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Gatineau, Québec K1A 0S5
Bid Fax: (819) 997-9776

SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

Vendor/Firm Name and Address
Raison sociale et adresse du
fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution
Vehicles & Industrial Products Division
11 Laurier St./11, rue Laurier
7A2, Place du Portage, Phase III
Gatineau, Québec K1A 0S5

Title - Sujet Truck / Camion	
Solicitation No. - N° de l'invitation W8476-133951/A	Amendment No. - N° modif. 006
Client Reference No. - N° de référence du client W8476-133951	Date 2012-11-09
GETS Reference No. - N° de référence de SEAG PW-\$\$HP-371-60999	
File No. - N° de dossier hp371.W8476-133951	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2012-11-23	
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Modérie, Christine	Buyer Id - Id de l'acheteur hp371
Telephone No. - N° de téléphone (819) 956-3970 ()	FAX No. - N° de FAX (819) 953-2953
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction:	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date

Solicitation No. - N° de l'invitation

W8476-133951/A

Client Ref. No. - N° de réf. du client

W8476-133951

Amd. No. - N° de la modif.

006

File No. - N° du dossier

hp371W8476-133951

Buyer ID - Id de l'acheteur

hp371

CCC No./N° CCC - FMS No/ N° VME

Amendment N° 006 to the solicitation is hereby raised to **DELETE** in its entirety Annex "B" dated October 2012 and replace it with the following dated November 2012 and to change the Bid Solicitation closing date as follows:

DELETE: Solicitation Closes 2012-11-15

INSERT: Solicitation Closes **2012-11-23**

All other terms and conditions remain unchanged.

**PURCHASE DESCRIPTION
FOR
LINE CONSTRUCTION VEHICLE
50ft, 6x4**

1. SCOPE

1.1 Scope - This Purchase Description describes the requirements for line maintenance type trucks with a rear, curb-side, corner mounted Digger Derrick unit. The vehicle will be used in domestic operations for aerial, overhead and underground Hydro cable installation and maintenance, post/pole hole digging, setting, and removal.

1.2 Instructions - The following instructions **shall** be applied to this Purchase Description:

- (a) Requirements, which are identified by the word "**shall**", are mandatory. Deviations will not be permitted;
- (b) Requirements identified by "**shall**^(B)" are mandatory. The Technical Authority will consider substitutes/alternatives for acceptance as an Equivalent;
- (c) Requirements identified with a "will" define actions to be performed by Canada and require no action/obligation on the Contractor's part;
- (d) Where "**shall**", "**shall**^(B)", or "will" are not used, the information provided is for guidance only;
- (e) In this document "provided" **shall** mean "provided and installed"; and
- (f) Where technical certification is required, a copy of the certification or an acceptable proof of compliance **shall** be provided upon request;
- (g) Metric measurements **shall** be used to define the requirement. Other measurements are for reference only and may not be exact conversions; and
- (h) Dimensions stated as nominal **shall** be treated as approximate dimensions. Nominal dimensions reflect a method by which materials or products are generally identified for sale commercially, but which differ from the actual dimensions.

OPI DSVPM 4 - DAPVS 4

Issued on Authority of the Chief of the Defence Staff

Publiée avec l'autorisation du Chef d'état-major de la Défense



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1.3 Definitions - The following definitions apply to the interpretation of this Purchase Description:

- (a) "Technical Authority" - The government official responsible for technical content of this requirement;
- (b) "Equivalent" - A standard, means, or component type, which has been accepted by the Technical Authority as meeting the specified requirements for form, fit, function and performance;
- (c) "Proof of Compliance" - A document such as a brochure, a third party test report, a report generated by third party software, or a certificate of attestation signed by a senior representative of the Original Equipment Manufacturer (such as a certified engineer) indicating the performance and/or feature specified; and
- (d) "Road legal" - are the characteristics that a vehicle requires so that it can be legally operated on all Canadian highways and secondary roads, not having special restrictions, without requiring overweight or dimensional permits.
- (e) "Vehicle" - refers to the cab, chassis, and parts provided with the frame before the addition of the aerial;
- (f) "Vehicle/equipment" - refers to the completely manufactured lift platform truck with aerial device, and related parts and equipment installed;

2. APPLICABLE DOCUMENTS

2.1 Government Furnished Documents - Not applicable. (Government Furnished Documents)

2.2 Other Publications - The following documents form part of this purchase description. Web sites for the organization are given when available. Effective documents are those in effect on date of manufacture. Sources are as shown:

Canadian Motor Vehicle Safety Standards (CMVSS)
Transport Canada,
Road Vehicle and Motor Vehicle Regulation,
330 Sparks Street,
Ottawa, Ontario K1A 0N5
<http://www.tc.gc.ca/acts-regulations/GENERAL/M/mvsa/menu.htm>

CAN/CSA C225-10 Vehicle Mounted Aerial Devices
CSA W47.1-09 Certification of Companies for Fusion Welding Steels
CSA W59-03 (R2008) Welded Steel Construction (Metal Arc Welding)
CSA W59.2-M1991 (R2008) Welded Aluminum Construction
Canadian Standards Association
5060 Spectrum Way, Suite 100
Mississauga, Ontario, L4W 5N6
<http://www.csa.ca/language/default.asp?thisUrl=%2FDefault%2Easp>

ANSI/ASSE A10.31-2006 Safety Requirements, Definitions and Specifications for Digger Derricks
American National Standards Institute
1819 L Street, NW, 6th Floor
Washington, DC, 20036
<http://www.ansi.org/>

Occupational Health and Safety Act (OHSA), 1990
Ontario Ministry of Labour,
400 University Ave.,
Toronto, Ontario M7A 1T7
<http://www.labour.gov.on.ca/>

SAE Handbook
Society of Automotive Engineers Inc.
400 Commonwealth Dr.,
Warrendale, PA, 15096
<http://www.sae.org>

Yearbook
Tire and Rim Association Inc.,
3200 West Market St.,
Akron, Ohio, 44321
<http://www.us-tra.org/traHome.htm>

FED STD 595C - Colors Used in Government Procurement
GSA - Specification Section
470 L'Enfant Plaza
Suite 8100
Washington, DC, 20407
<http://apps.fss.gsa.gov/pub/fedspecs/>

3. REQUIREMENTS

3.1 Standard Design - The vehicle/equipment **shall**:

- (a) Be the manufacturer's latest model having demonstrated industry acceptability by having been manufactured and sold commercially for at least 2 years, or, **shall** be manufactured by a company that has at least 5 years experience in design and manufacturing of a comparable type of equipment of equivalent or greater complexity;
- (b) Have engineering certification available, upon demand, for this application from the original manufacturers of major equipment systems and assemblies;
- (c) Conform to all applicable laws, regulations and industrial standards governing manufacture, safety, noise levels and pollution in effect in Canada at the time of manufacture; and
- (d) Have system and component capacities not greater than their published ratings (i.e. product or component brochures) or accompanied by proof of compliance.
- (e) Include all components, equipment, and accessories normally supplied for this application, although they may not be specifically described in this purchase description.

3.1.1 Design Principles

- (a) Standard Components - Commercially available standard parts complying with commercial standards **shall** be used wherever possible;
- (b) Interchangeability - All components, assemblies, and sub-assemblies used

in the construction **shall** be designed and manufactured to dimensional tolerances, which will permit interchangeability and facilitate replacement of parts;

- (c) Spare Parts - The manufacturer **shall** select components readily available for a minimum period of fifteen (15) years from the date of manufacture;
- (d) Maintainability - All maintenance and repair tasks, especially routine operator maintenance, **shall** be easy to perform with a minimum of special tools and skills; and
- (e) Modularity - Major assemblies **shall** be easily disconnected and removed from the vehicle without the necessity for extensive disassembly of components.

3.2 Operating Conditions

3.2.1 Weather - The vehicle/equipment **shall** operate under the extremes of weather conditions found in Canada in temperatures ranging from -40 to 37° C (-40 to 99° F).

3.2.2 Terrain - The vehicle/equipment **shall** be capable of being operated on highways, secondary roads, gravel roads, and off-road (e.g. construction sites, open fields, and dirt tracks).

3.3 Safety

3.3.1 Vehicle Safety Regulations - The vehicle **shall** meet the provisions of the Canada Motor Vehicle Safety Act in effect on the date of manufacture. The vehicle **shall** carry the National Safety Mark.

3.3.2 Equipment Integrator(s) Certification - The Contractor **shall** submit upon request, variant equipment integrator NSM certification number with Transport Canada as a Final Stage Manufacturer for the applicable equipment.

3.3.3 Aerial device safety - The installation of the rear, curb-side, corner mounted aerial device and digger derrick **shall** comply with the most recent requirements of CSA C225-10 and ANSI/ASSE A10.31-2006 and relevant sections of the OHSA. All welded fabricated items; assemblies and sub-assemblies **shall** conform to the latest issue of CSA W47.1 and W59.

3.3.4 Noise Levels - The noise level **shall not** exceed:

- (a) 85 decibels (dB(A)) in the cab when measured in accordance with SAE Recommended Practice J336; and
- (b) 86 decibels (dB(A)) at the vehicle platform when measured in accordance with SAE Recommended Practice J1096.

3.3.5 Human Engineering and Safety - The vehicle/equipment, all systems and components **shall**:

- (a) Be safe and easy to use by a 95th percentile male or 5th percentile female under all operating conditions as published in SAE Recommended Practice J833;
- (b) Have all entry and exit points equipped with handles and steps suitably positioned, to accommodate a 95th percentile male or a 5th percentile female under all operating conditions; and

- (c) Be equipped, where required for operator safety, with safety features such as warning and instruction plates, non-slip walking surfaces and heat shields.

3.4 Vehicle Performance - The vehicle with all specified equipment installed and fully loaded **shall** have the following performance:

- (a) Have a maximum forward speed of at least 100 km/h and a cruising speed of 90 km/h;
- (b) Have a gradeability of at least 25 percent while at 5 km/h; and
- (c) Have a gradeability of at least 1.2 percent at 90 km/h.
- (d) The Contractor **shall** provide a computer generated vehicle performance prediction analysis for a fully loaded vehicle which **shall** be performed in conformance with SAE J2188, using proposed equipment engine and transmission.

3.4.1 Weights and Dimensions - The vehicle with all equipment installed **shall** be Road Legal.

- (a) Gross Vehicle Weight Rating (GVWR) - The vehicle **shall** have a gross vehicle weight not exceeding the GVWR, as published in the manufacturer's literature and engineering data;
- (b) Gross Axle Weight Rating (GAWR) - The vehicle **shall** have a total load on each axle that is not exceeding the GAWR for that axle.
- (c) Centre of Gravity - The centre of gravity of the vehicle/equipment under all loading conditions and driving positions **shall** be in front of the rear axle and **shall** be within the chassis manufacturer's allowable conditions.
- (d) The Contractor **shall** provide the following chassis information:
 - i Wheelbase (WB): Front axle centerline to rear axle centreline
 - ii Cab-to-axle (CA): End of cab to rear axle centreline
 - iii Overhang (OH): Rear axle centreline to end of frame
 - iv Overall Length (OL): Length of body
 - v Bumper-to-axle (BA): Front of vehicle to front axle centreline (also known as front overhang)
- (e) Component and vehicular load and capacity ratings **shall** not be raised above normal commercial levels in order to meet the requirements of this purchase description.

3.4.2 Vehicle Delivery Condition - The vehicle/equipment **shall** be delivered to destination in a fully operational condition (serviced and adjusted) and both the interior and exterior **shall** be cleaned. If the vehicle requires assembly at destination, the Contractor **shall** be responsible for all manpower and equipment to perform assembly. The consignee will provide the area required for assembly. For shipment verification, all items such as wheel wrenches, jacks, and all other tools, equipment and accessories, which are shipped loose

with the equipment, **shall** be listed on the shipping certificate or to an attached packing note.

3.5 Cab, Chassis and Body

3.5.1 Cab - The vehicle cab **shall** be a commercially manufactured conventional type three-person cab. The cab **shall** include:

- (a) A minimum of two doors for entry and egress. Cab doors **shall** be equipped with locks, keyed alike, capable of being opened independently from the exterior and interior of the cab;
- (b) Hand grips, steps, and other features required for the safe entry and egress for the range of fifth percentile female to ninety-fifth percentile male;
- (c) The manufacturer's standard lining or insulation sufficient to limit the interior sound levels to a maximum of 85 dB(A) when measured in accordance with SAE J336;
- (d) Fully adjustable independent air-suspension driver seat with non-static heavy-duty upholstery;
- (e) Mats on the cab floor and toe-board;
- (f) High output temperature controlled fresh air heater and defroster adequate for the operating conditions specified;
- (g) Air-Conditioning equipped with all components and controls required for regulation of the cab interior temperature. The air conditioning system **shall** not use ozone-depleting refrigerants (chlorofluorocarbons (CFCs)) and **shall**^(E) use hydrofluorocarbons (HFCs);
- (h) Interior sun visors;
- (i) Two rectangular, external rear view mirrors with replaceable heads and glass, located on each side of the vehicle which provide the clearest possible undistorted view to the rear from the driver's position. The mirrors **shall** be constructed such that the mirror glass is shock mounted and sealed against the ingress of moisture; The mirrors **shall**^(E) be equipped with lights, defroster elements, a convex portion on each side, and be capable of folding rearward against the vehicle. Power mirrors are desirable;

NOTES: The following dimensions are provided as guidance:

- i Two (2) external rear view mirrors - 40.6 cm by 15.2 cm
- ii Two (2) convex mirrors - 10 cm diameter
- (j) Intermittent windshield wipers capable of clearing the windshield during driving operations, and where the wiper blades **do not** travel from a vertical centre windshield position to a horizontal position near the roof line;
- (k) Retractable shoulder/lap belt assemblies for the driver and the outside passenger, and at least a lap belt for the centre passenger;
- (l) AM/FM radio and CD player;

- (m) Tinted glass;
- (n) A standard electric horn;
- (o) An air horn;
- (p) Halogen headlights;
- (q) Interior and instrument panel lights to provide adequate lighting for nighttime operations: and
- (r) One (1) fibreglass window box with mesh instead of rear window.

3.5.2 **Frame** - The frame **shall** be strong at the towing and mounting points and suitable for the application. The frame **shall** have a Section Modulus of 15.9 and a resisting bending moment using 110,000 psi High Strength Steel.

- (a) The frame **shall**^(B) have a minimum of 61 cm (24 inches) integral frame extension. A stationary grill **shall** be provided.

3.5.3 **Chassis** - The chassis **shall** be a heavy duty type as recommended by the vehicle manufacturer to meet the operating conditions specified and the gross laden weight with the aerial device in its maximum operating range and **shall** be kept clear of vehicle accessories, behind the cab, for utility body mounting.

- (a) **Recovery** - The vehicle **shall** be designed so that it can be towed, while loaded to capacity, from the front or rear (not suspended) of the vehicle by commercial tow trucks.

- (b) **Frame Extensions** - The following requirements apply if frame extensions are required during the installation of the body:

- i The extension **shall** conform to the guidelines presented in the Cab and Chassis OEM Vocational Reference Guide;
- ii Additional frame rail material used for modifying the frame rails **shall**^(B) be of the same material specifications as the OEM frame;
- iii Have an engineering safety factor of at least four, including the affected region of the original frame;
- iv All extensions **shall** be free of cracks, notches, and imperfections;
- v All holes **shall**^(B) be drilled. Flame cut holes **shall** not be employed;
- vi Holes in the frame rails **shall**^(B) not be elongated or slotted;
- vii Spring type locking washers **shall**^(B) not be used on structural members;
- viii All joints in the frame rails **shall**^(B) be well clear of highly stressed regions of the frame; and
- ix If the wheelbase of the cab-chassis is altered, the alteration **shall** include all cab-chassis OEM components. The frame **shall** not

be altered between the front and rear axles.

3.5.4 **Body** - The body **shall** be a fibreglass line body type designed for mounting on a truck chassis and be the manufacturer's standard or standard option proven suitable in service as a maintenance or utility body. The body **shall**^(E) include:

- (a) An integral floor and rear platform extension constructed of a minimum thickness 4.8mm (3/16 inch) checker plate including wheel wells, deck entrance steps, and on the tops of fibreglass compartments;
- (b) A combination rear deck area and full width rear bumper, desired to be made of "Grip Strut" material. The bumper **shall** have provision to attach a trailer;
- (c) Aluminum drip mouldings **shall** be installed over all doors and access panels;
- (d) Seams between aluminium and body **shall**^(E) be sealed with 3M joint sealer to prevent water from getting between the plate and the FRP;
- (e) Removable wheel wells with suitable clearance for tire chains in accordance with SAE Information Report J683;
- (f) A foreman's master door lock system;
- (g) A "U" channel complete with wood manufactured material stops at rear deck entrance;
- (h) A mounting bracket which **shall**^(E) be incorporated into the body for the storage of four wheel chocks. The bracket **shall** be positioned for easy access. It is preferred that the storage locations are 2 on the driver's side and 2 on the passenger side of the vehicle. Four wheel chocks **shall** be supplied. The wheel chocks **shall**^(E) be made from a fuel resistant elastomeric compound;
- (i) Include assist grab handles at all deck entrances;
- (j) Include aluminum rock guards to protect exposed areas on the front corners; and
- (k) One aluminum headboard level with top of boxes.
- (l) Gas struts on all doors
- (m) Expanded aluminum mesh storage over vertical doors
- (n) Aluminum folding gates at side of deck (30 centimetres 12 inches) high.
- (o) Six (6) HD 2,721 kg (6000lb) tie down ring in deck with large washouts.
- (p) Fibreglass wheel skirts with FRP lining.
- (q) Rear bracket to hold composite material stop.
- (r) One (1) windjammer sign holder at front.
- (s) Two (2) reel stands with removable bases to fit into stake pockets.

- (t) Two (2) Texas style cone holders.
- (u) **Four (4) Outrigger pads with holders.**
- (v) One (1) shovel, broom and rack holder.
- (w) All bins shall contain LED fibreglow lighting.

3.5.4.1 **Side Compartments** - The body *shall*^(E) be equipped with the following five compartments:

- (a) Two on driver side at front, with the following nominal dimensions as guidance:

Vertical

- i Height - Approx 91 centimetres (36 inches);
- ii Width - Approx 76 centimetres (30 inches);
- iii Depth - Approx 45 centimetres (18 inches);

Horizontal (Barn Doors)

- i Height - Approx 60 centimetres (24 inches);
- ii Width - Approx 122 centimetres (48 inches);
- iii Depth - Approx 45 centimetres (18 inches);

- (b) Two compartments **on the passenger side, at front**, with the following nominal dimensions as guidance:

Vertical

- i Height - Approx 91 centimetres (36 inches);
- ii Width - Approx 76 centimetres (30 inches);
- iii Depth - Approx 45 centimetres (18 inches);

Horizontal (Barn Doors)

- i Height - Approx 60 centimetres (24 inches);
- ii Width - Approx 122 centimetres (48 inches);
- iii Depth - Approx 45 centimetres (18 inches);

- (c) One fibreglass box mounted on the passenger side at the rear with the following nominal dimensions as guidance:

- i Height - Approx 60 centimetres (24 inches);
 - ii Width - Approx 121 centimetres (48 inches);
 - iii Depth - Approx 50 centimetres (20 inches);
- (d) All compartments **shall**^(E) be equipped with:
- i Doors with a minimum two point latch;
 - ii Stainless steel or cadmium plated hinges, pins, and hardware;
 - iii Retaining chains, equipped with a quick release link, to hold the horizontal compartment doors open at 90 degrees;
 - iv Spring door holders to hold the vertical compartment doors at 90 degrees;
 - v Bulb type perimeter door seals installed on the door or doorframe ("Peel and stick" style door seals **shall** not be acceptable);
 - vi Large, recessed, D-type or T-type handles;
 - vii A "foreman's lock", enabling the doors on each side of the truck and the tool cabinet doors to be secured with padlocks at a rearward location;
 - viii Drawers with lock in/out latches;
 - ix Removable shelves capable of supporting a minimum of 45 kg (100 lbs) load;
 - x Shelves/bottom lined with Levitt-Safety or Dri-Dek Antislip matting to prevent shifting of tools while in motion; and
 - xi Maximum load capacity for all drawers and shelves clearly marked on the inside of the compartment doors.

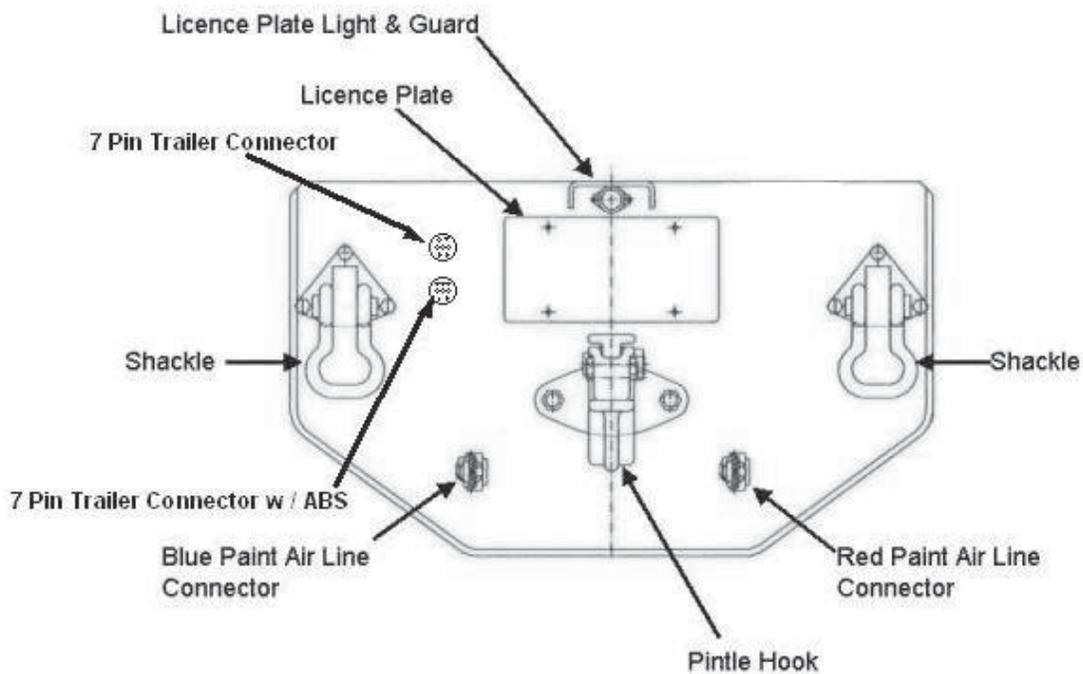
3.5.4.2 **Trailer Capability** - The following **shall** be provided for the capability to attach a trailer:

- (a) Rear pintle hook complete with chassis frame reinforcement capable of towing the maximum allowed Gross Trailer Weight for the vehicle provided. The pintle hook **shall**^(E) be Holland Hitch model PH-T-60-AOL-8.
- (b) Two (2) safety chain rings **shall** be mounted onto the rear of the vehicle such that the horizontal centre eye is between 685 mm and 737 mm (27 to 29 inches) above ground level.
- (c) In case a plate is required for pintle hook installation, the plate **shall** be fabricated using strong steel. Stress analysis **shall** be conducted to confirm the ability of the plate to withstand the maximum towed load capability of the vehicle. The result of the analysis **shall** be forwarded to the Technical Authority for approval. A line drawing for the plate design **shall** be provided detailing the location of the

following components:

- i The licence plate;
- ii Licence plate light and guard;
- iii Two shackles;
- iv The airline connectors;
- v Seven-pin trailer connector; and
- vi Seven-pin trailer connector with ABS

NOTE: An example of a pintle hook set up describe in 3.5.3.2 is provided below.



Licence Plate Light & Guard	Feu et cache de plaque d'immatriculation
Licence Plate	Plaque d'immatriculation
7 Pin Trailer Connector	Prise de remorque à 7 broches
Shackle	Maillon d'attache
7 Pin Trailer Connector w / ABS	Prise de remorque à 7 broches avec ABS
Blue Paint Air Line Connector	Raccord de système de freinage pneumatique peint en bleu
Shackle	Maillon d'attache
Red Paint Air Line Connector	Raccord de système de freinage pneumatique peint en rouge
Pintle Hook	Crochet d'attelage

3.6 Engine - The engine *shall* be capable of operating on diesel fuel to the CAN/CGSB Standard 3.517-2007. The design of the engine system *shall* include:

- (a) A control system suitable for this application;
- (b) A horsepower sufficient enough to meet all performance requirements; and
- (c) Engine manufacturer's certification *shall* be available upon request.

3.6.1 Engine Components - The engine *shall* include:

- (a) A severe service air cleaner protected from the ingress of rain and snow;
- (b) A full flow oil filter with a spin-on or replaceable type element;
- (c) A governor to limit engine speed to the operating range recommended by the engine manufacturer;
- (d) Engine coolant and a heavy duty cooling system recommended by the OEM that is capable of operating within the conditions stated in section 3.2;
- (e) A thermostatically controlled ON/OFF type fan clutch unless the engine is intercooled;
- (f) A fan shroud;
- (g) A fast-idle device to automatically set engine idle speed at a predetermined rpm when activated for aerial device operation;
- (h) An electronic adjusting hand throttle;
- (i) An automatic shutdown system for low oil pressure and high water temperature with a driver controlled override. Indicator lights *shall*^(E) be located at each control station to indicate a shut down due to low oil pressure or high water temperature; and
- (j) Any measures other than those already required by this purchase description that are necessary to adhere to the engine manufacturer's recommendations for aerial device and vehicle operation under cold weather conditions.

3.6.2 Fuel Tank(s) - The design of the fuel tank(s) *shall*:

- (a) Include a right or left hand mounted step tank with a minimum capacity of 189 litres (50 US Gallons);
- (b) Include primary and secondary fuel filters;
- (c) Include a non-spill type air vent with filler cap marked "Diesel Fuel Only";
- (d) Include sufficiently protected drain valve(s);
- (e) Include a switch for selection of the fuel tank and gauge, if more than one fuel tank is provided; and

(f) Be at least half full when delivered to the destination.

3.6.3 **Primary Cold Weather Aids** - The engine *shall* be equipped with cold weather aids to enable the engine (operating with winter grade fuels/oils) to be started at soak temperatures down to -40° Celsius (-40° Fahrenheit), with an external power source. The following *shall*^(E) be included:

- (a) A water separator/fuel filter incorporating an electrical heating system to preheat diesel fuel prior to starting. The heater *shall* be thermostatically controlled.
- (b) An in-line fuel heater. The heater *shall*^(E) be thermostatically controlled to prevent fuel temperature from rising above approximately 43° Celsius (110° Fahrenheit) and be a heat exchanger type connected to the cooling system; and
- (c) A low temperature starting aid. The engine *shall*^(E) have glow plugs and / or intake air preheat system.

3.6.4 **Auxiliary Cold Weather Aids** - The engine *shall* be equipped with the following auxiliary cold weather aids:

- (a) 110-volt engine heater(s) with a capacity as recommended by the engine manufacturer or conforming to SAE Information Sheet J1310;
- (b) 110-volt battery heater(s) having wattage matched to battery size to prevent battery damage due to overheating; and
- (c) Housing the battery in an insulated battery box or heated cab.

3.6.5 **Exhaust System** - The exhaust system *shall*:

- (a) Be non-intrusive to the vehicle;
- (b) Have components routed under the frame; and
- (c) Include a vertical exhaust pipe equipped with heat shield. The stack *shall* clear the body roof line and be fitted with an exhaust elbow.

3.7 **Power Train** - The power train consists of components transmitting power from engine output shaft to driven wheels. The power train *shall*:

- (a) Have components with a torque capacity exceeding the maximum applied torque;
- (b) The wheel drive system *shall* provide a 6 X 4 capability by delivering power equally to all wheels; and
- (c) Include driver controlled full locking rear differential.

3.7.1 **Transmission:** The transmission *shall*:

- (a) Be fully automatic and electronically controlled;
- (b) Be compatible with the diesel engine provided;
- (c) Have a minimum of five (5) forward speeds and one reverse speed;

- (d) Include a hydraulic torque converter with automatic lock-up clutch in at least the top two transmission gear ratios;
- (e) Include an oil cooler of a capacity approved by the transmission manufacturer for the service intended;
- (f) Include an oil filter;
- (g) Be equipped with auto neutral for fast idle. The high idle control **shall** be connected so as not to allow the high idle to engage when the transmission is in gear and the parking brake is applied; and
- (h) Include a safety device to ensure that the engine can only be started in the neutral or park position.

3.7.2 **Power Take-Off (PTO)** - The PTO **shall** be:

- (a) A single speed SAE heavy-duty roller or ball bearing type compatible with the transmission;
- (b) Approved for this operation;
- (c) Delivered complete with a converter PTO neutral lock-up; and
- (d) Include a hydraulic "Hot Shift" shifting mechanism connected through the transmission Electronic Control Unit.

3.8 **Braking system** - The vehicle **shall** be equipped with full air actuated ABS service brakes, capable of successfully completing the performance requirements specified in CMVSS. The brakes **shall**^(E) include:

- (a) A low air pressure indicator controlling a buzzer audible to the driver and a red warning light on the instrument panel. The warning devices **shall**^(E) operate only when the ignition switch is in the "ON" position.
- (b) An air compressor of at least 5 litres per second capacity complete with an air cleaner. The compressor **shall**^(E) be pressure lubricated and liquid cooled from the engine.
- (c) An air pressure governor;
- (d) A wet tank equipped with an automatically operated, electrically heated, moisture-expelling valve. The wet tank **shall**^(E) be capable of being recharged from an external source using a glad hand;
- (e) A safety valve to protect system from excessive pressure;
- (f) An automatic air dryer;
- (g) A spring applied, air released, parking brake with arrangements for automatic service brake application on the rear axles in the event of loss of air pressure;
- (h) Airbrake hoses conforming to SAE Standard J1402. Brake lines passing through metal **shall**^(E) be protected to prevent damage or failure due to chafing;
- (i) Dust shields;

- (j) S-cam type brakes with automatic slack adjusters;
- (k) Glad hands air couplers, with integral cover, mounted on the rear of the vehicle, plus a minimum 1.2 metres (4 feet) of air line. A blue cover for service connection and a red cover for emergency connection **shall** be provided; and
- (l) A trailer brake control mounted at the operator's station on or near the steering column.

3.9 Steering - The vehicle **shall** be equipped with power assisted steering with a tilt steering column and **shall** revert to manual mode in the event of power assist failure.

3.10 Axles and Suspension - Axles and suspension components **shall** not be loaded greater than their rated capacities during operation with the aerial device in any operating position(s). The front and rear axle weights and ratings **shall** be provided in the bid submission.

3.10.1 Front axle and suspension - Front suspension **shall** include at minimum:

- (a) Heavy-duty hydraulic double acting shock absorbers; and
- (b) Multi-leaf type springs with bumper pads.

3.10.2 Rear axle and suspension - The rear suspension **shall** be variable leaf spring suspension with bumper pads. The suspensions **shall** be equipped with rear suspensions stabilizer.

3.11 Wheels, Rims and Tires - The vehicle **shall** be equipped with steel-belted, tubeless radial tires mounted on hub pilot disc wheels that are balanced to preclude wheel shimmy at all vehicle speeds. The tires and rims **shall** have sufficient load capacity for a vehicle loaded to rated capacity (GVWR). Wheel, rim, and tire requirements **shall** also include:

- (a) Tires of the same size and ply rating. Ply ratings not included in the Tire and Rim Association Year Book will not be acceptable;
- (b) Mud and Snow tires on the front, rear, and spare wheels;
- (c) Wheel assemblies and rims **shall**^(E) be interchangeable, front and rear; and
- (d) Rear inner tires with valve extension for easy access.

3.11.1 Spare Tire - Each vehicle **shall** be delivered with a spare tire and rim assembly identical to the wheels used on the front and rear axles, including wheel changing tools and hydraulic jack.

3.12 Vehicle Controls - Controls **shall**^(E) conform to the general criteria set out in SAE J1814 and J898 and **shall**:

- (a) Not restrict the operator's field of view;
- (b) Be permanently marked to identify and show function of each control lever or switch with markings/instructions in English and French or international symbols as defined by SAE J1362. Markings **shall** include permanently attached instructions detailing operation of the engine,

transmission, and attachments; and

(c) Have controls easily accessible to the operator.

3.13 Vehicle Instruments - Instruments **shall** be readily visible while seated in the vehicle driver's seat. Panel instrument lamps **shall**^(B) have a dimmer switch. Instruments **shall** include:

- (a) An ammeter, or voltmeter;
- (b) An engine oil pressure indicator;
- (c) A fuel gauge or fuel gauges, as required;
- (d) Coolant temperature indicator;
- (e) If applicable, a torque converter oil temperature indicator;
- (f) PTO controls;
- (g) Transmission temperature gauge or warning device to indicate high temperature;
- (h) Brake system air pressure indicating gauge;
- (i) An hour-meter with numeric display, which accurately records accumulated engine running time up to at least 9,999 hours;
- (j) An engine tachometer;
- (k) An air pressure gauge in psi and kPa, to display the pressure in each air controlled valve supply line; and
- (l) Outrigger position warning light.

3.14 Equipment

3.14.1 Derrick - A hydraulic radial boom derrick **shall** be provided and the derrick:

- (a) **Shall** be rear, curb-side, corner mounted;
- (b) **Shall** have the following minimum sheave heights:
 - i Upper boom - 15.24 meters (50 feet);
 - ii Intermediate boom - 12.2 meters (40 feet); and
 - iii Lower boom - 9.15 meters (30 feet).
- (c) **Shall** be a 3-stage box type construction boom, where:
 - i The first and second stages are constructed of high strength steel;
 - ii The third stage is constructed of reinforced fibreglass; and

- iii The boom is complete with a hydraulic pole guide (pole claw).
- (d) **Shall** be dielectrically tested to 69 kV in accordance with CSA C225;
- (e) **Shall** be capable of a minimum boom articulation range of 15 to 20 degrees below horizontal to 85 to 80 degrees above horizontal;
- (f) **Shall** have a minimum digging radius of 5.5 meters (18 ft), and a maximum digging radius of 8.3 meters (27 ft). A 305 mm (1 ft) deviation is acceptable;
- (g) **Shall** be equipped with a boom overload protection system;
- (h) **Shall** have 360 degree continuous rotation or a minimum 370 degrees non-continuous rotation. If continuous rotation is used, a worm gear complete with side load protection to protect against rotation damage shall be provided. If non-continuous is used, the rotation stop **shall**^(E) be at forward centre of turret to allow free rotation at rear of vehicle;
- (i) **Shall** have a lateral reach, with the intermediate boom extended, of at least 9.15 metres (30 ft) and with fibreglass self-storing extension of at least 12.2 metres (40 ft);
- (j) **Shall** have the following minimum lifting capacities (with the auger stowed) (not bare boom):
 - i 6,804 kg (15,000 lb) with the boom at 80 degrees elevation above the horizontal and all booms extended;
 - ii 1,814 kg (4,000 lb) at 45 degrees with all booms extended; and
 - iii 499 kg (1,100 lb) at 0 degrees with all booms extended.

Note: A lift capacity chart **shall** be provided (showing load capacity vs. radius) for all boom positions.

- (k) Third extension applies:
 - i A fibreglass hydraulic third extension **shall** be provided;
 - ii The third extension **shall**^(E) be at least 2.74 metres (9 feet) long; and
 - iii A pulley at the end of the fibreglass extension **shall** be provided.
- (l) **Shall**^(E) be equipped with fully adjustable load holding valves on the boom lift cylinder, and one-way pilot operated holding valves on the boom lift cylinder and the boom extension cylinders. Where possible, these valves are desired to be integral with the cylinder. If not possible, high-pressure steel tubing **shall**^(E) be used between the hydraulic cylinder and the holding valve to adequately protect against

damage;

- (m) **Shall**^(E) be equipped with pivot and lift cylinder pins with grease fittings; and
- (n) **Shall**^(E) be equipped with hydraulic digger mounting brackets on the main and intermediate boom sections.

3.14.2 **Winch** - The following winches **shall** be provided:

- (a) **Boom Tip Winch** - A hydraulic boom tip winch **shall** be provided. The minimum bare drum rated winch capacity **shall** be at least 6,804 kg (15,000 lbs), at a 45-degree elevation. The winch **shall**^(E) be equipped with a minimum 23 metre (75 foot), **1 inch rope suitable for high voltage use**. The winch rope **shall**^(E) be supplied with a mechanical spliced eye at the end, of equal or greater strength than the cable.
- (b) **Front Winch** - A hydraulic front winch **shall** be provided. It **shall**^(E) be a Braden hydraulic planetary bumper mount recovery winch Model HUP30B. The hydraulic winch **shall**:
 - i Have a minimum rated first layer capacity of 13,607 kg (30,000 lbs);
 - ii **Shall**^(E) include a 3/4" wire rope with a minimum length of 76 m (250 feet).
 - iii Include an extension shaft;
 - iv Operate using a wireless remote control unit, powered in both directions; and
 - v Have controls located in the cab.

3.14.3 **Hydraulic Digger / Auger**

- (a) A two speed hydraulic digger **shall** be provided. The digger **shall** have a minimum torque rating of 12,000 ft-lbs at low speed and 3,000 ft-lbs at high speed;
- (b) **One vehicle-mounted auger shall be provided. The auger head is desired to be Pengo and the auger shall**:
 - i **Have a nominal diameter of 558 mm (22 inches).**
 - ii Be equipped with carbide teeth; and
 - iii Come complete with a screw anchor wrench assembly for 1 ½" anchors and 2 ½" Kelly bar with locking dog assembly.
- (c) Oil auger release valve **shall**^(E) be provided;
- (d) An auger overwind protection system **shall** be provided;

- (e) A nylon rope to elevate the auger to the stored position **shall**^(E) be provided;
- (f) All necessary plumbing and controls to operate digger **shall** be provided;
- (g) Stowage for extension shaft and out-put digger shaft **shall** be provided; and
- (h) Stowage bracket for one auger **shall** be provided. Location of bracket **can** be finalized at a pre-production meeting; suggested locations could be on the front boom rest and on top of right hand compartments.

3.14.4 Pole Equipment

- (a) Pole Puller - A hydraulic pole puller **shall** be provided, with a minimum rated capacity of 22680 kg (50,000 lbs) at 2000 psi. The pole puller **shall** fit into a mounting tray on the platform deck and **shall** include at least 2.1 metres (7 feet) of 16 mm (5/8 inch) high tensile chain and base.
- (b) Pole Tamper - A hydraulic tamper at least 1.8 metres (72 inches), including quick release couplers **shall** be provided. The tamper **shall**^(E) have a kidney-shaped foot, control valve on tube, and a free flow return line.
- (c) Pole Grabber - A hydraulic tilting pole grabber **shall** be provided. It **shall** be mounted in such a position so as to not interfere with the operation of fibreglass extension. A pole tang interlock **shall**^(E) be provided.

3.14.5 Removable Vice - A removable vice mount with a 4" vice at the rear of the platform extension **shall** be provided.

3.14.6 Brackets - The following **shall**^(E) be provided:

- (a) A bracket for storing the CR collapsible power reel at the right side of the cargo compartment;
- (b) Four brackets to hold warning flags, which are mounted on the vehicle corners;
- (c) Ladder mounting brackets complete with rollers for easy removal and stowage complete with tool tray, material rail and chains and pike pole bracket, mounted on the upper left side of the line maintenance body;
- (d) A safety cone holder located on the front of the truck which **shall** not interfere with servicing of the vehicle;
- (e) Holders located under the side compartments on each side of the truck used for storage of the outrigger pads; and
- (f) A spindle bar and brackets located at the rear of the cargo compartment, complete with a storage bracket for the bar. The brackets are to be mounted at a height adequate to allow the use of a 1,219 mm (48 in)

diameter reel;

3.14.7 **Outriggers** - Primary and auxiliary hydraulic, folding shoe, outrigger jacks **shall** be provided. Each outrigger **shall** be equipped with a hardwood pad at least 457 mm by 457 mm by 50.8 mm thick (18 in by 18 in by 2 in). The installation **shall**^(E) include:

- (a) Telescopic or radial type jacks; and
- (b) Two-way, double acting, pilot operated check valves on all outrigger cylinders. Where possible, these valves are desired to be integral with the cylinder. If not possible, high-pressure steel tubing **shall**^(E) be used between the hydraulic cylinder and the holding valve and **shall**^(E) be adequately protected against damage.

3.14.8 **Derrick Instruments and Controls** - The derrick **shall** be equipped with lower controls. Controls **shall** be permanently marked to identify and show function of each control lever or switch with markings/instructions in English and French or international symbols as defined by SAE J1362. Markings **shall** include permanently attached instructions detailing operation of the aerial device. The controls **shall** be mounted at the rear of the truck at the pedestal with a fold down platform for the operator to stand on. The control station **shall** be equipped with the following instruments and controls:

- (a) Stop and start engine ignition switch;
- (b) A direct reading type hydraulic hour meter with registration not less than 9,999 hours;
- (c) Hydraulic pressure gauges to indicate operating pressures;
- (d) Warning device when overloading the boom;
- (e) Controls for:
 - i Main selector control for derrick, auger, outrigger, and tip winch;
 - ii Derrick elevation, rotation, and extension;
 - iii Auger rotation and storage;
 - iv Left and right outriggers;
 - v Boom tip winch;
 - vi Pole puller;
 - vii Pole Tamper; and
 - viii Pole grabber.

(f) **Shall**^(E) have a boom rest position warning light mounted in the cab.

3.15 Other Equipment - The vehicle **shall** be equipped with the following miscellaneous equipment:

- (a) License plate holders, front and rear with license plate lights in accordance with CMVSS 108. The license plate light **shall** be connected to the current lighting system;
- (b) Standard mud flaps at the front wheels, spring loaded mud flaps at the rear wheels;
- (c) Two recovery tow points mounted at the front and at the rear, hooks and mountings of sufficient strength to permit the recovery of the fully loaded vehicle;
- (d) A certified fire extinguisher, easily accessible, properly mounted, suitable for low temperature use, with a minimum capacity of 9 kg (20 lbs), located at the left of the rear platform extension; and
- (e) A certified fire extinguisher, easily accessible, properly mounted, suitable for low temperature use, with a minimum capacity of 2.3 kg (5 lbs), located in the cab in a convenient location.

3.16 Electrical System - The vehicle/equipment **shall**^(E) be supplied with a 12 volt electrical system, and **shall**^(E) include:

- (a) Heavy-duty maintenance free batteries, in an accessible well protected location, mounting **shall**^(E) include heat shielding if necessary, and proper hold-downs. Batteries **shall** have a minimum of 1800 cold cranking amperes (CCA) available at -18°C for 30 seconds;
- (b) An alternator with a minimum output of 135 amperes and capable of supplying sufficient current to carry all electrical load requirements;
- (c) Grommets protecting electrical wiring passing through metal components;
- (d) An audible back-up alarm to alert personnel that the vehicle transmission is in reverse;
- (e) A static inverter attached to the direct current (DC) electrical system to produce a nominal 120 VAC, 60 hertz output with a minimum capacity of 3000 watts. The inverter **shall** have its own deep cycle batteries that are charged by the truck but isolated to prevent drain of truck battery (Advise inverter storage and position of AC power outlets);
- (f) Two (2) 120 volt, 60 hertz power outlets, in accordance with CSA Canadian Electrical Code standards, one flush mounted at the rear of the vehicle and one flush mounted behind the cab at the curbside of the vehicle. Outlets **shall** be equipped with a protective cover;
- (g) All cold weather aids **shall** be connected together with a single, cover-protected, external electrical power plug. The plug **shall** be in accordance to CSA-C22.2-Wiring Devices;
- (h) A seven-pin twelve-volt trailer receptacle mounted at the rear of the vehicle, plus 1.2 metres (4 feet). The trailer electrical receptacle **shall**^(E) be Phillips J560, conforming to ISO 3731;
- (i) A back-up camera system which will give the driver a real-time view of

the area behind the vehicle. The system **shall** incorporate an in cab, driver accessible screen with a minimum size of 25 square centimetres. The system **shall**^(E) be Safetyvision model SV□CLCD□56B1; and

(j) A master disconnect switch for electrical system.

3.17 Lighting - The vehicle/equipment **shall** have lights and reflectors in accordance with CMVSS. Lights **shall**^(E):

- (a) Be recessed or otherwise protected from damage with all components easily accessible for servicing. Relocation of existing chassis light **shall** not be acceptable;
- (b) Be LED, including: all lamps, reflectors, and self-cancelling turn signal system conforming to the requirements of the Highway Traffic Act of the Province Ontario. The turn signals **shall** be capable of being used as emergency flashers;
- (c) Include two (2) Star Warning Systems 25000 amber coloured LED beacons mounted in a suitable location to achieve maximum visibility and protection from boom rotation. Switches mounted within the cab **shall**^(E) operate the beacon lights;
- (d) Include instrument panel lamps;
- (e) Include an interior cab lamp;
- (f) One manually engaged light installed in each compartment and three on the deck and a master switch for all these lights located in the cab;
- (g) Installation of a trailer light package;
- (h) Include three (3) driver operated, remote control, spot/flood lamps. The lamps **shall**^(E) be a 12 volt, 100 watt sealed beam type with a control module and extendable cable mounted on the instrument panel in the cab. The lights **shall**^(E) be a Federal Visibeam Searchlight Model SL with an SLCME2 control module, a Grote Model 63911. They **shall** be mounted as follows:
 - i One lamp mounted at the upper left;
 - ii One at the upper right rear corner of the cab;
 - iii One mounted above the derrick control panel;
- (i) Audible reverse lights to aid vision while reversing in low-light conditions.

3.18 Hydraulic System - A hydraulic system complete with pump, reservoir, filters, and control valves **shall** be provided, compatible with the PTO assembly. The following applies:

- (a) The system **shall** include one hydraulic fluid supply outlet and one hydraulic fluid return outlet on each of: the rear of the vehicle, lower pedestal, and upper control station;
 - i The hydraulic fluid supply outlet is desired to be Male fitting

Aero-Quip 5602-12-12S, equipped with male dust cap Aero-Quip 5657-12; and

ii The hydraulic fluid return outlet is desired to be female fitting Aero-Quip 5601-12-12S, equipped with female dust cap Aero-Quip 5659-12.

- (b) Hydraulic Hose and Reel - Two (2) 25 ft hydraulic hoses (one supply line and one return line) with two (2) quick disconnect couplings, dust caps and fittings for hydraulic tool use, **shall** be installed on a manual reel, with spring retract capability;
- (c) All hydraulic hose assemblies **shall**^(E) comply with SAE J517;
- (d) The hydraulic pump **shall**^(E) be incorporated as part of the PTO assembly or driven by a shaft from the PTO;
- (e) The hydraulic tandem pump **shall**^(E) deliver an appropriate flow for derrick operation, and derrick and winch operation combined.
- (f) The hydraulic cylinders **shall**^(E) have chrome-plated piston rods;
- (g) The oil reservoir **shall** be of sufficient volume so that the oil does not overheat during normal operations. The reservoir **shall**^(E) be mounted against the front wall of the rear cargo compartment;
- (h) The supply tubes on the boom that supply hydraulic fluid to the digger and winch are desired to be telescopic with Lenz "O" Ring tube fittings or high pressure "U" cup seal and wiper. The telescopic tubes **shall**^(E) be protected from damage by telescopic steel covers, which **shall**^(E) be removed easily to allow inspection or servicing of the hydraulic system;
- (i) Gate valves in the suction and return lines to the hydraulic pump **shall**^(E) be installed to prevent loss of oil from the system when serving the filters and pump;
- (j) The suction line from the reservoir **shall**^(E) be fitted with a 60 mesh reusable strainer with a 3 psi bypass valve. The return line filter **shall**^(E) be fitted with a 10-25 micron paper element filter with a 15 psi bypass valve. The filter **shall** have a flow rate of a least 205 lpm (45 gpm). All filters **shall** be readily accessible for servicing;
- (k) A test fitting **shall**^(E) be located at the outlet of the pump so that a pressure meter may be installed to check the system if required; and
- (l) Hydraulic tool outlets at the pedestal **shall** be provided.

3.19 Lubricants and Hydraulic Fluids - The vehicle **shall:**

- (a) Be serviced with manufacturer's standard lubricants and hydraulic fluids compatible with delivery location and season; and

- (b) Operate satisfactorily on Canadian Forces Supply Line lubricants, which include 15W40, 85W140, DEXRON III, or synthetic equivalents. Vehicle hydraulic systems **shall** operate using DEXRON III.

3.20 Paint - Paint applied in accordance with the paint manufacturer's recommendations and the manufacturer's best production procedures, rendering a durable finish and a smooth appearance free from runs, sag, and orange peel. The vehicle **shall** be painted White. The chassis components may be painted the manufacturer's standard colour.

3.21 Corrosion Protection System - The following **shall** be provided for the vehicle:

- (a) Aftermarket rust proofing provided in addition to standard factory rust proofing. The treatment will normally be applied within the first year of service. The treatment date will be directed by the Technical Authority to optimize seasonal rust prevention benefits. If not demanded prior to delivery, a pre-paid certificate authorizing treatment at an aftermarket outlet **shall** be provided with the vehicle;
- (b) Metal surfaces treated with a rust preventive oily film product having the following properties;
- i Moisture displacing;
 - ii Creeping (capillary action);
 - iii Low solvent content;
 - iv Compatibility with rubbers, plastics, and all other materials used in automotive construction;
 - v Non toxic; and
 - vi Minimal dripping.
- (c) The application includes, but is not limited to the underside of fenders and hood, enclosed and boxed-in sections, seams, mouldings, crevices, weld points, underbody, and exposed exterior brackets;
- (d) A decal and warranty papers accompanying each vehicle; and
- (e) Corrosion protection system widely available across Canada or available through mobile services. The following corrosion protection system is provided as guidance: Krown Rust Kontrol or Rust Check products. If another product is used, written proof of a twelve hour ASTM B117 salt spray endurance test certification by an independent test laboratory. Krown Rust Kontrol and Rust Check products have been previously certified, proof not required.

3.21.1 Corrosion Resistant Materials - The vehicle/equipment **shall**^(B):

- (a) Be provided with stainless steel, zinc plated or hot dipped galvanized aluminium rivets, and plastic black oxide brass fasteners; and
- (b) Be designed to prevent galvanic corrosion.

3.22 Warning, Markings and Instruction Plates - International symbols and/or bilingual markings **shall** be provided for all identification, instructional, and warning labels. The following items **shall** be provided:

- (a) Be bilingual and within easy view of the operator and/or make use of graphic symbols, as much as possible, as defined in SAE J1362;
- (b) Engraved metal plates labelling all gauges and controls and **shall** be attached with rivets wherever possible.
- (c) Detailed, bilingual operating instruction plates for all operations, including, but not limited to:
 - i Remote on/off start controls;
 - ii Engine starting and shut-down, in the cab within easy view for the driver;
 - iii Transmission operation, in the cab within easy view for the driver;
 - iv PTO operation, in the cab within easy view for the driver;
 - v Operation of the winch;
 - vi Operation of the hydraulic controls; and
 - vii Hydraulic Derrick capacity chart.

3.22.1 **Vehicle identification** - The following information placards **shall**^(E) be permanently and clearly marked, bilingual and installed in a conspicuous and protected location:

- (a) The cab and chassis manufacturer's name, model number, serial number, and model year;
- (b) The body manufacturer's model and serial number;
- (c) The digger derricks manufacturer's model and serial number; and
- (d) The GVWR and GAWR ratings.

3.22.2 **Rear Markings** - A diagonal, black and white striped, warning pattern **shall** be formed on the rear face of the platform extension, the back of the left side of the line body, and the rear face of the derrick main frame. Gloss black paint and white reflective tape **shall** be used to form stripes 76 mm (3 in) wide.

4. **INTEGRATED LOGISTICS SUPPORT** - The Contractor **shall** ensure that spare parts required to properly maintain and repair completed vehicles are available for purchase for a minimum period of fifteen (15) years.

4.1 **Documentation** - The Contractor **shall** provide the following documentation:

4.1.1 **Deliverable Information** - The Contractor **shall** provide the deliverable information with each vehicle:

- (a) **Warranty Letter** - A paper copy of the completed bilingual Warranty Letter with each vehicle shipped in the approved format. The Contractor **shall** send a copy of the Warranty Letter, in electronic format, to the

Technical Authority for each vehicle, at shipment. Warranty information and certification for corrosion protection **shall** be provided. Designated warranty providers **shall** honour the warranty letter.

(b) Vehicle Manuals - The Vehicle **shall** be provided with manuals required for the safe operation, maintenance, and repair of the vehicle, sub-systems, attachments, components, and accessories supplied. Manuals **shall** be provided in accordance with the terms of the contract. The following manuals **shall** be provided:

i Operator's Manual - Operator's manual **shall** be provided in a bilingual format or as two manuals in a single binder (one English, one French). The operator's manual **shall** contain the following information:

1. Instructions for the safe operation of the vehicle;
2. Daily operator maintenance instructions/checks (including lubrication);
3. Safety warnings; and
4. Hand signals (as necessary).

ii Parts Manual - The Parts Manual **shall** be in English (French translation is desirable). The Parts Manual **shall** contain the following information:

1. Illustrations showing all components of the vehicle including equipment and accessories from other manufacturers that is supplied against the requirements of the contract. The illustrations **shall** have numbers for the itemization of the parts;
2. A listing for all itemized parts showing the manufacturer's part numbers (including Original Equipment Manufacturer's) of the illustration, the part name, and a brief description of the item; and
3. Cross reference relating all part numbers (including Original Equipment Manufacturer's) to the correct figure and item number.

iii Maintenance (Shop Repair) Manual - The Maintenance (Shop Repair) Manual **shall** be provided in a bilingual format or as two manuals in a single binder (one English, one French). The Maintenance (Shop Repair) Manual **shall** contain the following information:

1. A trouble shooting guide, showing the steps and tests required to determine the exact cause of a problem and an explanation of what steps would be required to correct a problem;
2. A listing of the necessary tolerances, torque levels, and fluid volumes required.
3. A section listing any special tools (including item part numbers) required **shall** be included; and

4. Information on the order of disassembly and assembly of the systems and components of the vehicle.
- (c) Equipment Manuals - All Equipment provided by the prime contractor and added to the vehicle **shall** have their own set of manuals. These **shall** include:
- i Operating Instructions with all the elements given in paragraph 4.1.1.b.i and information on the operating instructions and configurations that provide stable operation of the aerial device at net platform and net supplement capacities as per CSA C225-10, as per 3.14.1 (m);
 - ii Parts Manual with all the elements given in paragraph 4.1.1.b.ii; and
 - iii Maintenance Manual (Shop Repair) with all the elements given in paragraph 4.1.1.b.iii.
- (d) Manuals on CD/DVD-ROM - A copy of the manuals on CD/DVD-ROM **shall** be provided. This **shall** include all the manuals provided in clauses 4.1.1 (a) and (b) above. Manuals on CD/DVD-ROM **shall** ^(E) be interactive so that a maintainer can troubleshoot, disassemble and determine the part numbers required with a minimum of searching. The manuals in electronic format **shall** include a full search capability. The Technical Authority **shall** approve the electronic manual format. Operators' manual(s) **shall** also be supplied in paper format. For usability, CD/DVD-ROM **shall not** require password and/or Internet connection to be accessed.
- (e) Sample Manuals - The Contractor **shall** deliver a set of sample manuals, in electronic format only, including all documents in items 4.1.1 (a) and (b) above. The sample manuals **shall** be delivered to the LCMM. Sample manuals will not be returned. In the event that manuals are dependent on first vehicle completion, sample manuals **shall** be submitted within thirty (30) days after the pre-production vehicle approval or first production vehicle inspection. The Crown shall provide approval or comments on the manuals within thirty (30) days.

- NOTES:**
1. No information on methods or location for spare parts ordering shall be included in the manuals. Warranty Information in the manuals shall be identical to the warranty requirements of the contract.
 2. The Government of Canada reserves the right to translate and reproduce, for government use only, all or any part of the publications supplied.
 3. The Contractor is requested to maintain the delivery schedule of the manuals to the same as the vehicle/ equipment. In the event that the manuals are not available at time of shipment, provisional manuals shall accompany the vehicle/equipment. Provisional Manuals shall be clearly identified with the word "PROVISIONAL". Provisional manuals shall be replaced with approved manuals to all shipping locations within thirty (30) calendar days of receipt of approval of manuals.

4.1.2 Documents Provided to Technical Authority - The Contractor **shall** provide the following documents to the Technical Authority:

- (a) Data Summary - A bilingual Data Summary for each make/model/configuration by completing Technical Authority's template with data and a vehicle picture. The Contractor **shall** provide a Data Summary, if possible, before shipment of the vehicle.
- (b) Photographs - Three (3) digital pictures, one left-front three-quarter view, one right-rear three-quarter view, and one of the control panel. It is preferred that pictures have an uncluttered background. Pictures **shall** have a size of at least 4 Mega pixels.
- (c) Recommended Spare Parts List - The Contractor **shall** provide, to the Technical Authority, a list detailing the spare parts deemed necessary to maintain the vehicle for a period of 12 months exclusive of any warranty period, for each configuration. The Recommended Spare Part List **shall**:
 - i A complete change of all filters and filter elements **shall** be included;
 - ii Components such as fan belts and fuses may be included; and
 - iii For each part listed, the following elements **shall** be included:
 - 1. Part description;
 - 2. Original Equipment Manufacturer;
 - 3. Original Equipment Manufacturer Part Number;
 - 4. Suggested quantity; and
 - 5. Unit cost.
- (d) List of Special Tools - The Contractor **shall** provide a list detailing the special tools required for the vehicle that would not be included in a mechanics toolbox. This would include items such as special wrenches or extraction devices, winter tire chains, and special diagnostic tools/software. For each item listed the following elements **shall** be included:
 - 1. Part description;
 - 2. Original Equipment Manufacturer;
 - 3. Original Equipment Manufacturer Part Number;
 - 4. Suggested quantity; and
 - 5. Unit cost.
- (e) Line Setting Ticket - One copy of the chassis manufacturer's Line Setting Ticket, or equivalent, describing the components provided on the cab and chassis **shall** be provided to the Technical Authority. One copy **shall** accompany the vehicle to the final delivery point.
- (f) Chassis Information - The contractor **shall** provide a document detailing the chassis information as stated in section 3.4.1 of this PD.

4.2 Training - The Contractor **shall** perform the following training:

- (a) **Training - Maintenance Personnel** - The Contractor *shall* provide a maintenance/repair training course. The course *shall*:
- i Be given at the delivery destination;
 - ii Have a minimum duration of one (1) day to provide training of up to eight (8) maintenance personnel;
 - iii Be available in both official languages for locations in the province of Quebec and when requested by the Crown;
 - iv Have the final dates arranged with the Life Cycle Material Manager (LCMM);
 - v Have a syllabus or course outline and schedule available for review seven (7) days prior to the course commencement date;
 - vi Include the following items in the curriculum:
 - 1. Operator's training detailed in 4.2(b)vi below;
 - 2. Operation and maintenance safety precautions;
 - 3. Preventive maintenance including servicing schedules (10 % of classroom time);
 - 4. Trouble shooting, testing, and adjustments (70 % of classroom time); and
 - 5. Special tools and test equipment.
 - vii After completion of the course, the Contractor *shall* have a "**PROOF OF MAINTAINER TRAINING**" certificate signed by a Crown Representative for the destination. The Technical Authority shall supply this document in an electronic format.
- (b) **Training - Operators** - The Contractor *shall* provide an operator training course. The course *shall*
- i Be given at the delivery destination;
 - ii Have minimum duration of one (1) day to provide training for up to six (6) DND operators.
 - iii Be available in both official languages for destinations in the province of Quebec and when requested by the Crown.
 - iv Have the final dates arranged with the Life Cycle Material Manager (LCMM);
 - v Have a syllabus or course outline and schedule available for review seven (7) days prior to the course commencement date;
 - vi The course curriculum *shall* include:
 - 1. Safety precautions to be observed while operating and servicing the vehicle;

2. Vehicle/equipment operating characteristics;
 3. Vehicle/equipment operating procedures;
 4. Pre-operating and pre-shutdown procedures;
 5. Daily/weekly operator servicing procedures; and
 6. A minimum of two (2) hours practical operating experience, per operator.
- vii After completion of the course the Contractor **shall** have a "**PROOF OF OPERATOR TRAINING**" certificate signed by a Crown Representative for the destination. The Technical Authority shall supply this document in an electronic format.
- (c) Training Materials - For all training provided by the Contractor, for each attendee, the Contractor **shall** provide training syllabi, which **shall** include, at least:
- i A list of topics to be covered;
 - ii An approximate timetable showing when topics are scheduled to be covered and how much time is scheduled for each topic; and
 - iii Lists any reference material.
 - iv Make available any reference material used.

4.3 Certification - The Contractor **shall** provide the following certification:

- (a) Written manufacturers certification, by a Professional Engineer that the mounted unit meets or exceeds CSA Standard C225-10 for structural and stability requirements, ANSI/ASSE A10.31-2006 for dielectric requirements, and OHSA to be included with each completed vehicle and a copy sent to the TA.
- (b) Engineering certification of the chassis suitability for this application upon request.
- (c) The completed vehicle **shall** have Safety Compliance Certification Label with a **National Safety Mark (NSM)** in accordance with the Canada Motor Vehicle Safety Act;
- (d) Written proof of a twelve hour ASTM B117 salt spray endurance test certification by an independent test laboratory if required.

4.4 Testing - The following testing **shall** be performed on the vehicle:

- (a) All testing required to meet the C225-10 and ANSI/ASSE A10.31-2006 certifications for dielectrical rating, stability, and structure;
- (b) **Performance and Verification Testing** - The first vehicle to be delivered **shall** be examined and performance tested by the Contractor, under real or equivalent load and operating conditions, to ensure item by item conformance to specified requirements. The QAR and/or the Technical Authority may witness this testing and operate the unit sufficiently to assess the handling characteristics. The Contractor **shall** have a fully

equipped vehicle weighed on certified scales, and the total weight and weight on each axle **shall** be furnished.

- (c) **Remaining Vehicle Testing** - The remaining vehicles **shall** be tested by the Contractor, with or without load, to check general performance and operation.