

 <p style="text-align: center;">STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES</p> <p style="text-align: center;">Policy and Procedure</p>	POLICY AND PROCEDURE NUMBER 11.04.031	PAGE 1 of 21
	EFFECTIVE DATE July 1, 2002	
SUBJECT Preventive Maintenance	SUPERSEDES 11.04.031	DATED 6/16/2000
TITLE State Equipment Fleet	CHAPTER Equipment Use, Care and Maintenance	APPROVED BY Signature on File

PURPOSE

Introduction:

- A. Regularly scheduled service and inspection of vehicles and equipment is the cornerstone of fleet safety, maintenance and operational integrity, and controlling maintenance costs. The main components of a preventive maintenance service (PM) program are:
1. Inspection and repair at regular pre-determined intervals.
 2. Lubrication and service at regular pre-determined intervals.
- B. Adherence to these components of preventive maintenance will help extend machine service life, improve availability and reliability, reduce major component repair and replacement expenses, and enhance disposal value.
- C. These procedures outline the minimum program for Preventive Maintenance and Service of state owned equipment.

Responsibility/Performance:

SEF Managers:	Ensure compliance with this procedure.
Shop Supervisors and Mechanics:	Ensure the minimum PM standards are adhered to.
User Agency:	Ensure vehicles are available when PM inspection is due.

Definitions:

PM Service:

The combined operation of lubrication and service, inspection, and performance of adjustments and minor repairs on a regularly scheduled basis. This operation is a PM Inspection.

Annual Dry Asset Inspection:

An annual inspection of Dry assets to insure that the PM services are being performed and documented in accordance with this P&P.

Reference:

Applicable Manufacturer's Service and Lubrication Guides

PROCEDURE

- A. PM intervals and procedures shall be based on original equipment manufacturer's (OEM) recommendations and standard industry practice with appropriate adjustments for Alaska operating conditions.
- B. Pre-determined service and inspections intervals for all classes of vehicles and equipment shall be established.
- C. Each PM inspection will consist of a simultaneous operation of lubrication and servicing, inspection, adjustment, and minor repair.
- D. Major repair needs discovered during PM will be documented and subsequently scheduled into the repair shop for completion. Discovery of repair or service needs that affect safe or economical operation of a vehicle will require placing the vehicle out-of-service until the problem is corrected.
- E. Successive PM Inspection levels shall consist of:
 - 1. PM A Inspections.
 - 2. PM B Inspections (not currently used).
 - 3. PM C Inspections.
- F. Each successive PM inspection level will be more comprehensive than the last leading up to the "C" or most thorough level.
- G. PM Inspections will be based on intervals of hours, miles, fuel used, or time and may be adjusted to suit the specific needs of the various equipment classes and districts.

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- H. The PM intervals listed in Attachment A, Preventive Maintenance Schedule, represent the maximum service intervals of the affected vehicle class. Authority to change the maximum service intervals shall rest with the Statewide Fleet Manager.
- I. Each PM inspection shall be conducted according to the appropriate PM inspection check sheet and recorded on a shop work order that will include the parts cost, commodities used, and labor hours required to do the work.
- J. Only qualified maintenance personnel shall perform PM inspections.
- K. All new equipment shall be given a thorough pre-delivery inspection before being placed in service. Such inspection shall be documented on a pre-delivery report.
- L. Each major group of equipment shall have a PM check sheet specifically designed to accomplish proper servicing and inspection routines. Examples of check sheets are shown in Attachment B. The SEF Regional Equipment Managers shall approve all check sheets within their respective regions.
- M. The PM mechanic will check all appropriate items on the inspection sheet as they are completed. The PM mechanic is to adjust, tighten, lubricate, or add fluid required for each of the operations listed.
- N. PM scheduling will be the responsibility of the SEF District Manager, or a designee. A computerized scheduling list will be available from the Equipment Management System (EMS).
- O. The PM mechanic, Shop Supervisor, or other person designated by the SEF District Equipment Manager shall, where practical, road test or field test the vehicle after PM is complete.
- P. Completed PM work orders shall be reviewed by the Shop Supervisor and/or Superintendent. The SEF District Equipment Manager should review discrepancies or unusual reports. After completion and review, PM work orders are to become a part of the equipment file.
- Q. Vehicles shall be emission tested (IM) where required (i.e. Anchorage and Fairbanks) in accordance with local municipal ordinances and state statutes governing IM testing. Non-compliant vehicles will be deadlined or repaired.

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- R. Dry assets shall be inspected annually by SEF to insure that they had their PMs performed and documented in accordance with this P&P. Dry assets that are non-compliant shall be deadlined until their deficiencies have been corrected and they have been re-inspected and found to be compliant. Habitual failure to properly maintain Dry assets will result in the conversion of those assets to Wet status.

IMPLEMENTATION RESPONSIBILITY

Headquarters and Regional Directors

DISTRIBUTION

All Holders of the Department of Transportation & Public Facilities Policy and Procedure Manual

ATTACHMENT A
PREVENTIVE MAINTENANCE AND SERVICE SCHEDULE

<u>Equipment Group</u>	<u>Inspection Type</u>	<u>Maximum Interval</u>
Light Duty Vehicles (Including DPS Judicial Services & Administration)	A	6 months/5,000 miles
	C	36 months/30,000 miles
DPS Vehicles (All classes except Judicial Services & Administration)	A	6 months/3,000 miles
	C	36 months/30,000 miles
Light Duty (Seasonal Use)	A	12 months/5,000 miles
	C	36 months/30,000 miles
Heavy Duty Trucks	A	250 hours/5,000 miles
	C	Annual
Heavy Duty Trucks (Seasonal Use)	A	12 months/250 hours/5,000 miles
	C	24 months/1,000 hours/20,000 miles
Heavy Equipment	A	250 hours
	C	Annual
Heavy Equipment (Seasonal Use)	A	12 months/250 hours
	C	24 months/1,000 hours
Motor Graders	A	250 hours
	C	Annual
Motor Graders (Seasonal Use)	A	12 months/250 hours
	C	24 months/1,000 hours
Snow Blowers, Sweepers, Brooms, Traffic Markers, Auger Drills, Brush Cutter/Shredder, Boilers	A	250 hours
	C	Annual
Attachments	A	With parent
	C	With parent
Sanders	A	With host when mounted
	C	Annual
Trailers	C	Annual
Miscellaneous Support Equipment	A	250 hours
	C	Annual
Dry Vehicle		Annual or Bi-Annual

ATTACHMENT B - PREVENTIVE MAINTENANCE & INSPECTION CHECK SHEETS

Page 2 of 15: Light Duty Vehicles - Back

		A	B	C
E N G I N E	Check engine operation			
	Check choke & throttle linkage			
	Check radiator - clean as required			
	Check water pump & fan			
	Check all belts & hoses			
	Check carburetor, fuel pump & lines			
	Check cold starting aids			
	Pressure test radiator			
	Compression test			
	Tune up: scope test including: Adjust timing, voltage & pattern mixture, idle speed, check ignition points, coil, plugs & wires, emission controls. Change as required.			
	Steam clean engine			
D R I V E T R A I N	Check drivelines, joints, center bearings			
	Check clutch; adjust as required			
	Check transmission for operation			
	Check transfer case & 4x4 operation			
B R A K E S	Check brake pedal operation & reserve			
	Check condition of brakes			
	Adjust brakes			
	Check parking/emergency brake			
	Check master cylinder; levels & leaks			
	Check shoes, calipers, rotors & wheel cylinders. Replace as required.			
Check drums & front wheel bearings				
S T E E R I N G	Check steering gear assembly, including tie rods & ends, drag link, pitman arm, king pins			
	Check wheel alignment			

		A	B	C
W H E E L S & T I R E S	Check & record air pressure			
	<input type="checkbox"/> ↑ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Front <input type="checkbox"/> <input type="checkbox"/>			
	Inflate to recommended levels			
	Check for valve caps			
	Check wear & condition			
	Rotate as required			
	Check toe in - balance			
	Check wheel lug nuts/check run out			
	Inspect wheels for cracks			
	Check for hubcaps			
R O A D T E S T	Road test after all PM inspections & check:			
	Clutch action			
	Transmission - shifting correctly			
	Engine - smooth acceleration, knocks			
	Unusual noises, overheating, oil leaks & pressure			
Brakes - smooth even stops				
Roadability - check steering, excessive play, wandering, pulling to sides, of shimmy				
Comments:				
**** PM Completed ****				
Road test performed: Vehicle is road ready.				
Signed: _____				

ATTACHMENT B - PREVENTIVE MAINTENANCE & INSPECTION CHECK SHEETS

Page 3 of 15: Heavy Duty Trucks - Front

Preventive Maintenance Inspection

Date _____ Insp. Type _____

HEAVY DUTY TRUCKS

Location (Shop I/D) _____

(Class 200 & up, medium & heavy duty trucks)

Mechanic _____

Vehicle No. _____ W/O # _____			
Vehicle Description _____			
Hours _____		Miles _____	
- INSPECTIONS -			
PM C Annual _____			
PM B None _____			
PM A 4 months/250 hrs./4,000 miles _____			
Codes: 4 = Okay A = Adjust R = Replacement/Repair (R Items to go on Work Order)			
	A	B	C
B O D Y	"Walk-around" check for physical damage		
	Check paint & general appearance		
	Check decals, license plate, equipment number		
	Check mudflaps, winterfront		
C A B & I N S T R U M E N T S	Check instruments, gauges, warning lights		
	Check hour meter for operation		
	Check horns - air, electric, backup		
	Check heater, defroster		
	Check mirrors, all glass		
	Check door and window operation		
	Check safety equipment - fire extinguisher		
	Check seats, seatbelts, floor mats		
	Check windshield wipers & washer - change blades, add fluid as required		
	Check lights, turn signals, 4 ways		
E L E C T R I C A L	Check battery including hold downs & cables		
	Check wiring, connections, grounds		
	Check master switch if equipped		
	Check starter for proper operation		
	Check starter/alternator mounting		
	Check fuse box including spares		
	Clean & lube posts & cables		
	Check Starter current drawdown		

		A	B	C
L U B E & S E R V I C E	Change engine oil & filter: Check level			
	Change fuel filter(s)			
	Check air restriction reading			
	Air cleaner: clean & inspect; change as required			
	Check antifreeze condition & freeze point			
	Check coolant filter, change annually or as req'd.			
	Change hydraulic oil filter(s)			
	Check wheel seal lube levels			
	Drain air tank of water and oil			
	Check all fluid levels - top off as needed			
	Lube all fittings			
	Service & lube all accessory equipment			
	Clean breathers - eng., diff., trans.			
	Lube throttle linkage			
	Check magnetic plugs			
	Take engine oil sample as required			
	Lube speedo/tach cables			
	Drain & refill trans & differential			
Apply Lupriplate - hood & door latches				
C H A S S I S	Check frame & cross members			
	Check all U-bolts & trunion bolts			
	Check engine, trans., differential mounting			
	Check all spring shackles & mounting			
	Check radius & torque rods			
	Inspect 5 th wheel & mounting			
	Check dump box condition & mounting			
	Check plow hitch mounting			
	Check fuel & hydraulic tank mounting			
	Check exhaust system			

ATTACHMENT B - PREVENTIVE MAINTENANCE & INSPECTION CHECK SHEETS

		A	B	C
ENGINE	Start engine; Check throttle & accel. controls			
	Check RPM: Idle _____ max _____			
	Check governor cut-out			
	Check Jake brake operation			
	Check oil pressure (hot) idle _____ speed _____			
	Check for leaks, blowby			
	Clean radiator frontal area			
	Check radiator cap, relief valve, overflow			
	Check shuuter operation if equipped			
	Check water pump for leaks & bearing play			
	Check air compressor condition & mounting			
	Check all lines & hoses & belts			
	Check air dryer system			
	Check emergency shutdown			
	Steam clean engine			
	Check engine fuel pressure			
	Engine tune up: adjust injectors, valves, timing. Scope test			
	Check turbocharger			
Pressure test cooling system				
DRIVETRAIN	Check clutch for operation & freeplay			
	Check clutch brake			
	Check transmission for proper operation			
	Check 2-speed axle controls			
	Check driveline, U-joints, center bearing			
	Check axle flange nuts			
	Check all hydraulic controls including PTO			
	BRAKES	Check & adjust all brakes including parking		
Check all airlines/gladhands for condition				
Check operation of trailer protection valve				
Check air buildup & governor for leaks				
Check S-cams, slack adjusters				
Check condition of brake lining				
Remove wheels: inspect drums for cracks & wear; reline brakes as needed; check all bearings, replace as needed				
Check brake cans & diaphragms. Replace as needed				

		A	B	C	
STEERING	Check front springs & suspension				
	Check steering assy including tie rod ends & drag link				
	Check pitman arm & nut; kingpins				
	Remove front wheels & inspect				
	Jack up front end; check kingpins				
	Check alignment as necessary				
	WHEELS	Check & record air pressure			
& Inflate to recommended levels					
Check for wear/condition - rotate as required					
Check for valve caps					
Check wheel lug nuts					
Inspect wheels for cracks					
Check toe in - balance - wheel run-out					
Road test after all PM inspections & check:					
ROAD TEST		Clutch/transmission			
	Brakes				
	Driveline (vibration)				
	Engine controls/performance				
	Steering handling				
Check & inspect attachments using the PM checksheet for attachments. Attach checksheet used: <input type="checkbox"/> Yes <input type="checkbox"/> No					
Comments:					
**** PM Completed ****					
Road test performed: Vehicle is road ready.					
Signed: _____					

ATTACHMENT B - PREVENTIVE MAINTENANCE & INSPECTION CHECK SHEETS

Page 5 of 15: Heavy Equipment - General - Front

Preventive Maintenance Inspection

Date _____ Insp. Type _____

Location (Shop I/D) _____

HEAVY EQUIPMENT - GENERAL

Mechanic _____

(All heavy equipment classes except Graders & Snowblowers)

Equip. No. _____ W/O # _____				
Equip. Description _____				
Hours _____				
- INSPECTIONS -				
PM C Annual _____				
PM B 500 Hours _____				
PM A 250 Hours/4 Months _____				
Codes: 4 = Okay A = Adjust R = Replacement/Repair (R Items to go on Work Order)				
	A	B	C	
B O D Y	"Walk-around" check for physical damage			
	Check paint & general appearance			
	Check decals, license plate, equipment number			
	Steam clean machine			
C A B & I N S T R U M E N T S	Check all gauges & instruments			
	Check hour meter for operation			
	Check warning lights, horn, back up alarm			
	Check doors, windows, EROPS			
	Check windshield wiper & washer			
	Check lights, turn signals & hazard lights			
	Check seat & seatbelt			
	Check cab interior and safety items			
	Check heater & defroster			
	Check all controls & switches for operation			
Check all mirrors & glass				
E L E C T R I C A L	Check battery including hold downs & cables			
	Check wiring, connections, grounds			
	Check starter for proper operation			
	Check starter/alternator mounting			
	Check fuse box including spares			
	Check master switch if equipped			
	Check starter current drawdown			
	Check amp draw on glow plugs			
	Clean & lube posts & cables			
	Check neutral start switch			

		A	B	C
L U B E & S E R V I C E	Change engine oil & filter: Check level			
	Change fuel filter(s)			
	Check air restriction reading			
	Air cleaner: clean & inspect; change as required			
	Check pre-cleaner			
	Check antifreeze condition & freeze point			
	Check coolant filter, change annually or as req'd.			
	Change hydraulic oil & filter(s)			
	Check planetary & differential oil levels			
	Check all fluid levels - top off as needed			
	Lube all fittings			
	Service & lube all accessory equipment			
	Clean breathers - Eng., diff., TC			
	Lube throttle linkage			
	Take oil samples as required			
	Drain air tank of water & oil			
	Check magnetic plugs			
	Change oil in all gear boxes, transmission, planetaries & hydraulic system			
	Change transmission filter (or as required)			
	Clean transmission pump screen			
Drain sediment from fuel tank				
C H A S S I S & T R A C K S	Check all mounting brackets/plates			
	Check all pivot joints/hinge pins for wear			
	Check all linkage for operation & wear			
	Check all U-bolts & trunion bolts			
	Check EROPS mounting			
	Check frame locking pin			
	Check frame for cracks, damage			
	Check pin & bushing wear			
	Check rollers, idlers, sprockets			
	Check track pads & rock guards			
Check track, adjust as required				
Check track frames for straight				

ATTACHMENT B - PREVENTIVE MAINTENANCE & INSPECTION CHECK SHEETS

		A	B	C
ENGINE	Start engine; Check throttle & accel. controls			
	Check oil pressure reading			
	Check cold weather starting aids			
	Check shutdown system			
	Check lines, hoses, connections for leaks			
	Check belts & pulleys			
	Check radiator for leaks & obstruction			
	Check cables & linkage for cond. & operation			
	Check exhaust piping & muffler incl. rain cap			
	Check water pump for leaks & bearing play			
	Check air intake system & turbo			
	Check low & high idle			
	Pressure check cooling system			
	Tune engine: set valves & injectors			
	Check fuel pressure			
	Check turbo for operation & bearing wear			
Torque turbo/engine mounting bolts				
DRIVE TRAIN	Check clutch & steering brake adjustment			
	Check trans/torque convertor/PTO			
	Check all linkages for operation and condition			
	Check drop boxes, transfer cases			
	Check planetaries/axles/differential lockout			
	Check FWD/rev/speed range clutch press			
	Check all drive couplings/mid bearings			
	Check trans/TC for internal leakage			
	Check trans cooler pressure - in/out			
	Check convertor pressure - in/out			
	Check trans lube pressure			
Check unloading valve pressure				
Check main & low pressure relief valve				
Torque trans/TC mounting bolts				
HYDRAULIC	Check all hydraulic controls for proper operation			
	Check all hoses, fittings, connections			
	Check all hydraulic cylinders for wear/leaks			
	Check all pumps for operation/leaks			
	Check boom kickout & bucket leveler			
	Check hydraulic tank mounting			
Replace hydraulic tank breather				

		A	B	C
BRAKES	Check brakes for proper operation			
	Adjust parking/emergency brake			
	Bleed air from system			
	Check for leaks - whl. cyl., caliper, master cyl.			
	Check lining/drums/discs			
	Check all hoses/connections for wear, leaks			
	Check accumulator precharge pressure			
STEERING	Check all steering components			
	Check secondary steering system			
	Check ball joints, pitman arm, tie rods			
	Check pump for leaks, operation			
	Check steering relief pressure			
TIRES	Check all tires for wear & condition			
	Check tire pressure in all tiers			
	Check wheels, lug nuts & studs			
MISC	Service and inspect any special equipment or components according to manufacturers recommendations			
	Check and inspect attachments using the PM checksheet for attachments. Attachments checksheet used: Yes <input type="checkbox"/> No <input type="checkbox"/>			
OPERATION CHECK	Perform operational check/road test after all PM inspections:			
	Check engine controls/performance			
	Check transmission/drivetrain			
	Check brakes including parking/emergency			
	Check operation of all machine functions (raise, lower, swing, etc.)			
Check all accessory controls & equip. for proper operation				
Comments:				
**** PM Completed ****				
Operational test performed: Unit is ready to work.				
Signed: _____				

ATTACHMENT B - PREVENTIVE MAINTENANCE & INSPECTION CHECK SHEETS

Page 7 of 15: Motor Graders - Front

Preventive Maintenance Inspection

Date _____ Insp. Type _____

Motor Graders

Location (Shop I/D) _____

Mechanic _____

Equip. No. _____ W/O # _____			
Equip. Description _____			
Hours _____			
- INSPECTIONS -			
PM C Annual _____			
PM B 500 Hours _____			
PM A 250 Hours/4 Months _____			
Codes: 4 = Okay A = Adjust R = Replacement/Repair (R Items to go on Work Order)			
	A	B	C
B O D Y	“Walk-around” check for physical damage		
	Check paint & general appearance		
	Check decals, license plate, equipment number		
	Steam clean machine		
C A B & I N S T R U T M E N T S	Check all gauges & instruments		
	Check hour meter for operation		
	Check warning lights, horn, back up alarm		
	Check doors, windows, EROPS		
	Check windshield wiper & washer		
	Check lights, turn & hazard lights		
	Check seat & seatbelt		
	Check cab interior/safety items		
	Check heater & defroster		
	Check all controls & switches for operation		
Check all mirrors & glass			
E L E C T R I C A L	Check battery including hold downs & cables		
	Check wiring, connections, grounds		
	Check starter for proper operation		
	Check starter/alternator mounting		
	Check fuse box including spares		
	Check master switch if equipped		
	Check neutral start switch		
	Check starter current drawdown		
	Check amp draw on glow plugs		
	Clean & lube posts & cables		

		A	B	C
L U B E & S E R V I C E	Change engine oil & filter: Check level			
	Change fuel filter(s)			
	Check air restriction reading			
	Air cleaner: clean & inspect; change as req'd.			
	Check pre-cleaner			
	Check antifreeze condition & freeze point			
	Check coolant filter, change annually or as req'd.			
	Change hydraulic oil			
	Check hydraulic oil filter			
	Check tandem/final/transmission fluid level			
	Check all fluid levels - top off as needed			
	Lube all fittings			
	Service & lube all accessory equipment			
	Clean breathers - eng., diff., trans., TC			
	Lube throttle linkage			
	Take oil samples as required			
	Drain air tank of water & oil			
	Check magnetic plugs			
	Change oil in all gear boxes, transmission			
	Change single reduction SR30-SR40 lube			
Change tandem fluid				
Change transmission filter (or as required) & clean transmission pump screen				
Drain sediment from fuel tank				
C H A S S I S	Check all mounting brackets/plates			
	Check all pivot joints/hinge pins for wear			
	Check all linkage for operation & wear			
	Check all U-bolts & trunion bolts			
	Torque EROPS mounting bolts			
	Check articulation anchor pins			
	Torque hydraulic pump mounts			
	Torque final drive to frame			
	Torque final drive to tandems			
	Check transmission mounting			
Check hydraulic tank mounting				

ATTACHMENT B - PREVENTIVE MAINTENANCE & INSPECTION CHECK SHEETS

		A	B	C
ENGINE	Start engine; Check throttle & accel. controls			
	Check oil pressure reading			
	Check cold weather starting aids			
	Check shutdown system			
	Check lines, hoses, connections for leaks			
	Check belts & pulleys			
	Check radiator for leaks & obstruction			
	Check cables & linkage for cond. & operation			
	Check exhaust piping & muffler incl. rain cap			
	Check water pump for leaks & bearing play			
	Check air intake system & turbo			
	Check low & high idle			
	Pressure check cooling system			
	Tune engine: set valves & injectors			
	Check fuel pressure			
	Check turbo for operation & bearing wear			
Torque turbo/engine mounting bolts				
DRIVETRAIN	Check clutch operation and adjustment			
	Check trans/torque convertor			
	Check all linkages for operation and condition			
	Check drop boxes, transfer cases			
	Check all driveshafts/couplings			
	Check trans/TC for internal leakage			
	Check tandem case for damage/leaks			
	Check trans cooler pressure - in/out			
	Check convertor pressure - in/out			
	Torque rear axle nut			
Adjust trans lube/lockup pressure				
HYDRAULIC	Check hydraulic pump(s) for operation/leaks			
	Check all hydraulic controls for proper operation			
	Check primary hydraulic relief setting			
	Check all hoses, fittings, connections			
	Check all hydraulic cylinders for wear/leaks			
CIRCLES / DRAWBAR	Adjust circle timing			
	Adjust stirrup bearings			
	Check ball cap adjustment			
	Adjust blade lift cylinder trunions			
	Adjust drawbar ball studs			
	Torque tilt quadrant bolts			
	Check moldboard sliding surface			
Check cutting edges				

		A	B	C
BRAKES	Check brakes for proper operation			
	Adjust parking/emergency brake			
	Bleed air from system			
	Check for leaks - whl. cyl., caliper, master cyl.			
	Adjust drum brake linings			
	Check all hoses/connections for wear, leaks			
STEERING	Check all steering components			
	Check secondary steering system			
	Torque radius arm/drag link nut			
	Check ball joints, pitman arm, tie rods			
	Check pump for leaks, operation			
	Check steering relief pressure			
	Adjust axle pivot bearing preload			
Adjust pivot block preload				
TIRES / WHEELS	Check all tires for wear & condition			
	Check tire pressure in all tires			
	Check wheels, lug nuts & studs			
	Adjust wheel toe in			
	Adjust wheel bearing preload			
Torque wheel rim clamps				
MISC	Service and inspect any special equip. or components according to manufacturers recommendations			
	Check and inspect attachments using the PM checksheet for attachments. Attach checksheet used: Yes <input type="checkbox"/> No <input type="checkbox"/>			
OPERATION CHECK	Perform operational check/road test after all PM inspections:			
	Check engine controls/performance			
	Check transmission/drivetrain			
	Check brakes including parking/emergency			
	Check operation of all machine functions			
Check all accessory controls & equipment for proper operation				
<p>**** PM Completed ****</p> <p>Operation test performed: Unit is ready to work.</p> <p>Signed: _____</p>				

ATTACHMENT B - PREVENTIVE MAINTENANCE & INSPECTION CHECK SHEETS

Page 9 of 15: Snow Blowers - Front

Preventive Maintenance Inspection

Date _____ Insp. Type _____

SNOW BLOWERS (Truck & Loader Mounted)

Location (Shop I/D) _____

Mechanic _____

Equip. No. _____ W/O # _____			
Equip. Description _____			
Hours _____			
- INSPECTIONS -			
PM C 800 Hours/24 Months _____			
PM B 400 Hours/12 Months _____			
PM A 100 Hours/6 Months _____			
Codes: 4 = Okay A = Adjust R = Replacement/Repair (R Items to go on Work Order)			
	A	B	C
B O D Y	"Walk-around" check for physical damage		
	Check paint & general appearance		
	Check decals, license plate, equipment number		
	Steam clean machine		
	Spot paint unit & replace service instruction decals as required		
C A B & I N S T R U T M E N T S	Check all gauges & instruments		
	Check hour meter for operation		
	Check warning lights, horn, back up alarm		
	Check doors, windows, EROPS		
	Check windshield wiper & washer		
	Check lights, turn & hazard lights		
	Check seat & seatbelt		
	Check cab interior/safety items		
	Check heater & defroster		
	Check all controls & switches for operation		
Check all mirrors & glass			
E L E C T R I C A L	Check battery including hold downs & cables		
	Check wiring, connections, grounds		
	Check starter for proper operation		
	Check starter/alternator mounting		
	Check fuse box including spares		
	Check master switch & neutral start switch		
	Check starter current drawdown		
	Test battery: clean & lube posts and cables		
	Check amp draw on glow plugs		

		A	B	C
L U B E & S E R V I C E	Change engine oil & filter: Check level			
	Change fuel filter(s)			
	Check air restriction reading			
	Air cleaner: clean & inspect; change as req'd.			
	Check pre-cleaner			
	Check antifreeze condition & freeze point			
	Check coolant filter, change annually or as req'd.			
	Change hydraulic oil & filters			
	Filter all hydraulic oil			
	Check planetary & differential oil levels			
	Check all fluid levels - top off as needed			
	Lube all fittings per manufacturers specifications			
	Service & lube all accessory equipment			
	Clean breathers - eng., diff., trans., TC			
	Lube throttle linkage			
	Take oil samples as required			
	Drain air tank of water & oil			
	Check magnetic plugs			
	Change oil in all gear boxes, transmission, differential, drop boxes			
	Change transmission filter (or as required)			
	Change transmission pump screen			
	Drain sediment from fuel tank			
	C H A S S I S	Check all mounting brackets/plates		
Check all pivot joints/hinge pins for wear				
Check all linkage for operation & wear				
Check all U-bolts & trunion bolts				
Check frame for cracks, damage				
Tighten all mounts: eng., radiator cowling, etc.				

ATTACHMENT B - PREVENTIVE MAINTENANCE & INSPECTION CHECK SHEETS

		A	B	C
ENGINE	Start engine; Check throttle & accel. controls			
	Check oil pressure reading			
	Check cold weather starting aids			
	Check shutdown system			
	Check lines, hoses, connections for leaks			
	Check belts & pulleys			
	Check radiator for leaks & obstruction			
	Check cables & linkage for cond. & operation			
	Check exhaust piping & muffler incl. rain cap			
	Check water pump for leaks & bearing play			
	Check air intake system & turbo			
	Check low & high idle			
	Pressure check cooling system			
	Tune engine per manufacturer specifications			
	Check fuel & oil pressure			
Check engine compression				
Check turbo for operation & bearing wear				
DRIVE TRAIN	Check clutch adjustment			
	Check trans/torque convertor			
	Check all linkages for operation and condition			
	Check drop boxes, transfer cases			
	Check planetaries/axles/differential lockout			
	Check for worn lines, fittings, hoses			
	Check chains/sprockets for wear			
	Pressure check transmission			
	Check all drive couplings			
	Check trans/TC for internal leakage			
Check convertor pressure				
HYDRAULIC	Check all hydraulic controls for proper operation			
	Check all hoses, fittings, connections			
	Check all hydraulic cylinders for wear/leaks			
	Check all pumps for operation/leaks			
	Check hydraulic tank mounting			
	Replace hydraulic tank breather			
	Check all hydraulic valves & controls for leaks and excessive wear			
	Check pump pressure			
Check hydrostatic pump pressure & hydraulic motor output				

		A	B	C
BRAKES	Check brakes for proper operation			
	Adjust all brakes including parking & emergency			
	Check all brakes for wear & replace as required			
	Check all hoses/connections for wear, leaks			
	Check lines, master cylinder, etc. for leaks, wear			
STEERING	Check all steering components			
	Check secondary steering system			
	Check ball joints, pitman arm, tie rods			
	Check pump for leaks, operation			
	Check steering relief pressure			
TIRES	Check all tires for wear & condition and proper mounting			
	Check tire pressure in all tires			
	Check wheels, lug nuts & studs			
BLOWER ASSEMBLY	Check volute for wear. Repair with insert as required.			
	Check paddles for wear. Replace as required.			
	Check reel flights for wear. Replace as required.			
	Check shoes for wear			
	Check blower head for stress cracks			
	Check right angle gear box for wear			
OPERATION	Check all U-joints			
	Check chains & sprockets for wear			
CHECK	Perform operational check/road test after all PM inspections:			
	Check engine controls/performance			
	Check transmission/drivetrain			
	Check brakes including parking/emergency			
	Check operation of all machine functions			
CHECK	Check all accessory controls & equipment for proper operation			
	Comments:			
**** PM Completed ****				
Operational test performed: Unit is ready to work.				
Signed: _____				

ATTACHMENT B - PREVENTIVE MAINTENANCE & INSPECTION CHECK SHEETS

Page 11 of 15: Attachments/Sanders & Trailers

Preventive Maintenance Inspection

Date _____ Insp. Type _____
 Equip. No. _____ W/O # _____ Location (Shop I/D) _____
 Equip. Description _____ Mechanic _____
 Hours _____

*** Attachments/Sanders ***				
PM C 800 Hours/24 Months				
PM B 400 Hours/12 Months				
PM A 100 Hours/6 Months				
Codes: 4 = Okay A = Adjust R = Replacement/Repair (R Items to go on Work Order)				
		A	B	C
*** Attachments/Sanders ***				
B O D Y / C H A S S I S	Check for physical damage & condition			
	Check for license plate & equipment number			
	Check for loose bolts & fittings			
	Check for wear/cracks			
	Check all lines, hoses, fittings			
	Check all mounting brackets, plates			
	Check all hydraulic cylinders			
	Check all locking/pin connections			
	Check condition of wear edges/points			
	Check all lights/reflectors			
	Check all electrical connections			
	Check tire condition/pressure			
	L U B E	Lube & service per manufacturers chart		
Lube & service accessory equipment				
Check all fluid levels				
Repack wheel bearings				
Steam clean (flush sander box)				
S A N D E R	Change gear box oil/check bearings			
	Oil conveyor chain			
	Adjust conveyor chain			
	Check & lube all bearings			
	Check sander box sheet metal			

*** Trailers ***						
	A = 6 Months	B = None	C = Annual	A	B	C
B O D Y / C H A S S I S	Check for physical damage & general condition					
	Check for license plate & equipment number					
	Check for mud flaps, tie downs					
	Check for loose bolts & fittings					
	Check for wear/cracks					
	Check condition of decking/ramps					
	Check condition of kingpin					
	Check landing gear/jack stand					
	Check hitch pintle/safety chains					
	Check all locking/pin connections					
	Check all lights/reflectors					
	Check hydraulic cylinders					
	Check lines, hoses, wiring					
	Check tank trailers for leaks, including valves, piping, pumps, spray bars					
B R A K E S	Adjust brakes; check condition					
	Drain air tanks					
	Check airlines including gladhands					
	Check brake pads, shoes, drums					
	Repack wheel bearings					
	Check tires for condition & wear					
	Check tire inflation					
L U B E	Lube all fittings per chart					
	Lube & service all accessory equipment according to chart					

**** PM Completed ****

Unit is services and ready to work.

Signed: _____

ATTACHMENT B - PREVENTIVE MAINTENANCE & INSPECTION CHECK SHEETS

Page 12 of 15: Miscellaneous Support Equipment - Front

Preventative Maintenance Inspection

Misc. Support Equipment - Rollers, sweepers, A/C dist. tar pots, hydraulic booms/cranes/liftgates, auger drills, brush cutters, paint striper, chip spreader, portapatcher, garbage packer, steam generator & boiler, air compressor, welder & other misc. equipment.

Note: Make sure Support Equipment Supplement sheet is attached.

Date _____ Insp. Type _____

Shop I/D _____

Mechanic _____

Equip. No. _____ W/O # _____			
Equip. Description _____			
Hours _____			
- INSPECTIONS -			
PM C Annual _____			
PM B None _____			
PM A 100 Hours _____			
Codes: 4 = Okay A = Adjust R = Replacement/Repair (R Items to go on Work Order)			
	A	B	C
B O D Y	"Walk-around" check for physical damage		
	Check paint & general appearance		
	Check decals, license plate, equipment number		
	Check mud flaps, winterfront, roller wiper pads		
	Steam clean machine		
C A B & I N S T R U M E N T S	Check all gauges & instruments		
	Check hour meter for operation		
	Check warning lights, horn, back up alarm		
	Check doors, windows, EROPS		
	Check windshield wiper & washer		
	Check lights, turn & hazard lights		
	Check seat & seatbelt		
	Check cab interior/safety items		
	Check heater & defroster		
	Check all controls & switches for operation		
E L E C T R I C A L	Check neutral start switch		
	Check wiring, connections, grounds		
	Check battery including hold downs & cables		
	Check fuse box including spares		
	Check master switch if required		
	Check starter for proper operation		
	Check starter/alternator mounting		
	Check amp draw on glow plugs		
	Clean & lube battery posts & cables		
	Check starter current drawdown		

		A	B	C	
L U B E & S E R V I C E	Change engine oil & filter: Check level				
	Change fuel filter(s)				
	Check air restriction reading				
	Air cleaner: clean & inspect; change as req'd.				
	Check pre-cleaner				
	Check antifreeze condition & freeze point				
	Check coolant filter, change annually or as req'd.				
	Change hydraulic oil & filters				
	Check planetary & differential oil levels				
	Drain air tank of water & oil				
	Check all fluid levels - top off as needed				
	Lube all fittings				
	Service & lube all accessory equipment				
	Clean breathers - eng., diff., trans.				
	Lube throttle linkage				
	Check magnetic plugs				
	Take oil samples as required				
	Change oil in all gear boxes, transmission, planetaries and hydraulic system				
	Change transmission filter (or as required)				
	Clean transmission pump screen				
	Pack wheel & roller bearings as needed				
	Drain sediment from fuel tank				
	C H A S S I S	Check all mounting brackets/plates			
		Check all pivot joints/hinge pins for wear			
		Check all linkage for operation & wear			
		Check all U-bolts & trunion bolts			
Check EROPS mounting					
Check frame locking pin					
Check frame for cracks, damage					
Check suspension					
Check mounted body for condition & operation					

ATTACHMENT B - PREVENTIVE MAINTENANCE & INSPECTION CHECK SHEETS

Page 14 of 15: Miscellaneous Support Equipment - Back

		A	B	C
ENGINE	Start engine; Check throttle & accel. controls			
	Check oil pressure reading			
	Check cold weather starting aids			
	Check shutdown system			
	Check lines, hoses, connections for leaks			
	Check belts & pulleys			
	Check radiator for leaks & obstruction			
	Check cables & linkage for cond. & operation			
	Check exhaust piping & muffler incl. rain cap			
	Check water pump for leaks & bearing play			
	Check air intake system & turbo			
	Check low & high idle			
	Pressure check cooling system			
	Tune engine; set valves & injectors			
	Check fuel pressure			
	Check turbo for operation & bearing wear			
	Torque turbo/engine mounting bolts			
	DRIVE TRAIN	Check clutch/steering brake adjustment		
Check trans/torque converter/PTO				
Check all linkages for operation and condition				
Check drop boxes, transfer cases				
Check planetaries/axles/differential lockout				
Check clutch pressure where applicable				
Check all drive couplings/mid bearings				
Check trans/TC for internal leakage				
Check trans cooler pressure				
Check convertor pressure				
Check transmission lube pressure				
Torque transmission/TC mounting bolts				
HYDRAULIC	Check all hydraulic controls for proper operation			
	Check all hoses, fittings, connections			
	Check all hydraulic cylinders for wear/leaks			
	Check all pumps for operation/leaks			
	Check hydraulic tank mounting			
	Replace hydraulic tank breather			

		A	B	C
BRAKES	Check brakes for proper operation			
	Adjust parking/emergency brake as required			
	Bleed air from system			
	Check linings/drums/discs			
	Check for leaks - whl. cyl., caliper, master cyl.			
	Check all hoses/connections for wear, leaks			
Check accumulator precharge pressure				
STEERING	Check all steering components			
	Check ball joints, pitman arm, tie rods			
	Check pump for leaks, operation			
	Check steering relief pressure			
TIRES	Check all tires for wear & condition			
	Check tire pressure in all tires			
	Check wheels, lug nuts & studs			
MISC	Service and inspect any special equip. or components according to manufacturers recommendations			
	Use miscellaneous Support Equipment Supplement sheet to cover inspections for specific types of equipment			
OPERATION	Perform operational check/road test after all PM inspections:			
	Check engine controls/performance			
	Check transmission/drivetrain			
	Check brakes including parking/emergency			
	Check operation of all machine functions (Raise, lower, etc.)			
	Check all accessory controls & equipment for proper operation			
	Check operation of all machine functions			
Comments:				
**** PM Completed ****				
Operational test performed: Unit is ready to work.				
Signed: _____				

ATTACHMENT B - PREVENTIVE MAINTENANCE & INSPECTION CHECK SHEETS
Page 15 of 15: Annual Dry Inspection

Equip. No. _____ WO # _____ Date _____

Vehicle Description _____ Hours or Miles _____

Pass _____ Fail _____

<u>Inspection Item</u>	<u>Finding</u>
Review customer's records for documentation of PMs and repairs	_____
Check VIN and license plate numbers against EMS master record	_____
When required check for current IM inspection	_____
Check fluid levels and condition	_____
Inspect at least one wheel for brake condition	_____
Inspect tire condition	_____
Inspect underside of vehicle for fluid leaks; damage; and condition of exhaust, steering, fuel, and brake systems	_____
Inspect exterior for damage	_____
Check lights for operation	_____
Check vehicle for required state decals	_____
Check vehicle for emergency equipment	_____
Inspect interior and exterior for cleanliness	_____
Conduct short road test of vehicle	_____
Take picture of vehicle for SEF file	_____

Inspected by _____

ATTACHMENT C – EQUIPMENT RECEIVING REPORT

DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
STATEWIDE EQUIPMENT FLEET
EQUIPMENT RECEIVING REPORT

Delivery Date _____	Unit VIN _____	Hour Meter Reading _____	
Asset No. _____	Class _____	Odometer Reading _____	
Delivery Order _____	Manufacturer _____	Color _____	
PR No. _____	Model _____	Replaced/Add No. _____	
Bid No. _____	Description _____	Location _____	
Attachment(s) _____	Warranty Information: _____	Warranty Start Date _____	
		Date Vendor Notified _____	
		Initials _____	

Credit Card Ordering Information:

STATE CREDIT CARD FUELMAN CREDIT CARD OTHER

Date Ordered _____ Date Received _____

VENDOR

POWER TRAIN	ELECTRICAL	HYDRAULIC SYSTEM
Engine Make Model Serial No.	Alternator No.	Pumps & Motors Hoses, Lines & Valves Hoists
Main Transmission Assy. Make Model Serial No.	Headlights Parking Lights	PARTS & SERVICE MANUAL Parts Service
Auxiliary Transmission Make Model Serial No.	Clearance Lights	BODY-BOXES Type Color
Rear Axle Assy - Single Tande Make Model Serial No.	Marker Lights Stop Lights Tail Lights	WHEELS & HUBS Wheel & Tire Sizes - Front Wheel & Tire Sizes - Rear
BRAKE SYSTEM Hoses, Lines, Fittings, Tanks, Pump Brake Assembly	Turn Signals 3 Light Cluster 4 Way Flasher	Wheel & Tire Sizes - Spare
SUSPENSION Front Spring Capacity Rear Spring Capacity Tandem Suspension Assembly Make Model	Back-Up Light License Light Reflectors Dome Light Wiring (General)	FRONT AXLE & STEERING Front Axle Assembly Make Model Steering Assembly Make Model
ITEMS MISSING - DAMAGES - REMARKS		

It is mandatory that this check sheet be used when receiving all units: Major components such as engine, transmission, etc., should have model name and number written in appropriate block. The key diagram should indicate condition of each item checked.
OK - Operating Property, Oil levels and lubrication checked X - Not in working order O - Not supplied N - Not installed but with vehicle

Signature of Inspecting Employee _____ Date _____

Signature of Regional Equipment Manager for Unit Acceptance _____ Date _____

EMS PLATES PAY

ITEM DOES NOT MEET SPECS
(REFERENCE REMARKS SECTION ABOVE)