Section on or before the required date.
7. Deliver DR Form 51 (Notice of Transfer of Equipment Between Districts) and DR Form 254 (Surplus Equipment Checklist (the surplus envelope)), to the Fleet Management Section when equipment is delivered to Lincoln.
8. The bar code tag shall be destroyed. If equipment is reassigned, a new bar code tag will be issued.

Fleet Management Section Responsibilities:

The Districts will obtain the 3 Star Report out of EAMS and identify equipment eligible to be surplussed. Upon receipt of surplussed equipment, the Fleet Management Section will inspect and prepare the equipment for sale.

Equipment prepared for surplus will have the license plates, registration certificate and the Voyager Fuel Credit Card removed from the equipment and will turn that in to the Fleet Management Section. If equipment is being driven in, the license plates are to remain on the equipment. Fleet Management will fill out the proper documentation for surplussing equipment and submit it to Administrative Services.

Accounting for Lost or Stolen Equipment:

Each Division District will report to Fleet Management, DR Form 25 (Vandalism – Theft Report), those instances when equipment cannot be located and is presumed to be missing or stolen. After all efforts to locate the lost equipment have been exhausted, permission to remove the equipment from inventory will be requested by Fleet Management. Fleet Management will

submit the proper documentation regarding these instances to Administrative Services – Materiel.

Reporting Damaged Equipment or Equipment that May Need to be Destroyed:

Each Division/District will report to Fleet Management on DR Form 51 (Transfer of New/Used Equipment Between and Within Districts), the equipment that has been damaged beyond repair or is being considered for destruction. Upon receipt of DR Form 51, Fleet Management will, if necessary, request a Certificate of Destruction Form from Administrative Services-Materiel. Equipment **CANNOT** be destroyed until Fleet Management receives the Certificate of Destruction. If approved for destruction, this form will be sent to the Division/District for the signature of the Division Head/District Engineer and a witness when equipment is destroyed. The signed and dated form shall be returned to Fleet Management along with documentation of destruction (IE: pictures) for further processing to remove this unit from our inventory.

Highway Fleet Manager