

**From:** Richard Bakken  
**Sent:** Friday, March 31, 2017 9:16 AM  
**To:** bobmiller@mc.net  
**Subject:** Crosswind Specification

Bob,  
I hope you are enjoying your vacation. A revised Crosswind spec is attached for your review. Please give me a call to discuss when your schedule permits.

Thanks,  
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**DETAILED SPECIFICATIONS**  
Algonquin Township Highway Department  
Regenerative Air Street Sweeper

<b>INTENT</b>
<p>It is the intent of this specification to provide for the purchase of one (1) new and unused regenerative air street sweeper having a six-wheeled C.O.E. truck chassis with dual dual drive, sweeper controls and switches, 8.0 cubic yard hopper, automatic transmission, 240+140 gallon water tank, and left and right side broom with variable down pressure controlled from cab.</p> <p>The following specification is based upon an ELGIN CROSSWIND street sweeper, mounted on an Autocar ACMD 'Xpert' Cabover Chassis. The Algonquin Township Highway Department has evaluated different types of street sweepers and has determined that this product is best suited for their needs in safety, quality, performance, and standardization. This specification is not to be interpreted as restrictive, but rather as a measure of the safety, quality and performance against which all sweepers bid will be compared.</p> <p>In comparing proposals, consideration will not be confined to price only. The successful bidder will be one whose product is judged as best serving the interests of the Algonquin Township Highway Department when price, product performance, safety, quality and delivery are considered. The Algonquin Township Highway Department reserves the right to reject any or all bids or any part thereof, and to waive any minor technicalities. A contract will be awarded to the bidder submitting the lowest responsible bid meeting the requirements of this specification.</p>
<b>EQUIVALENT PRODUCT</b>
<p>Bids will be accepted for consideration on any make or model that is equal or superior to the sweeper specified. Decisions of equivalency will be at the sole interpretation of the Algonquin Township Highway Department. A blanket statement that equipment proposed will meet all requirements will not be sufficient to establish equivalence. Original manufacturer's brochures of the proposed unit are to be submitted with the proposal. All modifications made to the standard production unit described in the manufacturer's brochures must be certified by the manufacturer and submitted with the bid, or the bid will be deemed "non-responsive" and rejected without further review. Bidder must be prepared to demonstrate a unit similar to the one proposed, if requested.</p>
<b>INTERPRETATIONS</b>
<p>In order to be fair to all bidders, no oral interpretations will be given to any bidder as to the meaning of the specification documents or any part thereof. Every request for such a consideration shall be made in writing to the Algonquin Township Highway Department. Based upon such inquiry, the Algonquin Township Highway Department Clerk may choose to issue an Addendum.</p>
<b>GENERAL</b>
<p>The specification herein states the minimum requirements of the Algonquin Township Highway Department. All bids must be regular in every respect. Unauthorized conditions, limitations, or provisions shall be cause for rejection. The Algonquin Township Highway Department will consider as "irregular" or "non-responsive" any bid not prepared and submitted in accordance with the bid document and specification, or any bid lacking sufficient technical literature to enable the Algonquin Township Highway Department to make a reasonable determination of compliance to the specification. It shall be the bidder's responsibility to carefully examine each item of the specification. Failure to offer a completed bid or failure to respond to each section of the technical specification (COMPLY: YES or NO) will cause the proposal to be rejected without review as "non-responsive". All variances, exceptions and/or deviations shall be fully described in the appropriate section. Deceit in responding to the specification will be cause for rejection.</p>

		COMPLY	
		YES	NO
<b>SECTION A – CHASSIS</b>			
1.00	CHASSIS - NEW 2017 OR 2018 MODEL YEAR AUTOCAR XPRT CABOVER DUAL STEER		
1.10	Chassis shall be 33,000 GVW rating. State chassis make, model and point of manufacture:		
1.20	Wheelbase shall not exceed 164 inches.		
1.30	Cab to axle shall be not more than 138 inches.		
1.40	Frame; High Strength 120,000 PSI 10"x3"x.375" 2.13M RBM		
1.50	For safety, the rear of the sweeper shall be equipped with a rear panel to provide under ride protection. When dumping debris, material shall not be discharged on top of the rear panel.		
1.60	Front tow hooks shall be provided		
1.70	One- (1) 50-gallon fuel tank shall be shared by both engines and shall be easily accessible without raising or shifting any components. A fuel gauge, in cab, shall be supplied. Sight tube is not acceptable.		
1.80	Diesel emissions shall be EPA 2013 or greater and have a minimum capacity of 5 U.S. gallons diesel emissions fluid		
2.00	CHASSIS ENGINE		
2.10	Truck engine shall be minimum 2013 Emission Compliant, Cummins ISB 6.7-200 or equivalent, turbocharged diesel, 200 HP @ 2600 RPM, 520ft-lbs. @ 1600 RPM.		
2.20	Horizontal DPF w/ LH Vertical SCR		
2.30	The cooling system shall be protected to -34° F.		
2.40	Engine shall be equipped with block heater. Receptacle located at cab step.		
2.50	Fuel/Water Separator with probe & dash light.		
2.60	Radiator fan shall be viscous drive type.		
2.70	13" one stage air cleaner with safety element.		
3.00	TRANSMISSION, AXLES, WHEELS & BRAKES		
3.10	An Allison 2500 RDS series (or approved equal) automatic transmission shall be provided.		
3.20	The rear axle ratio shall be approximately 7.17 for proper sweep speed and performance in this application.		
3.30	Front axle shall be 12,000 and be equipped with taperleaf front suspension and shock absorbers.		
3.40	The rear axle shall be a Dana 21060S 21,000 lb. single speed with Hendrickson HTS 21,000 lb. capacity suspension		
3.50	For safety, and to allow the emergency interchange of tires at a job site, the front and rear tires and rims shall be interchangeable.		
3.60	Tires shall be tubeless radial tires 14 ply 11R22.5 "G" load rated. The rear axle shall include dual tires for load capacity; singles will not be acceptable.		
3.70	Rims shall be 10 hole steel hub piloted 22.5 x 8.25		
3.80	Parking brake shall be spring applied rear wheel drum and shoe.		
3.90	Brakes shall be full air brakes S Cam with a 18.7 CFM capacity compressor, with automatic slack adjusters and ABS.		
3.10	Air system shall include an air dryer; Wabco 1200 Plus and pull cords on all air tanks.		

4.00	CAB		
4.10	Maximum visibility, forward line of sight from the chassis front bumper to the point on the ground visible to the operator shall not exceed 8 feet for an SAE 98th percentile size operator.		
4.20	Steering shall be full power with dual operator controls. Two steering gears, one at each side. Only OEM dual steering installed by the chassis manufacturer at the original time of assembly will be deemed acceptable. Dual steering systems composed of a single steering gear box with a cross shaft connecting the gear box to the other side will not be accepted, nor will systems requiring 3rd party modifications to add a second steering position after the cab and chassis have been completed by the OEM. Dual tilt/telescopic steering columns.		
4.30	Both seats shall be air ride, cloth covered for air circulation and include 3 point seat belts.		
4.40	Sweeper shall include two (2) outside heated power west coast type mirrors with lower 8 inch convex lens for easy viewing of the side broom during sweeping.		
4.50	To maximize operator visibility of the curb and sweeping gear, outside mirrors shall be mounted forward of the front wheels.		
4.60	For safety during night sweeping, switches shall be illuminated so that they can be readily identified without the use of the cab dome light.		
4.70	Switches shall be clearly identified by name and symbol.		
4.80	Cab interior environment shall be fully air-conditioned including a fresh air heater/ventilator/defroster.		
4.90	Cab shall have full flow through ventilation for optimal temperature control.		
4.10	Wipers shall have intermittent feature.		
4.11	Interior of cab shall have acoustical insulation for low operating noise, automotive type trim, and center sweeper console.		
4.12	Dash shall be faced with soft molded plastic.		
4.13	All glass shall be tinted safety glass.		
4.14	Each operator position shall have adjustable sun visor.		
4.15	Doors shall be keyed alike ignition.		
4.16	Door windows shall be powered vertical slide type.		
4.17	Side windows shall have defogger.		
4.18	Cab shall include dash mounted cigar lighter.		
4.19	Cab shall include an AM/FM radio with Bluetooth connectivity, (2) speakers, and AM/FM antenna.		
4.20	Electric horn shall be provided.		
5.00	INSTRUMENTS		
5.10	Chassis right and left side operator instrument panel shall be chassis OEM, full vision illuminated with tachometer, speedometer, odometer, trip odometer, hour meter, fuel gauge, water temperature gauge, oil pressure gauge, transmission temperature gauge, air pressure gauge, volt gauge and DEF gauge.		
5.20	Chassis engine instruments shall include warning light and chime for low coolant level and high coolant temperature.		
5.30	Console shall have left/right primary driver switch.		
5.40	Hydraulic functions shall be controlled by rocker switches located in the cab mounted control panel.		
5.50	Truck instruments shall include warning lights for battery and cab latch to make sure the cab is locked in position.		

5.60	All console switches including transmission controls and all gauges shall be illuminated.		
5.70	Intake mounted air restriction indicator with graduations.		
6.00	<b>ELECTRICAL</b>		
6.10	Batteries should be located in an enclosed accessible environment for long life and ease of service. Electrical system shall be 12 volt only. Electrical systems that are split 12V/24V are not acceptable.		
6.20	Chassis shall have two (2) maintenance free batteries rated at not less than 1500 CCA total, 12 volt.		
6.30	Chassis engine shall have a 130 amp alternator.		
7.00	<b>CHASSIS LIGHTING</b>		
7.10	Chassis lighting shall include sealed multi-beam halogen head-lights. LED rear brake, turn, and tail lamps provide a high degree of lamp visibility as well as significantly longer service life. These LED lamps are designed to have a usable life of up to 100,000 hours.		
7.20	License plate lights, clearance lights, signal lights, illuminated gauges and instrument panel, and directional lights with hazard switch shall be included.		
7.30	A 70" Federal Signal Legend lightbar shall be mounted to the cab roof, with a controller mounted inside the cab.		
<b>SECTION B - SWEEPER MODULE</b>			
8.00	<b>SWEEPER ENGINE</b>		
8.01	Shared power (patent # 9,010,467) is defined as a sweeper system that is power-driven by a combination of chassis and auxiliary engine horsepower. For gained economy, the sweeper system shall utilize horsepower captured by chassis regenerative braking.		
8.02	At sweeping vehicle speed, the chassis engine shall be capable of propelling the vehicle and providing additional horsepower for sweeping functions via the shared power system. The chassis typically has a minimum of 50 hp (37 kW) available while at idle. Please refer to Chassis section 2.0 for type of chassis engine listed.		
8.03	Auxiliary diesel engine shall be 4 cylinder, turbocharged, dynamically counter balanced 276 CID (John Deere 4045T or equal). Engine must be EPA Tier 4 "final" and CARB emission compliant. Engine must be EPA Tier 4i Emission compliant but subject to change based on EPA emission compliant engine availability and future emission regulatory changes.		
8.04	Auxiliary engine horsepower rating shall be 74 (55 kW) @ 2400 RPM, torque 224 lb-ft @1600 RPM.		
8.05	Auxiliary engine shall drive the blower "fan" by a heavy-duty five (5) "V" groove power belt for simplicity and ease of maintenance.		
8.06	Auxiliary engine shall have ECU for throttle control and management of aftertreatment system.		
8.07	Auxiliary engine shall be protected by a dual safety element dry type air cleaner & restriction indicator that indicates it is time to service the filter element.		
8.08	Auxiliary engine shall be filled with 50/50 mixture anti-freeze/water for cold weather storage and or operation.		
8.09	For greater heat dissipation, less noise and lower cost of maintenance, auxiliary engine shall have individually replaceable wet sleeve cylinder liners.		



8.10	To accommodate both easy access and sound attenuation, the engine shall be enclosed on both sides by two access doors, one on each side of the sweeper body. These doors provide access to serviceable items without tilting the hopper.		
8.11	The Turbo II pre-cleaner is in addition to the standard air cleaner and is well suited for dusty and dirty applications. It spins out dust particles before they enter the air cleaner, thus extending the time between air cleaner element replacements.		
8.12	This pump allows raising / lowering the body and opening / closing the rear door without running the auxiliary engine. It can be used when there is an auxiliary engine malfunction or when the operator wishes to activate the body functions without starting the auxiliary engine. This pump is not needed for auxiliary engine access, as the access doors to this compartment are controlled electric linear actuators.		
9.00	<b>BLOWER</b>		
9.01	Blower shall be driven by a five (5) "V" groove power belt for maximum performance and simplicity of construction, with manual tension adjustment not requiring repositioning of the engine.		
9.02	Shared power system shall provide all horsepower for fan speed of 3400 RPM to effectively convey the bulk of material into the debris hopper; debris types such as but not limited to trash, sand, gravel, dirt, leaves and other organics.		
9.03	Blower shall be a closed face turbine type, 31 3/8 in. diameter, with 9 vanes constructed of Hardox® 500 steel for optimal combination of hardness and abrasion resistance for maximum service life. An open faced fan will not provide adequate combination of air flow and vacuum, and is not acceptable. Impellers constructed of material other than Hardox® 500 steel will not be accepted. For longevity of the fan and maximum bearing life, the impeller must be balanced to within .5 ounce-inches.		
9.04	The blower shall be constructed using a robotic arc welder for accuracy and repeatability to a minimum of 0.0225 in., including features such as touch sensing, weaving and seam tracking to precisely lay a quality weld that's in accordance with AWS D1.1 standards. Blowers constructed from cast aluminum are not acceptable.		
9.05	The blower housing shall be constructed of 10 gauge steel and lined with 0.25" thick Linatex natural rubber for maximum extended wear in abrasive environments.		
9.06	Blower housing shall have an inspection door for access to blower without removing the blower housing or looking into the air exhaust opening.		
9.07	Blower housing shall not be an integral part of the hopper. Replacement of the blower housing must be possible without any cutting and/or welding of the housing and or hopper.		
9.08	The blower shall be mounted and supported on both sides by heavy-duty greasable bearings. Greasing of the bearings must be possible from ground level, without tilting the hopper. Only greasable bearings are capable of tolerating the fan speeds required to produce simultaneous high air flow and high vacuum levels.		
9.09	The blower must not be directly exposed or open to the dust separator to preclude carry-over of material from the separator into the blower and blower housing.		
9.10	The blower shall be equipped with an electric actuated Flow Blocker, which can be controlled from within the cab, incorporated on the inlet side of the blower housing that minimizes fugitive dust during the raising or lowering of the pickup head.		
10.00	<b>PICKUP HEAD</b>		
10.01	The pickup head is a spring-balanced, all steel fabricated pickup head with separated upper and lower chambers where pressurized air is blasted from the upper chamber through an elongated blast orifice, to the lower vacuum chamber.		



10.02	The pickup head shall be not less than 90 inches wide and 30 inches long for a total area of 2700 square inches.		
10.03	The pickup head shall have a minimum of 14 inch diameter pressure hose that connects the blower outlet with the pickup head. Urethane transition pieces between the pressure hose and the pickup head are not acceptable.		
10.04	The pickup head shall have a minimum 12 3/4 inch diameter suction hose with a quick disconnect coupling at the lower area near the pickup head. The quick disconnect enables the operator to inspect the suction hose as well as the inlet area of the pickup head without tilting the hopper.		
10.05	The pressure side shall be equipped with an electric actuated pressure relief valve/vacuum enhancer/leaf bleeder, for optimum leaf and light debris sweeping. The control for this feature must be in-cab positional information for operator. Cable operated valves are not acceptable.		
10.06	The front and rear debris curtains shall be removable without removing the pickup head from the unit.		
10.07	Sweeping paths:		
10.08	Pickup head only = 90 inches		
10.09	One side broom and pickup head = 117 inches		
10.10	Two side brooms and pickup head = 144 inches		
10.11	The pickup head shall be equipped with side mounted adjustable steel runners with carbide inserts with a minimum width of 1 1/8 inches for maximum pickup performance and long life.		
10.12	The pickup head shall be raised and lowered hydraulically by a rocker switch on the control panel inside the cab.		
11.00	<b>SIDE BROOMS</b>		
11.01	The right and left side broom shall be a free floating trailing arm design with inward motion safety to prevent damage when sweeping and encountering a fixed obstacle. The trailing arm shall be of a parallelogram design for simple, non-binding action/motion and for constant bristle and wear pattern.		
11.02	The side brooms shall be 42-inch diameter minimum, with hydraulically driven rotation.		
11.03	Brooms shall be pneumatically raised, lowered and suspended.		
11.04	Adjustable down pressure shall be pneumatically controlled by the operator from the cab in order to maintain proper surface contact consistently during vertical broom travel.		
11.05	The broom hydraulic motor drive shall provide not less than 6045 in/lbs. of torque for superior digging power.		
11.06	The side broom assemblies shall have greaseless pivot pins.		
11.07	The side broom assemblies shall be held in the storage position by a positive means to support broom during travel.		
11.08	Each side broom shall be controlled from in the cab by simple rocker switches.		
11.09	Electrically operated tilting mechanism allows operator to change inward/outward tip of the right Sidebroom. Angle can be changed from the cab while sweeping. This allows efficient sweeping of irregular surface that could require special manual setting of the broom.		
11.10	Electrically operated tilting mechanism allows operator to change inward/outward tip of the left Sidebroom. Angle can be changed from the cab while sweeping. This		

	allows efficient sweeping of irregular surface that could require special manual setting of the broom.		
12.00	<b>HOPPER</b>		
12.01	Volumetric capacity shall be 8 cubic yards minimum.		
12.02	Hopper shall be constructed of 10 gauge steel sides, and quarter inch floor.		
12.03	The hopper floor angle when dumping shall be a minimum of 50°. Dumping shall be accomplished by tilting the hopper via a two-stage telescopic cylinder. The use of multiple cylinders for tilting the hopper shall not be acceptable. Relying solely on a moving raker bar, which is attached to the rear door inside the hopper, in lieu of tipping the hopper for dumping shall not be acceptable.		
12.04	The hopper floor angle shall be a minimum of 10° to assist in easy dump off of debris.		
12.05	The hopper shall have an external hopper prop. No exception to this feature shall be accepted.		
12.06	A removable, adjustable, abrasion resistant "scoop" style steel deflector shall be located at the suction inlet. This scoop is to direct material to the center of the hopper for optimal loading.		
12.07	The hopper rear door shall be hinged at the top and opened by means of a hydraulic cylinder. The hopper door shall open first prior to tilting the hopper. The hopper rear door should open at a minimum angle of 90° and be perpendicular to the hopper opening for maximum dumping action. The Algonquin Township Highway Department has evaluated many styles and considers this design to be the most effective for dumping and cleaning. No exceptions to this requirement will be acceptable.		
12.08	Hydraulic cylinder movement shall be controlled by two hydraulic valve levers located on the right-hand side of the hopper to view discharging of debris out of the hopper during dumping for maximum safety.		
12.09	The rear hopper door shall have an external door prop. No exception to this feature shall be accepted.		
12.10	The hopper rear door shall include an automatic lock mechanism for a tight fit and optimal sealing between the hopper and the rear door.		
12.11	The rear door seal shall be a water resistant heavy-duty reinforced D style rubber seal for optimal sealing. Foam seals that can absorb moisture and freeze are not acceptable.		
12.12	Two 34½" x 43½" screens, for a total screen area 3000 square inches, of not less than 11 gauge steel shall be installed to allow air to move freely from the hopper into the centrifugal dust separator. The hopper screens shall be hinged and easily lowered for cleaning and inspection without tools or pin's removal.		
12.13	The LifeLiner Hopper System shall be provided to protect the hopper against corrosion and wear and to facilitate the removal of the debris when dumping. This liner system shall provide protection such that the hopper will be warranted for the life of the sweeper. Bare steels including stainless steels are unacceptable as they do not provide sufficient protection for long term wear.		
12.14	Hopper screens are constructed of Type 304 stainless steel in lieu of mild steel to resist corrosion and enhance hopper clean out.		
12.15	A 6 in. (152 mm) hopper drain is on the hopper door. It allows draining off excess water. A screen mounted inside on the hopper door keeps larger debris from clogging the hose.		



12.16	Stainless steel inspection door and step shall be located on the right side of the hopper.		
13.00	<b>DUST SEPARATOR</b>		
13.01	Dirt separation from the air stream shall be accomplished by means of a Labyrinth style dust separator that is installed at the air return outlet of the hopper. The separator shall be designed so that it will not plug with regular debris.		
13.02	To allow inspection and cleaning of the separator interior, the dust separator shall have minimum of two hinged inspection doors. Both doors are self-opening when tilting the hopper.		
13.03	To allow automatic discharge of debris when tilting the hopper, the dust separator shall have a self-opening door made of abrasion resistant steel. Cable or other manual/mechanical means required for discharging the separator are not allowed.		
13.04	The dust separator shall have minimum of two easy to open inspection doors allowing inspection and cleaning of the separator interior. Both doors are self-opening when tilting the hopper.		
13.05	The dust separator shall have a self-opening door made of abrasion resistant steel allowing automatic discharge of debris when tilting the body. Cable or other manual/mechanical means required for discharging the separator are not allowed.		
14.00	<b>SPRAY WATER SYSTEM</b>		
14.01	The water tank shall be a removable, 240 gallon total capacity. Constructed of rust proof polyethylene, and an additional 140 gallon tank. Mounted between cab and hopper.		
14.02	The water tank shall be frame mounted with no part sharing any common wall with the hopper and shall not raise during body dumping for better weight distribution.		
14.03	A 16 ft. 8 inch fill hose with NST coupling with strainer shall be supplied.		
14.04	A water level gauge shall be provided on the control console within the cab.		
14.05	All water lines shall be color coded for easy identification.		
14.06	The water filter must be easy to access and clean without tilting the hopper. A ball valve must be provided at the filter inlet to allow cleaning of the filter without the loss of water from the water tank.		
14.07	All water piping shall be external to the operator cab. No water lines capable of leaking or bursting shall be within the cab.		
14.08	Three (3) water spray nozzles are located at each side broom for optimal dust control. A pivoting bracket is provided to allow for optimum positioning of the side broom spray nozzles.		
14.09	Seven (7) easily removable water spray nozzles are located inside the pickup head. Water spray nozzles that spray only on the outside of the pickup head are not acceptable.		
14.10	Three (3) removable water spray nozzles are located at the lower portion of the suction hose for lubrication of the suction hose and to further enhance dust control.		
14.11	Two electric 12 volt, diaphragm type pumps will provide a combined flow of 8 GPM @ 40 PSI to the pickup head, the suction hose and the side brooms.		
14.12	One water pump is dedicated to supplying water to the pickup head and the suction hose for dust control.		
14.13	One water pump is dedicated to the side brooms for dust control.		
14.14	Each water pump must have two flow rates, selectable by the operator from within the cab and capable of running dry without damage.		

14.15	Cab controlled front water spray bar assists with wetting down debris under extremely dusty conditions. Four removable brass nozzles mounted under the front bumper of the truck on copper pipe keep the system corrosion resistant.		
14.16	Special nozzle assembly in the body door for washing out the body. Fill hose is included that is connected to a hydrant and the wash out system in the body door.		
14.17	Quick coupling for the water fill hose. Instead of threaded on connection, the water fill hose can be quickly connected and disconnected to the sweeper's water fill connector.		
14.18	High pressure pump with 24 in. (610 mm) hand lance and 30 ft. (9m. 140mm.) hose. It provides 4.2 GPM (15.9 L/m) at 1500 PSI. Designed for washing down and for loosening up catch basin materials and for efficient cleaning of the hopper and the sweeper exterior. The hose has an attached spray wand with on/off trigger and with two nozzle settings allowing the operator to spray fine or wide. The quick disconnect for the high pressure wash down is easily accessible on the right side of the sweeper.		
14.19	Anti-Siphon prevents water in sweeper's spray water tank from being drawn back into supply water system.		
14.20	The water system is capable of being purged of water by the use of pressurized air. The sweeper air system is utilized to provide air pressure using a manual valve control.		
14.21	Functional control of water system dispenses water with the use of the sweeper function rocker switch.		
15.00	<b>HYDRAULIC SYSTEM</b>		
15.01	Hydraulic pump shall be a gear driven, gear style pump for maintenance free operation, having a flow capacity of 7.7 GPM @ 2500 RPM. A belt driven or PTO driven hydraulic pump is not acceptable.		
15.02	Reservoir capacity shall be not less than 23 gallons and have an exterior sight gauge. The reservoir must be located in the enclosed auxiliary engine compartment for quick inspections without tilting the hopper. All hydraulic circuits shall have quick disconnect pressure check ports for ease of maintenance.		
15.03	All hydraulic circuits shall have quick disconnect pressure check ports for ease of maintenance.		
15.04	Hydraulic oil cooler shall be standard to provide adequate cooling with fresh air intake and accessible without raising the hopper. The hydraulic system shall operate below 200°F.		
15.05	To minimize the hazards of potential leakage, all high pressure fittings shall be O-Ring Face Seal (ORFS) type. Other systems shall not be acceptable.		
15.06	The automatic lubrication system is for the complete sweeper. Bearing lubrication is automatically delivered to each lube point, through individual nylon lines from a 2 liter reservoir. The process is controlled by a solid-state timer with 14 settings between 3.5 to 65 minutes.		
16.00	<b>PNEUMATIC SYSTEM</b>		
16.01	There shall be a PR4 protector type pressure protector for the chassis air system.		
16.02	A separate air tank for all sweeper air components shall be provided.		
16.03	All pneumatic cylinders shall be interchangeable.		
16.04	All pneumatic cylinders must be rated to 150 PSI and have a separate rod seal and wiper to prevent contamination entering the cylinder.		
16.05	Each cylinder shall be controlled by a single, two position, solenoid valve mounted on a manifold with common input and exhaust.		



16.06	There shall be a filter with a polycarbonate bowl to filter out contaminants down to 5 microns to prevent contamination in the air system.		
17.00	<b>ELECTRICAL SYSTEM</b>		
17.01	Sweeper engine shall have one (1) 925 CCA, 12 volt battery.		
17.02	Sweeper engine shall have a 95 amp alternator.		
17.03	Sweeper shall have a rear facing back-up camera for additional safety and operator awareness of surroundings.		
17.04	Sweeper shall have an electronic back-up alarm for additional warning and safety when chassis is in reverse.		
17.05	Sweeper lighting shall include rear identification lights, side broom and rear clearance lights.		
17.06	Sweeper warning lights shall include body up and body full load.		
17.07	Sweeper wiring harnesses shall be color-coded and function stamped with appropriate circuit name every four inches, i.e. "Ignition", "Side Broom" on each wire.		
17.08	All electrical circuits must be protected by manually resettable circuit breakers.		
17.09	A LED beacon light shall be installed at the top rear of the hopper		
17.10	(2) Rear Bumper Mounted Strobes shall be provided.		
17.11	Two (2) work lights shall be supplied at the rear of the unit. Each work light shall have an independent in-cab control switch.		
17.12	Two (2) LED work lights shall be supplied at the rear of the unit. Each work light shall have an independent in-cab control switch.		
18.00	<b>CONTROLS</b>		
18.01	All sweeper controls shall be mounted on a stationary central console that allows for use from either right or left positions. This allows the operator to view all important auxiliary engine information from either operating position.		
18.02	The controls shall include all sweep, spray water, and lighting functions.		
18.03	The controls for sweeping, spray water, and lighting functions shall be conventional rocker switches.		
18.04	Controls for auxiliary engine ignition and throttle, side broom down pressure and manual reset circuit breakers shall be located in the control console.		
18.05	Controls for sweep system shall include sweep/resume feature; allowing the automatic raise when chassis transmission gear selector is put into reverse of side brooms and pickup head.		
18.06	Controls shall include a single switch that facilitates the deployment of all previously set sweeper functions. The single switch shall control at least, pickup head position, side broom position, and broom tilt position if so equipped. System shall be Elgin Memory Sweep ® or equivalent.		
18.07	Electric solenoid water valves shall be in-cab, individually controlled, for use of water at each sweep function location		
19.00	<b>INSTRUMENTS</b>		
19.01	Sweeper engine instruments shall include tachometer, hour meter, oil pressure, fuel, voltage, and coolant temperature for complete information for the operator on the condition of the auxiliary engine, visible from both operator positions.		
19.02	Sweeper engine instruments shall include an auxiliary engine air intake restriction gauge for ease of maintenance.		



19.03	Sweeper instruments shall include diagnostic information for the sweeper engine and sweeper functional information to include water level, sweeping mode and transport mode.		
19.04	Sweeper instruments shall include a "raised" hopper indicator, an "open" hopper door indicator and a "full" hopper indicator to notify the operator.		
20.00	<b>ADDITIONAL EQUIPMENT</b>		
20.01	Sweeper shall include an additional 140 gal water tank (in addition to the standard-capacity tank). Both tanks shall be filled via the same water fill location as the main tank and also include appropriate anti-siphon provisions		
20.02	A retractable high pressure washdown reel shall be provided and mounted conveniently for machine washdown purposes		
20.03	A Midwest-brand Autolube system shall be provided which encompasses both sweeper and chassis		
20.04	The sweeper shall be equipped with a factory designed and installed hopper vibrator to assist in debris removal from the hopper		
20.05	The sweeper shall have a factory designed and installed system to adjust the pickup head curtain position, one position shall position the curtain so that it does not block large debris/leaves from entering the pickup head, the other shall place the curtain in the standard location for typical municipal sweeping. Controls for this curtain position shall be located in the cab.		
20.06	A toolbox shall be installed behind the cab that extends the width of the body		
21.00	<b>MANUALS</b>		
21.01	A sweeper operation manual shall be provided.		
21.02	A sweeper parts manual shall be provided.		
21.03	A service manual is supplied with the sweeper.		
22.00	<b>WARRANTY</b>		
22.01	Manufacturer's warranty shall be not less than one (1) year on entire sweeper, including all parts and labor.		
22.02	Manufacturer's warranty shall be not less than two (2) years on chassis engine, including all parts and labor.		
22.03	Manufacturer's warranty shall be not less than lifetime protection against rust-through of the water tank.		
22.04	Bidders submitting literature stating warranties which do not fully comply with warranty requirements of this specification, must submit a letter from the manufacturer certifying warranty compliance as an integral part of their proposal. Failure to comply may cause the proposal shall be deemed "non-responsive" and rejected without further review.		
23.00	<b>SERVICE AND TRAINING</b>		
23.01	Vendors shall have a full parts and service facility within a reasonable distance from the Algonquin Township Highway Department Garage. State location and distance of facility and local parts inventory value _____		
23.02	A qualified technician shall provide complete training to Algonquin Township Highway Department personnel at the Algonquin Township Highway Department Garage. Training shall include safety, operation, maintenance and service.		
24.00	<b>DELIVERY</b>		
24.01	Sweeper shall be delivered F.O.B. Algonquin Township Highway Department.		
24.02	Acceptance shall be subject to the inspection and approval of the Algonquin Township Highway Department.		

24.03	Bidder shall state delivery time after receipt of order: _____		
25.00	<b>QUALITY</b>		
25.01	Sweeper shall be manufacturer registered quality standard no less than ISO 9001.		
26.00	<b>PAINT</b>		
26.01	All visible exterior metallic surfaces shall be coated prior to assembly with polyester powder coat. The paint must be a minimum of 2 mils thick. The uses of acrylic enamels and/or polyurethanes are not acceptable.		
26.02	Vehicle shall have an accent color of Grey on the components and lower portions of the unit.		
26.03	The sweeper body is painted RAL 1037 Yellow.		
26.04	The cab is painted RAL 1037 Yellow.		
27.00	<b>OPTIONAL ITEMS</b>		
27.01	The Algonquin Township Highway Department may choose, at its sole discretion, to add any or all of the following optional items to this purchase. Insert pricing for each option.		
	1.) Omit T4 \$ _____		
	Additional upgrades and/or options not listed above that the Manufacturer or Dealer submitting a bid would like to include in their proposal.		
	1.) _____		
	2.) _____		
	3.) _____		
	4.) _____		
	5.) _____		
28.00	<b>EXCEPTIONS AND DEVIATIONS</b>		
28.01	Bidder shall fully describe every variance, exception and/or deviation. Additional sheets may be used if required.		
	1.) _____		
	2.) _____		
	3.) _____		
	4.) _____		
	5.) _____		

## **PROPOSAL FORM**

TO: ALGONQUIN TOWNSHIP HIGHWAY DEPARTMENT

The undersigned hereby declares that they have carefully examined the requirements of the specifications contained herein, and propose to furnish and deliver to the Algonquin Township Highway Department the apparatus listed below.

ONE (1) NEW AND UNUSED SIX WHEEL REGENERATIVE AIR STREET SWEEPER

BODY MAKE: \_\_\_\_\_ MODEL: \_\_\_\_\_

CHASSIS MAKE: \_\_\_\_\_ MODEL: \_\_\_\_\_

TOTAL PRICE (Not Including Optional Add-On's and Deducts): \$ \_\_\_\_\_

(In Words) \_\_\_\_\_

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_