

CHAPTER 4

FLEET MANAGEMENT

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4-1.0 INTRODUCTION

Fleet Management is not simply about operating the equipment and keeping it working. Fleet Management is very wide in scope and includes the full circle of justification, specification, acquisition, assignment, scheduling, utilization, and disposal.

By definition, this chapter refers to “fleet” equipment, often referred to as “mobile” equipment, “road” equipment, “vehicle” equipment, etc. Equipment not included in “fleet” is scientific equipment, laboratory equipment, surveying equipment, office equipment, etc. Neither does “fleet” include testing equipment used to repair fleet equipment. Included in the “fleet” are those pieces of equipment purchased out of the MnDOT Road Equipment Budget, where each is identified by an equipment unit number and an equipment class number.

MnDOT’s fleet is as varied in composition and as wide as the Department’s scope of responsibilities. Included are road and off-road, motorized and non-motorized, self-propelled and pull-type, licensed and non-licensed, two-wheeled drive and multi-wheeled drive, single axle and dual axle, etc. Some are often rated as “heavy” and others as “light”. The fleet provides transportation for the administration and inspection of maintenance and construction projects as well as for the production of the activity itself.

MnDOT’s fleet of equipment represents a large investment, exceeded only by buildings, structures, and the highways themselves. It is the policy of the Department to provide ample and adequate up-to-date equipment for the performance of all routine maintenance and construction functions.

As of 2012, MnDOT has about 11,000 equipment units in the fleet, valued at nearly \$255 million. About 3100 of the units are licensed as road vehicles. MnDOT expends over \$14 million annually on equipment maintenance and repair and invests about \$14 million each year on new purchases.

MnDOT employees are charged with the safe operation, proper maintenance and efficient use of all equipment they operate. Operating equipment requires continuous learning, both on the job and at special training courses offered by the Department. Operators are required to know and understand all laws, regulations, and policies pertaining to the operation of MnDOT equipment, especially those related to safety.

The Equipment Section of the Office of Maintenance has the general overall fleet management responsibility of administering, acquiring, issuing, and repairing equipment. A substantial part of Department funds are used to purchase and operate this equipment, which necessitates economical administration.

All equipment operating out of the Central Office is under the maintenance control of the Central Shop. All other units are under the direct maintenance control of the Districts and Maintenance Areas in which they are operating, either on temporary or permanent assignment.

4-2.0 ROLES AND RESPONSIBILITIES

4-2.01 ROLE OF OFFICE OF MAINTENANCE

The [Office of Maintenance's](#) primary responsibilities include oversight of maintenance functions, coordination of maintenance functions, and customer support for the eight MnDOT Districts. An important part of MnDOT's mission is to operate, maintain, and preserve Minnesota's existing transportation systems and infrastructure.

The [Office of Maintenance](#) is organized into sections in order to carry out its responsibilities. The following is a list of those sections:

- Building Services
- Fleet Management
- Financial and Support Services
- Maintenance Operations, Research and Training

The [Equipment Section](#) within the Office of Maintenance has specific responsibilities that include, among others: fleet management, equipment purchasing, plow truck fabrication, equipment maintenance, and inventory and supplies management.

4-2.02 ROLE OF DISTRICTS AND OFFICES

MnDOT is organized into eight regional areas called districts. This includes seven Greater Minnesota districts and one Metro District (Minneapolis-St. Paul Metropolitan Area). The districts are further divided into Maintenance Areas and Maintenance Sub-Areas depending on their organizational structure.

Most day-to-day operations are managed at the district level, including highway construction project development & administration, as well as maintenance of existing state highways.

To carry out the operations, each district is provided with a fleet of equipment. In fact, the vast majority of MnDOT's total fleet is assigned directly to the districts. Each district is responsible for the maintenance of the equipment.

Several offices of the Central Office also have significant numbers of equipment assigned to them, including the Offices of Materials, Maintenance, Administration (Central Office Motor Pool), Electrical Services, etc. These offices receive preventive maintenance and repair service from the Equipment Section of the [Office of Maintenance](#).

4-2.03 ROLE OF DEPARTMENT OF ADMINISTRATION (DOA)

The Department of Administration provides oversight and direct services to all State Departments, including MnDOT. The role of the DOA includes:

- All advertisement of bids for MnDOT equipment purchases, which are processed through the [Materials Management Division](#) of DOA.
- Oversight of the Asset Works M5 Equipment Management System used by MnDOT as well as being a standard for other major State Agencies.
- Disposing of surplus equipment through the State Auctions, administered by Fleet and Surplus Services of DOA.
- Liability and accident insurance for MnDOT's fleet, provided by the [Risk Management Division of DOA](#).

4-2.04 ROLE OF GOVERNOR'S EXECUTIVE ORDERS AND STATE LEGISLATION

During every Administration, the Governor often uses the power of Executive Orders to lead and drive his Administration's new or focused directions. While Executive Orders are rescinded if the administration changes, the programs initiated under Executive Order often become well established and are continued, albeit in modified form, from one administration to another.

State statute can influence fleet composition. One such example is [Minnesota Statutes, Section 16C.137](#), which states that all agencies, using 2005 as a base, shall reduce the usage of gasoline by 25% by 2010 and by 50% by 2015. Additionally petroleum diesel usage shall be reduced by 10% by 2010 and 25% by 2015. This program drives the effort to purchase alternative, cleaner fuel vehicles and purchase high efficiency vehicles that exceed 30 mpg/city or 35 mpg/hwy. It promotes the use of alternative fuels such as ethanol, biodiesel and hydrogen from agricultural products as well as promoting the greater use of electronic information technologies to reduce Agency reliance on fleets to deliver products and services.

Another statute impacting fleet composition is [Minnesota Statutes, Section 16C.135](#) that directs Agencies and state employees to use E85 and other cleaner fuels whenever "reasonably available". Agencies are directed to strengthen the infrastructure for E85 and biodiesel availability throughout the state.

4-2.05 ROLE OF FEDERAL GOVERNMENT

The [Federal Motor Carrier Safety Administration \(FMCSA\)](#) of the U.S. Department of Transportation (USDOT) has a primary mission of reducing crashes, injuries, and fatalities involving large trucks and buses. To achieve this, the FMCSA develops, maintains, and enforces Federal regulations that promote carrier safety, industry productivity, and new technologies. The FMCSA establishes safe operating requirements for commercial vehicle drivers, carriers, vehicles, and vehicle equipment. The FMCSA regulations, known as the [Federal Motor Carrier Safety Regulations \(FMCSR\)](#), are made available to all MnDOT operators of Commercial Motor Vehicles.

A Commercial Motor Vehicle (CMV) is clearly defined in FMCSR (§382.107). Generally speaking, a CMV includes:

- A motor vehicle with greater than 26,000 pounds gross vehicle weight rating (GVWR).

- A combination of motor vehicles greater than 26,000 pound GVWR inclusive of a towed unit with a GVWR of greater than 10,000 pounds.
- A vehicle designed to transport 16 or more passengers, including the driver.
- Any vehicle used to transport hazardous materials. For MnDOT, this includes, among other equipment, all snow plow trucks.

All MnDOT operators of CMVs are governed in part by the FMCSR regulations. This includes Commercial Driver's License (CDL) requirements, random drug testing, Pre-Trip and Post-Trip daily inspections, training session attendance, etc. Class A licenses are required to operate truck/trailer combinations. Class B licenses are required for single units and trailers under 10,000 pounds GVWR.

All MnDOT operators of CMVs must learn and know about federal as well as state laws, regulations, and policies and must stay current with the FMCSA regulations.

4-3.0 OPERATIONS PERFORMANCE MEASURES

4-3.01 INTRODUCTION

MnDOT is committed to making business decisions using customer expectations and performance measures. MnDOT conducts extensive market research to identify customer satisfaction and expectations. As a result of market research, as well as professional expertise, MnDOT has developed performance measures and associated performance targets that help MnDOT work better.

Based on the current 2012-2015 [Highway Systems Operation Plan](#), There are several key performance measures with set targets that operating units within MnDOT are monitored and measured against. The following are the performance measures:

1. Equipment Utilization Rate
2. Units Within or Out -of -Life Cycle
3. Fleet Size Measures
4. Scheduled vs. Unscheduled Vehicle Maintenance

While they are listed as individual goals, they are all related. Making progress toward meeting one goal may affect the progress in meeting another. For example, increasing average Utilization may reduce Fleet Size. If reducing Fleet Size leads to surplus units rather than replacing them, Life Cycle is enhanced. Increasing Scheduled Maintenance may reduce downtime and permit lower Fleet Size. Effectively monitoring and scrutinizing high cost add-on features may free up equipment investment funds to improve Units within Life Cycle.

These Operation Performance Measures are valuable in terms of providing direction and motivation to fleet managers. They can be monitored as individual targets or as a set of targets together. Furthermore, an individual fleet manager can monitor progress, one year to the next, or compare their operation against another District or Office.

The goals are set by management as attainable targets to strive for. Districts or Offices can be compared against similar Districts or Offices. As a continuous improvement strategy, when Districts and Offices apply creative and progressive measures and achieve the assigned targets, the “bar is raised” and targets may be adjusted. As times change, so do targets.

District Engineers and Office Directors need to understand that for a fleet manager to be successful in managing its fleet against these performance goals, the engineers and directors needs the entire organization, in particular the operators of equipment and their supervisors, to work together in concert to reach the targets.

4-3.02 UTILIZATION RATE GOALS

The purpose of acquiring equipment is to produce work or provide a service. Idle equipment does neither while incurring costs in the form of depreciation, insurance, obsolescence, storage, cost of tied up money, etc. These same costs apply to spare parts as well. Limited replacement funds expended on low usage equipment take away from the ability to invest in equipment that is needed more often. Replacing an underutilized vehicle is particularly counterproductive to good fleet management principles.

Minimum utilization targets have been set for selected classes of equipment. Examples include:

- Tandem and Single Axle Plow Trucks 8,000 miles/yr.
- Cars, Pickups & Medium Duty Vehicles 12,000 miles/yr.
- Loaders, Articulated..... 250 hours/yr.
- Skid Loaders & Wheel Type Backhoes 125 hours/yr.

Equipment utilization and optimization can be improved in several ways:

- Double shifting of equipment
- Combining the use of equipment with other units, resulting in one or more units being disposed of as surplus
- Encouraging use of a central motor pool
- Reorganizing operation at the district vs. area or sub-area level
- Assigning units (and accountability of its care) to crews, areas, districts or offices as opposed to individuals
- Sharing equipment between operating units/districts
- Local renting/leasing for seasonal needs
- Lower need for business travel (video conferencing in place of meetings, etc.)
- Centralized purchases with leases to the district/office
- Taking advantage of the “Shared Service Initiative” where other state agencies utilize a common M5 Equipment Management System leading to more options of shared ownership and shared usage of equipment between agencies

From a fleet management perspective, vehicle assignments to individual employees should be minimized. Assigning vehicles to individuals decreases the opportunity for maximized utilization of individual vehicles and often leads to growth in fleet size to accommodate all employees' needs. Fleet size is the number one contributor to overall fleet cost to MnDOT. Pooling and open sharing of equipment resources assures higher average utilization. District staff should review the Fleet Management Policy and associated references within the policy when making management decisions or operations.

4-3.03 UNITS WITHIN OR OUT-OF-LIFE CYCLE GOALS

To minimize costs and maximize vehicle availability and top utilization potential, older vehicles need to be replaced when their cost to operate and maintain become excessive. New units have high front end investment and depreciation costs but even if they break down, warranties may cover it during the early life of the unit. Older units may not depreciate much but they tend to break down more often, leading to high maintenance and downtime costs.

MnDOT's M5 Equipment Management Information System is used to provide average life-cycle cost information, including running repair costs of parts, labor, downtime, etc. This information, together with changing needs and technological advancements, defines the most economical life-cycle for different classes of equipment. Life-cycle cost information is particularly useful in long and short range planning and budgeting purposes, like for putting together a budget presentation to the central office or the legislature for establishing an adequate road equipment budget for a biennium. In changing times, optimum life-cycles change as well.

This measurement essentially measures how effectively Districts and Offices invest their available equipment replacement funds to improve average fleet age or life cycle targets.

4-3.04 FLEET SIZE MEASURES

This measurement has shown the tendency of District and Office fleets with the least number of equipment units in a specific class per unit of work produced are often the fleets that have the highest annual utilization rate per unit in a class.

The Operations Performance Measure of Fleet Size does not have a goal or target per se. Instead, it is comparing the number of units, perhaps by class, of one District or Office compared to a similar District or Office. It can be used in comparing the number of units per mile or per unit of work performed from one organization to another.

4-3.05 SCHEDULED VS. UNSCHEDULED MAINTENANCE GOALS

There are two kinds of maintenance activities: Scheduled and Unscheduled.

Scheduled maintenance is planned component repair or replacement, often triggered by preventive maintenance inspections, Pre-trip and Post-trip inspections, regular oil changes and grease jobs, etc., all of which are scheduled maintenance activities themselves.

Unscheduled maintenance is work that results from breakdowns or surprise failures, often triggering road calls and usually causing expensive downtime of labor crews.

This measure is intended to compare the portion of the work done in repair shops that is considered preventive maintenance, inspection or modification as opposed to reactionary, operator reported or breakdown maintenance or repair. When a vehicle is down, not available for service, the organization has lost the use of that item which results in less efficient operations. When this down time is unscheduled maintenance an entire crew and job could be idled.

Targets have been set on the percentage of total shop work that should be preventive rather than reactionary maintenance.

4-3.06 FOUR WHEEL DRIVE (4WD) MEASURES

The Equipment Section will report on the inventory of four-wheel-drive (4WD) vehicles annually. The Equipment Section will provide periodic updated information on life cycle costs of 4WD vs. Two Wheel Drive (2WD) vehicles.

Districts and Offices should base all decisions on purchasing a 4WD vehicle on a need/benefit/cost analysis i.e., the vehicle's intended application against its higher annual ownership costs.

Districts and Offices that currently have high numbers of 4WD vehicles should re-evaluate past decisions and justifications for existing 4WD units. Do not automatically assume that future replacements of 4WD vehicles must be 4WD. Follow [MnDOT Guidelines: Four-Wheel Drive \(4WD\) Vehicles](#) and the questions listed in [Four Wheel Drive Considerations](#).

If, following the procedure described in [MnDOT Procedure: 4WD Vehicle Requests](#), a higher cost can be justified by need, the district or office may be justified in purchasing a 4WD vehicle. Once a need is established, submit the [Equipment Request Form](#) to the Central Office for approval.

4-4.0 EQUIPMENT MANAGEMENT SYSTEM

4-4.01 EQUIPMENT MANAGEMENT SYSTEM

MnDOT's fleet of equipment and vehicles is managed by the Equipment Section within the Office of Maintenance by utilizing M5, an Equipment Management System from Asset Works. The Office of Maintenance Equipment Section supports M5 for all of the districts and offices. The M5 fleet system tracks every aspect of the fleet, including evaluating a need,

budgeting, acquisition, in-service, maintenance schedules, repair history, fuel, lifecycle and disposal.

In addition, M5 tracks work flow in the mechanical shops and work order costing including labor, parts, and commercial charges. MnDOT's motor pool locations can use M5 for tracking motor pool units.

The integrity of the data going into M5 is critical to MnDOT's operation as it supplies all the data for daily operations as well as management reporting needs at all levels. For example, M5 uses data entered by operators when fueling up vehicles for a variety of purposes, including accumulating operation costs, triggering the reordering of fuel, monitoring fuel theft or loss, scheduling Lube and Service reminders, etc.

4-4.02 LIFE CYCLE COST ANALYSIS

Life Cycle Costing calculates ownership and operating costs throughout the working life of the units. Life Cycle Costing includes the valuation of costs associated with things like availability, service, resale value, downtime or rental costs for replacing units "down" for service. Typically, as a unit ages, average maintenance costs go up but investment costs decrease. If a unit receives a major repair, is overhauled or is rebuilt, the investment goes up accordingly but the economic life is extended.

For replacement purposes, individual pieces of equipment have three lives:

- Economic life, the length of time over which the average total unit cost is the lowest.
- Technological life, the length of time before it is considered obsolete and no longer efficient or effective given new technology currently available.
- Service life, the length of time before the unit is no longer able to perform (because it is simply worn out) or is no longer serviceable (because of unavailability of replacement parts).

It should be noted however that life cycle cost analysis applies best to equipment whose replacement cycle is governed mostly by economic life.

In the case of economic life, several cost factors need to be taken into consideration when determining whether to buy vs. lease vs. rent, purchase new vs. used, whether to keep the unit another year or replace it, etc. There are two basic types of costs associated with a fleet operation. Those are Ownership Costs and Operating Costs. Ownership costs are those costs which are incurred by simply owning the piece of equipment, whether the unit is utilized or not. Operating costs are incurred through the use of the equipment. Examples of those two types of costs are listed below:

- | | |
|-------------------|----------------------------|
| ▪ Ownership Costs | ▪ License and registration |
| ▪ Operating Costs | ▪ Vendor Repairs |
| ▪ Depreciation | ▪ Insurance |
| ▪ Fuel | ▪ Replacement Parts |

- Remarketing
- Shop Labor
- Operator Training
- Field Labor
- Value of Money
- Downtime
- Storage
- Parts Inventory
- Obsolescence

During the life of the unit, these costs vary; some will increase with time, some will remain level and others will decline. Together, they comprise the total cost of the unit.

The Equipment Management System M5 is designed to track various costs associated with owning, operating and maintaining MnDOT equipment. This information is used to conduct life cycle cost analysis for both long range planning and short range decision making. Long term, it helps set age, mileage, and time criteria for the statewide MnDOT fleet in order to project biennial budgetary needs and justify budgetary requests. It can assist in determining how available funds are best distributed to individual Districts and Offices for optimum return on investment. It can be used at the local level to determine which units are most economical to replace in a given year.

In the case where the equipment's replacement is governed by service life, operating or maintenance cost is not the issue so the Equipment Management System M5 and life cycle costing data is not applicable in the decision making process. The same is true when technological life governs. In this case, even though the unit can be kept serviceable, the unit becomes obsolete technologically before it begins to cost too much to continue to own, operate, and maintain.

In summary, life cycle cost analysis applies to equipment where the replacement cycle is best determined by costs. It does not have an application to units where service life and obsolescence are the primary factor in replacement decision-making.

4-5.0 EQUIPMENT OPERATIONS STANDARDS

Referenced in this section are several Equipment Operational Standards that are important to know, understand, and follow concerning the operation and maintenance of MnDOT equipment. This listing is not all-inclusive.

Generally speaking, the [Minnesota Statutes](#) define several operational policies and procedures that apply to all state employees who operate MnDOT owned or rented vehicles and equipment or are driving personal vehicles while conducting official state business. In some cases, MnDOT has added to or modified the definition to tailor it to its needs.

The [Minnesota Statutes](#) define vehicle operator's responsibilities such as license requirements, minimum age limitations, driving under the influence, insurance coverage when using personal vehicles, seat belt use requirements, using headlights at

all times, personal liability for traffic violations and fines, etc. The [Minnesota Driver's Manual](#) explains the safety rules and state laws you need to follow in order to drive safely and legally in Minnesota.

MnDOT's [Equipment Operator's Manual](#) contains guidance more specifically directed at MnDOT operators and procedures including equipment assignments, vehicle operator responsibility, service and maintenance, etc.

Any person towing a trailer behind a State vehicle must read and comply with the guidelines outlined in the pamphlet entitled "[Fleet Safety Standards for Towing Trailers](#)", published by the [Risk Management Division](#) of DOA.

It is the policy of MnDOT to comply with all state laws governing Oversize/Overweight loads using equipment owned or used by MnDOT.

The policy on Take-Home Vehicles is governed by [Minnesota Statutes, Section 16 B.55](#) which states that a state vehicle may be used only for authorized state business. Specifically, a state vehicle may not be used for transportation to and from the residence of a state employee except as noted in [MnDOT Policy #3.20](#) and [2015 Business Manual](#). Qualifying criteria and eligibility are included on the [MnDOT Take-Home Vehicle Authorization](#) (iHub) form which must be approved by a Division Director. MnDOT tracks vehicles/operators authorized as take-home units using the [Take Home Vehicle Tracking Process](#) (iHub) of the M5 Equipment Management System.

[MnDOT's Warning Light guidance](#) requires that at least one approved light be visible 360 degrees from a 60 foot radius around the unit.

MnDOT's [Maintenance Bulletin No. 99-1, Guidelines for Procedure to Implement the Rescue Law](#), provides guidelines on the use of state employees and equipment to assist private disabled vehicles during snow and ice removal operations.

MnDOT's [Cargo Securement Job Aids](#) and [Minnesota Statute 169.81.5a](#) addresses the need to secure loads and cover loose loads unless certain conditions are met.

[Minnesota Statute 169.733](#) defines when mud flaps are required.

Any property damage or personal injury accident involving state employees using state mobile equipment must be reported according to policies and procedures administered by the [Risk Management Loss Control](#) Division of DOA.

[Maintenance Bulletin No.03-3](#) and [MnDOT Business Manual, Chapter 4](#) defines the Vehicle Assignment Guidelines that restrict assignment of vehicles to individual employees. Individual assignments are acceptable when a vehicle is equipped with specialized equipment that is required by an individual employee to carry

out his work (like a Field Mechanic) or when the assigned vehicle will meet minimum daily business usage needs per year or portion of a year.

4-6.0 PREVENTIVE MAINTENANCE & INSPECTION

4-6.01 PURPOSE OF MNDOT'S PREVENTIVE MAINTENANCE & INSPECTION PROGRAM

The purpose of MnDOT's Preventive Maintenance & Inspection Program is to provide and establish a consistent program of inspecting, adjusting, lubricating, servicing, cleaning, and repairing of equipment and to identify and correct deficiencies before they develop into major repairs.

Regular inspections will provide a safe vehicle for the operator and others in the travel or work area. When inspections are properly performed, equipment downtime will be decreased and cost of maintaining the vehicle will be lowered.

The operator is the first line of defense of any preventive maintenance program. The success of preventive maintenance programs depends on operators following preventive maintenance guidelines and reporting and conveying issues in a timely matter.

4-6.02 GENERAL DAILY OPERATOR'S INSPECTION

It is the responsibility of all vehicle and equipment operators to read and understand MnDOT's [Equipment Operator's Manual](#) which defines the operation inspection policies and procedures governing all MnDOT vehicles and equipment.

All employees operating MnDOT vehicles shall also adhere to the requirements of MnDOT Travel Procedures contained in the [MnDOT Business Manual](#).

4-6.03 OPERATORS' DAILY INSPECTION AND MAINTENANCE ON COMMERCIAL MOTOR VEHICLES (CMV)

MnDOT employees holding a Class A or B Commercial Driver's License (CDL) are required by [Federal Motor Carrier Safety Regulations \(FMCSR\)](#) and State of Minnesota Motor Vehicle and Traffic Laws to conduct a Pre-Trip and Post-Trip inspection before and after using the equipment, every day they are operating a Commercial Motor Vehicle (CMV). A CMV is defined by FMCSR in its pocketbook, under §382.107.

The Operator's Daily Checklist Book (Form MnDOT TP-03050-2A) shall be used to verify that the inspection has been made and to record any deficiencies corrected by the operator or referred to shop supervisors to be corrected. The book includes both a Pre-Trip Report and a Post-Trip Report along with instructions as to

what procedures are to be followed. A copy of this book should be available in the cab of every CMV.

Figure 1: Operator's Daily Checklist Book (Form MnDOT TP-03050-2A)

MnDOT TP-03050-2a (12-93)

MINNESOTA DEPARTMENT OF TRANSPORTATION
OPERATOR'S DAILY CHECKLIST BOOK

Unit Number

Make and Type

EQUIPMENT ASSIGNED TO: (MAKE ENTRIES IN PENCIL)

District Area	Dist. No.
Station	No.
Division	Dist. No.
Eng. or Suprv.	No.
Operator:	
Maint. Shop:	
Date Assigned:	

It is the operator's responsibility to read and understand the Automotive and Equipment Operator's Manual before operating equipment.

DRIVE DEFENSIVELY
KNOW AND PRACTICE SAFETY

THIS BOOK IS TO BE KEPT WITH THE UNIT.

4-6.04 OPERATOR-PERFORMED LUBRICATION & SERVICE

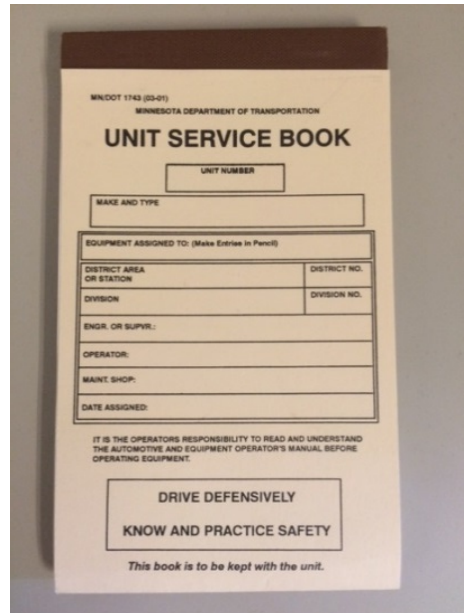
It is the responsibility of the operator to adhere to the schedule of lubrication and service of equipment as recommended by manufacturer's lubrication and service instructions. Districts and offices, through their Shop Supervisors, may set different intervals. Lubrication and services procedures also require certain checks at proper intervals.

By definition, lubrication (also referred to as PML or preventive maintenance lubrication) includes the greasing of the equipment; service (also referred to as PMA or preventive maintenance oil change & grease job) includes greasing plus changing the oil and filter.

All services performed and discrepancies found by operators during any inspection, are to be recorded and reported in the Unit Service Book (Form 1743) found in the equipment/or request from shop mechanic supervisor.

For recommended service intervals see the district shop supervisor.

Figure 2: Unit Service Book (Form 1743)



MNDOT 1743 (03-01)
MINNESOTA DEPARTMENT OF TRANSPORTATION

UNIT SERVICE BOOK

UNIT NUMBER

MAKE AND TYPE

EQUIPMENT ASSIGNED TO: (Make Entries in Parenthesis)

DISTRICT AREA OR STATION	DISTRICT NO.
DIVISION	DIVISION NO.
ENGR. OR SUPERV.	
OPERATOR	
MAINT. SHOP	
DATE ASSIGNED	

IT IS THE OPERATORS RESPONSIBILITY TO READ AND UNDERSTAND THE AUTOMOTIVE AND EQUIPMENT OPERATOR'S MANUAL, BEFORE OPERATING EQUIPMENT.

DRIVE DEFENSIVELY
KNOW AND PRACTICE SAFETY

This book is to be kept with the unit.

4-6.05 WINTER EQUIPMENT PRE AND POST INSPECTION

Following individual district developed guidelines, all snow and ice control equipment should be inspected thoroughly before the winter season. Trucks should be in good working order with necessary parts available. Snow plows and wings should be mounted on the trucks and inspected for proper operation. Auxiliary equipment, such as tire chains, shovels, lights, etc., should be available and operational.

In addition, prior to every winter maintenance operation, each piece of equipment should be inspected for proper operation and to determine if any deficiencies exist.

4-6.06 OPERATOR ROUTINE EQUIPMENT MAINTENANCE RESPONSIBILITY

Passenger vehicle drivers are expected to assume personal responsibility for the care and appearance of the unit. Both the interior and the exterior of passenger cars are to be kept clean. During the winter, particular care is to be exercised in removing road chemicals regularly at either MnDOT or contract facilities. Drivers and car pool dispatchers shall use the Unit Service Book (Form 1743) to report to the Shop Supervisor any unsatisfactory performance or any item on the vehicle requiring attention in the form of repair or scheduled servicing. This applies to cars, pickups, vans, and other passenger vehicles assigned to any office in MnDOT.

Maintenance equipment operators are responsible for ascertaining that the following is performed: daily inspection, scheduled Lubrication and Service, proper care of tires and lug nuts, cleanliness and appearance of vehicles, keeping the cooling system in good order and adding anti-freeze when required, checking all belts for cracks and tension, keeping the battery clean and adding water to the proper level, keeping accessible chassis bolts and nuts tight, etc. Operators shall use the Unit Service Book (Form 1743) to record services performed or to inform the Shop Supervisor of items needing attention. Seasonal activities involving the use of chemicals requires frequent cleaning and re-oiling of all contaminated delivery mechanisms.

Salt, slush, and scum accumulations are to be removed from trucks, sander hoppers, and dump bodies after each ice removal period and prior to being sent into shop for repairs. Salt should be cleaned out prior to washing and returned to salt storage facilities.

Services, inspections, and repairs needing to be performed by the Equipment Shops shall be arranged for and scheduled in advance by contacting the Shop Supervisor at the nearest maintenance shop or Central Shop. If, for some reason, it is impossible to bring the unit in when scheduled, the Shop Supervisor shall be notified immediately. The amount of work scheduled vs. non-scheduled is measured and used to monitor the performance of a District operation.

Operators, supervisors and mechanics are urged to offer feedback on the performance of each piece of equipment, either verbally or in written form, to the Shop Supervisor.

Nothing in this manual or any other instructions pertaining to equipment operations and maintenance shall in any way limit or restrict the prompt reporting and correction of faulty functioning of a unit, whether or not the trouble is specifically covered by instructions.

4-6.07 REPAIR SHOP PREVENTIVE MAINTENANCE

Trained mechanic personnel perform Preventive Maintenance Inspections (PMI) on specific vehicles at prescribed intervals for the purpose of identifying and fixing deficiencies.

The following [forms](#) are used:

- [PMI Record Sheet for Light Duty Vehicles](#)
- [PMI Record Sheet for Snow Plow Trucks](#)
- [PMI Record Sheet for Loaders](#)
- [PMI Record Sheet for Trailers](#)

4-6.08 MANUFACTURER SERVICE AND WARRANTY

Dealer or warranty inspections including minor adjustments required on new equipment shall be made at Department facilities. Only actual warranty work is to be furnished by the dealer. All warranty work is to be requested through the Shop Supervisor only.

The equipment warranty is subject to adjustment when equipment is modified after being procured. Where questions arise, the Shop Supervisor should be consulted.

4-6.09 ANNUAL COMMERCIAL VEHICLE INSPECTION (CVI)

An Annual Commercial Vehicle Inspection (CVI) shall be performed by certified mechanics on all Commercial Motor Vehicles (CMV) as defined by FMCSR. No vehicle shall be operated without the CVI Inspection completed and a numbered Inspection Decal properly affixed to the vehicle.

The CVI can only be performed by trained, certified mechanics. The forms used must be approved by the Minnesota State Patrol who also issues the Inspection Decals.

4-7.0 REPAIR SHOP OPERATIONS

4-7.01 SHOP ORDERS

All shop work of any nature, including field service calls and Annual Inspections, shall be covered by a written Unit Service Request form in the Unit Service Book (Form 1743), signed by the Shop Supervisor or other employee duly authorized by the Area Maintenance Engineer (AME). No shop work may be performed without such an order. All repair work performed on a unit which incurs labor or parts, whether performed in-house or done commercially, needs to be documented on a work order in the fleet management program M5.

In order to ensure that the desired repair is cost-effective, the Shop Supervisor will obtain approval from the District Fleet Manager/Designee when the repair cost seems high when compared to full replacement value. High investment in repairs, overhauls, rebuilding, etc., affect life cycle costing and should provide cause for extending replacement cycle in order to recover such investment costs. The District is encouraged to seek concurrence from the Equipment Section prior to authorizing such work.

4-7.02 RESEARCH REQUESTS TO IMPROVE EQUIPMENT

If Maintenance Research funds are desired to make an improvement to a piece of equipment by adding an external function to it, a research proposal must be created. The research proposal(s) is then sent to the Maintenance Operations Research Unit at the Central Office. Once the proposal is received, it will be reviewed by either the

NTREC (New Technology, Research and Equipment Committee), if the total cost is greater than \$15,000, or by MOR (Maintenance Operations Research), if the total cost is less than \$15,000.

A guide on how to write the Project Proposal and additional information regarding research proposals can be found in the [Maintenance Operations Research](#) web site.

4-8.0 ACQUISITION OF EQUIPMENT

4-8.01 JUSTIFICATION FOR ADDITIONS AND REPLACEMENTS

The justification for additions and replacement of equipment is established by the Fleet Manager.

Additions must be justified on the basis of increased work load or meeting new expectations by the public. Additions may be also justified because of availability of new technology that reduces overall costs or improves response time of providing MnDOT products and services.

Timely replacement is essential to good fleet management. But replacement decision-making is a complex task for fleet managers. Perhaps the most critical factor is availability of funds but even then, needs change, cost of repairs change, available technology changes, etc. Budgets may be built on average age/mileage/hour replacement criteria, but these are just averages and some units below that level are justified for replacement early and some units are not justified until higher age/mileage/hour levels are reached. Each replacement decision is a separate decision based on current projected utilization, costs, availability, and return on investment. Alternatives of renting, leasing, purchasing used, repair/rebuild, all have to be made at this point in the life cycle of every unit. Opportunities for fleet reductions are never better than at replacement time. "Wants" need to be separated out from "needs". Not unlike the private sector, fleet managers are always working under budget restrictions which enhance the importance of good decision making.

For MnDOT equipment purchases, an appropriate Microsoft Outlook MnDOT Equipment Request Form needs to be completed. Contact the District Fleet Manager or Equipment Section for instructions.

4-8.02 ANNUAL EQUIPMENT BUDGET

Each biennium, MnDOT establishes budgets for funding the cost of new equipment and the replacement of old, obsolete, or worn out equipment.

The Road Equipment Fund is administered within MnDOT by the Office of Maintenance. Distribution of equipment funds is established by an allocation formula.

Equipment acquisitions and expenditures are documented in M5.

4-8.03 EQUIPMENT PROCUREMENT METHODS

The Equipment Section in cooperation with the Materials Management Division of the Department of Administration shall use the guidelines and procedures as documented in the Materials Management Divisions Procurement Manual.

Types of purchasing methods include contracts, requests for proposals, requests for bids, and phone quotes.

The annual equipment budget specifies the amount of money available for the purchase of equipment each year. The Fleet Manager, after receiving recommendations from the maintenance areas, is responsible for the preparation of specifications and requisitioning of all equipment for purchase. After the requisitions have received the proper administrative approval, they are forwarded to the Equipment Section for purchase and delivery. Delivery is made to the destination specified in the requisition. At that point, the newly purchased equipment is inspected by the Shop Supervisor, or his delegate, to check its condition and compliance with the specifications and is accepted or rejected for use by the Department.

4-8.04 MODIFICATIONS/BETTERMENTS

Modifications are any changes to the equipment.

Betterments are defined as major modifications or improvements that increase the value of the equipment and where the cost is distributed over the remaining life of the unit.

Betterments are an improvement that is not merely a repair but that also adds to the value of real property. The key is that it has to add value to the original unit. An example would be adding a lift gate to a pickup truck.

Any Modifications or Betterments should not be done without approval of the District Fleet Manager.

4-8.05 RENTING/LEASING EQUIPMENT

Renting is generally done to acquire use of another owner's equipment on a short term basis, usually on a daily, weekly, or monthly basis. The owner assumes the responsibility for costs and risks of normal wear and tear, routine maintenance and repair, depreciation, insurance, etc. The renter is responsible for fuel, preventive maintenance, and the operator.

Leasing is generally acquiring the use of another owner's equipment for longer time periods, like seasonally or a specific number of years. During the lease, the lessee is responsible for routine maintenance to keep the unit in satisfactory condition and is generally required to stay below prescribed usage limits. At the end of the leasing period, the lessee may or may not retain the option to purchase the vehicle at a price pre-determined at the time the original contract is written and agreed upon.

As a service within MnDOT, the Equipment Section purchases some mid-size sedans, pickups and sedans and leases them to Districts/Offices on a fiscal year by year basis. Rates vary from year to year. These and other provisions may vary from year to year. Details regarding the leasing procedure are provided on the Equipment Section web site under [lease Program](#).

Equipment funds can be used to lease/rent equipment in lieu of purchasing equipment but most often, local operating funds are used to rent equipment.

4-8.06 VEHICLE MARKINGS & APPROVED LICENSE PLATES

Vehicles owned or leased by the department will be clearly marked as MnDOT or Minnesota Department of Transportation vehicles. This generally is achieved by the use of either the MnDOT Logo or with MnDOT lettering. The operator is responsible to ensure that this marking, once installed, is maintained and remains affixed to the unit.

All vehicle licenses will be identified with a tax-exempt [Minnesota State Vehicle License Plate](#) unless specially exempted by state law.

4-8.07 SHARING & PARTNERSHIPS

Sharing of equipment continues to be a practice that is endorsed at all levels within MnDOT. Inter-district sharing of equipment is strongly encouraged to make the most efficient use of these resources and it may also help with utilization targets. Sharing of equipment within MnDOT is at the discretion of the District. The [MnDOT Internal Resource Sharing Agreement form](#) should be used for internal sharing. Sharing of equipment may include partnering with another governmental agency at the truck station level. Sharing of equipment with other governmental agencies does require an agreement or contract. This may be less formal than a typical partnership agreement but it must still be documented and requires a mutual return on the effort. See the [Contract Management](#) website and [Chapter 6 of the Maintenance Manual](#) for additional guidance on type of documentation required and procedures.

Following are some things to consider when determining whether to enter into a partnership and the type of written agreement required:

- Funding - is there a need for a dedicated receivables account?

- Liability - what are the liability implications? For example, who pays for damaged or lost equipment?
- Accountability – how can we ensure MnDOT gets the results it is paying for?

Depending on the circumstances, it may be determined that a formal contract is needed to provide for partnering efforts. The basic premise of “partnerships” is that it provides an efficient use of public resources to deliver desired services in a dependable, effective, and cost-efficient manner. Minnesota has a partnership statute that allows and encourages MnDOT and other governmental entities to break down some barriers and deliver services in a more effective and seamless manner.

[Minnesota Statutes, Section 174.02](#) provides MnDOT with broad authority to engage in intergovernmental “partnerships”. The statute also provides districts and offices with a means to be reimbursed for money spent on partnership activities. The purpose of such partnerships is to promote efficiencies in providing governmental services and to further the development of innovation in transportation for the benefit of the citizens of Minnesota. Partnerships can cover a wide range of activities, from occasional lending or borrowing of equipment, to construction and operation of joint-use facilities. Partnerships can involve in-kind or monetary exchanges. The only basic legal constraint on a partnership is that the parties must have the legal authority to engage in the activities contemplated by the partnership and there must be a mutual return to justify the expenditure of trunk highway funds.

Partnerships are generally formalized in a “partnership agreement.” Partnership agreements are especially important when MnDOT will be receiving money from the other party. Entering into a partnership agreement allows a district to establish a dedicated receivable fund. This will allow any funds received to be placed in a segregated fund at the district or office level to be used for the purposes of the partnership, rather than having those funds go directly into the trunk highway fund.

MnDOT has undertaken efforts to establish “master” partnership agreements with local governments, making it easier to receive compensation for routine services provided by districts, without committing the time and resources necessary to prepare an agreement specific to each type of service.

4-8.08 PLACING VEHICLES IN SERVICE

A Microsoft Outlook Vehicle In Service Form and the Unit Items Form is filled out at the point of delivery at the time the new unit is initially delivered. Contact Shop Supervisor for these forms.

The MnDOT Vehicle in Service Form identifies the Unit Number, In-Service Meter(s), and In-Service Date for each vehicle.

These forms must be turned in to the Shop Supervisor who in turn will see that the Equipment Management System M5 is kept current.

It is recommended that each Commercial Motor Vehicle have a Unit Data Sheet prepared and permanently installed in a standard location somewhere in the cab that is easily accessible by the operator both when inspecting and servicing the unit. The mounting location should be safe and protected from being damaged or ripped off.

The Unit Data Sheet shall include, when applicable, the unit number, the unit numbers of attachments (like plow, wing, sander), types and grades of fluids used (like for coolant, power steering fluid, engine oil, transmission, front hubs, power take off, hydraulic system, differential, etc.), special grades of grease used, tire specifications (sizes, load range, air pressure), and brakes (maximum strokes).

The preparation and installation of the Unit Data Sheet should be done under the direction of the Shop Supervisor or his designee.

Whenever a unit is assigned, transferred, traded-in or disposed of, an e-mail must be prepared by the Fleet Manager in the district, area or division from which the equipment unit is being transferred from and sent to the *DOT Fleet mailbox. This is necessary to make the appropriate Ownership modifications in both the M5 and SWIFT systems.

4-9.0 DISPOSAL OF EQUIPMENT

Equipment can be disposed of using several methods:

- Trade in on purchase of new or used unit.
- Advertised and sold directly by sealed bid
- Public auction
- Transfer to other district/office within MnDOT
- Negotiated sale to other governmental agency
- Parts removed with remainder sold as scrap
- Donate to non-profit organization

Inspecting the equipment and making it presentable for sale or disposition is an important process to maximize MnDOT's initial return on investments. This includes possible actions like making minor repairs, cleaning the unit, etc. and deciding on inclusion/non-inclusion of attachments, accessories, manuals, surplus spare parts, maintenance records, etc. A written summary of the unit's condition and list of extras may lead to increased market value.

After the District has determined which unit(s) it has selected for disposal they will follow the [Direct Sales Procedure](#) and submit to the Equipment Section a completed [Property Disposition Request \(Form 761\)](#) listing the unit number, description, serial number and meter reading, three weeks prior to the estimated sale date. The

Equipment Section will forward the form to the Fleet and Surplus Services section of DOA for approval. Upon receiving approval the Equipment Section will notify the district to flag the units in the Equipment Management System (M5) for disposal. The district will be responsible for flagging the units for disposal and note any known defects.

4-10.0 MOTOR FUEL

Motor fuel for department vehicles and equipment can be drawn from MnDOT sites as well as purchased at commercial fueling stations.

Several district maintenance facilities use an in-house bulk fueling system. These sites utilize an automated fuel delivery system which is integrated with the Equipment Management System (M5). To dispense fuel, the operator will be required to enter the unit number, the unit's meter reading, and the operator's fuel card number.

Fuel may be purchased at any commercial fueling station which accepts the contracted fuel purchasing card. Operators are required to follow the procedures outlined in [MnDOT Fuel Card Policy #5.2](#)

[Minnesota Statutes, Section 16C.135](#) directs Agencies and state employees to use "cleaner" fuel in state vehicles whenever "reasonably available". "Reasonably available" in this case means the "cleaner" fuel is cost comparative and compatible for the specific vehicle. Employees can refer to ["cleaner" fuel websites](#), including E85, and other alternatives.

4-11.0 VEHICLE INCIDENT AND ACCIDENT REPORTING

4-11.01 VEHICLE INCIDENT AND CRASH REPORTING

For purposes of this section, crash and incident will be used interchangeably. Crashes are any circumstance that causes equipment damage or injury to an operator, passenger or pedestrian. All vehicle crashes involving MnDOT fleet equipment will be reported and investigated. Crash reports will be immediately filed with the Risk Management Division of the Department of Administration (DOA) through MnDOT's Safety Units. MnDOT Safety and DOA's Risk Management will support management to determine incident trends and develop risk assessment reports developed for the incident database. Auto crashes and abuse will be looked at on a case-by-case basis and appropriate employee accountability actions will be taken.

4-12.0 SAFETY & SECURITY

Special care must be taken to secure all MnDOT equipment or assets. Be aware that MnDOT equipment and vehicles, especially those having MnDOT logos on

them, are often sought after by criminals and terrorists in an effort to pose as “government officials” while committing a crime. Special care must also be taken to prevent MnDOT logos, State of Minnesota license plates, and other official identification and insignia from getting into illicit hands.

It is essential that any stolen vehicles, equipment, logos, etc. be reported immediately to the law enforcement agency. Also, e-mail the Equipment Section of the Office of Maintenance immediately to report stolen equipment and fax a completed [MnDOT Stolen Vehicle/Equipment/Logo Report](#).

The ignition keys should be removed when the unit is parked, except when safe on highway property with the transmission in “park” position and the emergency brake on.

No motor should be idled in excess of three (3) minutes except when necessary for warm up, and never unattended.

INDEX OF LINKS

Chapter 6 (Maintenance Manual) – Contracts and Agreements

<http://www.dot.state.mn.us/maintenance/pdf/manual/chapter-6-contracts-and-agreements.pdf>

“Cleaner” fuel websites

<http://www.cleanairchoice.org/E85InCounty.asp?State=MN>

Contract Management

<http://ihub.dot.state.mn.us/contracts/>

Direct Sales Procedure

<http://ihub.dot.state.mn.us/maintenance/equipment/forms/DirectSaleProcedure.doc>

Equipment Operator’s Manual

<http://ihub.dot.state.mn.us/training/maintenancetraining/documents/equipmentOperatorManual.pdf>

Equipment Request Form

<http://ihub.dot.state.mn.us/maintenance/equipment/forms/Equipment%20Request%20Form%20Interactive20060309.dot>

Equipment Section

<http://www.dot.state.mn.us/maintenance/fleet.html>

Federal Motor Carrier Safety Administration (FMCSA)

<http://www.fmcsa.dot.gov/>

Federal Motor Carrier Safety Regulations (FMCSR)

<http://www.fmcsa.dot.gov/rules-regulations/rules-regulations.htm>

Fleet Safety Standards for Towing Trailers

http://www.mn.gov/admin/images/Fleet_Policy_SafetyStandards.pdf

Four Wheel Drive Considerations

<http://ihub.dot.state.mn.us/maintenance/equipment/forms/4wdConsiderations20060125.doc>

Highway Systems Operation Plan

<http://www.dot.state.mn.us/maintenance/hsop/>

Lease Program

<http://ihub/maintenance/equipment/forms/Lease%20Program%20Lease%20Agreement%20for%20FY14%20-%20Revised%2020130104.pdf>

Maintenance Operations Research Fund (MOR)

<http://www.dot.state.mn.us/maintenance/research.html>

Materials Management Division

<http://www.mmd.admin.state.mn.us/>

Minnesota Driver's Manual

<http://www.dps.state.mn.us/dvs/DLTraining/DLManual/DLManual.htm>

Minnesota State Vehicle License Plate

<http://www.revisor.leg.state.mn.us/stats/16B/581.html>

Minnesota Statutes

<https://www.revisor.mn.gov/index.php>

Minnesota Statutes, Section 16 B.55

<http://www.revisor.leg.state.mn.us/stats/16B/55.html>

Minnesota Statutes, Section 16C.135

<https://www.revisor.mn.gov/statutes/?id=16C.135>

Minnesota Statutes, Section 16C.137

<https://www.revisor.mn.gov/statutes/?id=16c.137>

Minnesota Statutes, Section 174.02

<https://www.revisor.mn.gov/statutes/?id=174.02>

[MnDOT Business Manual](#)

<http://oit-jboss-prod.dot.state.mn.us/edms/download?docId=913221>

MnDOT Equipment Request Form

<http://ihub.dot.state.mn.us/maintenance/equipment/forms/Equipment%20Request%20Form%20Interactive20060309.dot>

MnDOT Fuel Card Policy #5.2 dated June 2, 2009

<http://oit-jboss-prod.dot.state.mn.us/edms/download?docId=908157>

MnDOT Guidelines: Four-Wheel Drive (4WD) Vehicles

<http://ihub.dot.state.mn.us/maintenance/equipment/forms/4wdGuidelines20060125.doc>

MnDOT Procedure: 4WD Vehicle Requests

<http://ihub.dot.state.mn.us/maintenance/equipment/forms/4wdRequest%20Procedure20060313.doc>

MnDOT Stolen Vehicle/Equipment/Logo Report

<http://ihub.dot.state.mn.us/maintenance/equipment/forms/VehicleTheftReport.dot>

MnDOT Take-Home Vehicle Authorization

<http://ihub.dot.state.mn.us/maintenance/equipment/forms/TakeHomeVehicleAuthorization.doc>

MnDOT's Warning Light Guidance

<http://www.dot.state.mn.us/products/vehiclelighting/index.html>

Office of Maintenance

<http://www.dot.state.mn.us/maintenance/>

Operator's Daily Checklist Book

[Click here for more information](#)

PMI Record Sheet for Light Duty Vehicles

<http://ihub/maintenance/forms.html>

PMI Record Sheet for Loaders

<http://ihub/maintenance/forms.html>

PMI Record Sheet for Snow Plow Trucks

<http://ihub/maintenance/forms.html>

PMI Record Sheet for Trailers

<http://ihub/maintenance/forms.html>

Property Disposition Request

<http://ihub/maintenance/forms.html>

Risk Management Division

<http://www.mainserver.state.mn.us/risk/>

Risk Management Loss Control

<http://www.mn.gov/admin/government/risk/safety-loss-control/index.jsp>

Take Home Vehicle Tracking Process

<http://ihub.dot.state.mn.us/maintenance/equipment/forms/M5OperatorAssignment.doc>

Unit or Betterment Equipment Purchases reference

http://ihub.dot.state.mn.us/maintenance/equipment/forms/PurchasingprocessandflowchartAug%2008_1.doc

Unit Service Book

[Click here for more information](#)