THE PORT AUTHORITY OF NY & NJ
2 Montgomery Street, 3rd Floor, Jersey City, NJ 07302

Date 07/16/2014

REQUEST FOR QUOTATION

Collective# 0000038739
Bid Due Date 08/04/2014
Bids must be received no later than 11:00 AM on the above Bid Due Date.

Contact person/Telephone
Shanta Nelson/201-395-3480

Deliver Goods/Services To:
Newark International Airport
Building 11 - Stockroom
Newark NJ 07114

Quantity	Description	Unit Price	Total
	Aircraft Refueling Hydrant Service Vehicles Delivery to various facilities as noted in Appendix D. Attachments: "Specifications for Aircraft Hydrant Service Vehicles", "Appendix A-F" to be made part of this contract. Contract Administrator: Mr. Aldo Nuzzolese 201-216-2367 NOTE: PLEASE CONTACT MR. NUZZOLESE THREE (3) BUSINESS DAYS PRIOR TO DELIVERY FOR INSTRUCTIONS. DELIVERY SHALL BE MADE BETWEEN THE HOURS OF 8AM AND 2PM, MONDAY THROUGH FRIDAY.		
	PLEASE QUOTE FULLY DELIVERED PRICES	**PAYMENT TERMS** **Total Delivered Price**	

This Quotation is subject to the terms and conditions set forth on the back page hereof. Bidder is advised to read these before signing.

We have read the instructions and, if favored with an order, we agree to furnish the items enumerated herein at the prices and under the conditions indicated.

Signed _____
Firm Name _____
Telephone number_____Date_____
Fax Number_____
Federal Taxpayer ID _____

Bidder Must Sign In Two Places

NOTICE TO BIDDERS: Unless the following term of assurance that the above offer is irrevocable is signed, the offer submitted herein shall not be deemed to be complete.

The foregoing offer shall be irrevocable for 90 days after the date on which the Port Authority of New York and New Jersey opens this proposal.

Signed_____Date_____
Firm Name_____

THE PORT AUTHORITY OF NY & NJ
2 Montgomery Street, 3rd Floor, Jersey City, NJ 07302

Date 07/16/2014

REQUEST FOR QUOTATION

Bid Due Date
08/04/2014

Quantity	Description	Unit Price	Total
	This is a Formal Bid Invitation Mail Sealed Bids to: The Port Authority of NY & NJ Attn: Bid Custodian Procurement Department 2 Montgomery Street, 3rd Floor Jersey City, NJ 07302 by the date and time listed above, where it will be publicly opened and read. Bids are only accepted Monday through Friday, excluding Port Authority holidays,between the hours of 8 A.M. & 5 P.M., via regular mail,express delivery service or hand delivery. If you do not use or have an envelope provided, you must clearly mark the outside envelope/package with 'BID ENCLOSED' and show the company name, address, as well as Bid number and Due date as stated on this bid document. A valid photo id is required to gain access into the building, to attend the bid opening or hand deliver a bid.		
	Aircraft Refueling Hyd Service Vehicles		
	PLEASE QUOTE FULLY DELIVERED PRICES **PAYMENT TERMS**	**Total Delivered Price**	

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Firm Name_____

THE PORT AUTHORITY OF NY & NJ
2 Montgomery Street, 3rd Floor, Jersey City, NJ 07302

Date 07/16/2014

REQUEST FOR QUOTATION

Bid Due Date
08/04/2014

Quantity	Description	Unit Price	Total
	The item covers the following services:		
63	Aircraft Refueling Hyd Service Vehicles		
	PLEASE QUOTE FULLY DELIVERED PRICES **PAYMENT TERMS**	**Total Delivered Price**	

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Signed_____Date_____
Firm Name_____

PA280/9-03

TERMS AND CONDITIONS

1. The Port Authority (PA) reserves the right to request information relating to seller's responsiblity, experience and capability to perform the work.
2. Unless otherwise provided, complete shipment of all items must be in one delivery FOB delivery point. Payment will not be made on partial deliveries unless authorized in advance by the party to be charged and the discount, if any, will be taken on the total order.
3. PA payment terms are net 30 days. Cash discounts for prompt payment of invoices may be taken but will not be considered in determining award, except in the case of tie bids.
4. Separate unit and total FOB delivered prices must be shown.
5. Sales to the PA and to PATH are currently exempt from New York and New Jersey State and local taxes and generally from federal taxation. The seller certifies that there are no federal, state, municipal or any other taxes included in the prices shown hereon.
6. The PA shall have the absolute right to reject any or all proposals or to accept any proposal in whole or part and to waive defects in proposals.
7. Unless the phrase "no substitute" is indicated, bidder may offer alternate manufacturer / brands, which shall be subject to Port Authority approval. Please indicate details of product being offered with bid.
8. Acceptance of seller's offer will be only by Purchase Order Form signed by the PA. No change shall be made in the agreement except in writing.
9. If the seller fails to perform in accordance with the terms of this purchase order, the PA may obtain the goods or services from another contractor and charge the seller the difference in price, if any, a reletting cost of $100, plus any other damages to the PA.
10. Upon request, sellers are encouraged to extend the terms and conditions of any terms agreement with the PA to other government and quasi-government entities by separate agreement.
11. By signing this quotation or bid, the seller certifies to all statements on Form PA 3764A regarding non-collusive bidding; compliance with the PA Code of Ethics; and the existence of investigations, indictments, convictions, suspensions, terminations, debarments and other stated occurrences to assist the PA in determining whether there are integrity issues which would prevent award of the contract to the seller. The PA has adopted a policy set forth in full on PA 3764A, that it will honor a determination by an agency of the State of New York or New Jersey that a bidder is not eligible to bid on or be awarded public contracts because the bidder has been determined to have engaged in illegal or dishonest conduct or to have violated prevailing wage legislation. The Terms and Conditions of PA 3764A apply to this order. A copy can be obtained by calling (201) 395-3405 or at http://www.panynj.gov/business-opportunities/become-vendor.html
12. The vendor may subcontract the services or use a supplier for the furnishing of materials required hereunder to such persons or entities as the Manager, Purchasing Services may from time to time expressly approve in writing. All further subcontracting shall also be subject to such approval.
13. The successful bidder (vendor) shall not issue nor permit to be issued any press release, advertisement, or literature of any kind, which refers to the Port Authority or that goods will be, are being or have been provided to it and/or that services will be, are being or have been performed for it in connection with this Agreement, unless the vendor first obtains the written approval of the Port Authority. Such approval may be withheld if for any reason the Port Authority believes that the publication of such information would be harmful to the public interest or is in any way undesirable.
14.Neither the Commissioners of the Port Authority, nor Directors of PATH, nor any of them, nor any officer, agent or employee thereof, shall be charged personally by the Contractor with any liability, or held personally liable to the Contractor under any term or provision of this Agreement, or because of its execution or attempted execution, or because of any breach, or attempted or alleged breach, thereof.

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY
OPERATIONS SERVICES DEPARTMENT
CENTRAL AUTOMOTIVE DIVISION
241 ERIE STREET, ROOM 307
JERSEY CITY, NEW JERSEY 07310-1397

DATE: May, 2014
CODE: 049-G7G814-4794

SPECIFICATIONS FOR:

AIRCRAFT REFUELING
HYDRANT SERVICE VEHICLE SPECIFICATIONS

1. Intent

These specifications cover the furnishing of a total of sixty-three (63) latest production model 750 GPM Aircraft Refueling Hydrant Service Vehicles for Aircraft Refueling operations at Newark Liberty International Airport and JFK International Airport. These vehicles shall be provided at each Airport as follows:

- Twenty (20) Aircraft Refueling Hydrant Service Vehicles at Newark Liberty International Airport
- Forty-Three (43) Aircraft Refueling Hydrant Service Vehicles at JFK International Airport

The vehicles shall be the manufacturer's latest production model available and equipped with all manufacturer stock or standard equipment, and also equipped with the specific components and the optional equipment for each vehicle as listed within these specifications. The vehicles shall also have all other equipment, parts or components that are necessary and/or appropriate for the operational intent of the vehicles.

The vendor shall complete the Bidder's Pricing Sheet located in Appendix C, listing the Price for each vehicle and listing the Grand Total Bid Price that will be used to evaluate the bid.

Note: The bid shall be evaluated based on the Grand Total Price listed in the Bid Evaluation Pricing.

Although the vehicles are being purchased by the Port Authority of NY & NJ, they will be operated and maintained by the agency's aircraft refueling contractor, presently Allied Aviation at both Newark Liberty International Airport and JFK International Airport. All rights of the Port Authority regarding serviceability, warranty, fitness for service training, and other vendor requirements to the Port Authority shall apply as well to the contractor.

The vehicles shall be designed to fuel all commercial aircraft in a safe and efficient manner from a fuel hydrant system using any combination of refueling nozzles on the vehicle. The vendor shall design and manufacture these vehicles so that they meet these specifications including all other requirements specified herein and all requirements mandated and as required by 49CFR, NFPA 407, EI, ATA, SAE, and all other latest requirements that apply to the construction, operation, and maintenance of aircraft refueling hydrant service vehicles. The vendor shall provide the vehicles with all components, equipment, and items required to place the vehicles in-service and to perform the aircraft refueling function, and shall not be limited to the itemized components listed in these specifications. These specifications are intended only to establish minimum requirements for the vehicles.

The aircraft refueling vehicles shall consist of a commercially available latest model year cab-chassis as specified in the section entitled "Cab-Chassis Specifications" equipped with an aircraft refueling system with all components as specified in the section entitled "Aircraft Refueling System Specifications" and also equipped with all the optional system and components for either Option 1 or Option 2 as specified in the section entitled "Optional Aircraft Refueling Equipment Specifications." The vendor shall procure the cab-chassis, perform all proper cab-chassis modifications, install an elevating lift platform, and provide a complete aircraft refueling system with either Option 1 or Option 2 equipment and components. The vehicles shall be configured so that they are easily operated to refuel all narrow-body and wide-body aircraft that currently operate at commercial airports. The elevating lift platform shall provide the capability of refueling all current largest commercial aircraft such as the Airbus A380. The aircraft refueling system shall be a 750 GPM refueling system that has minimum pressure loss. The refueling system shall be equipped with a pressure control system as specified herein, two (2) underwing refueling hose connections on the elevating refueling platform, one (1) underwing refueling ground hose reel connection, and all other required control systems and operators. All refueling hoses and nozzles shall be properly configured so that any wide-body aircraft is easily refueled utilizing the platform refueling hoses and any narrow-body aircraft is easily refueled utilizing the ground refueling hose.

The refueling system shall be capable of, and set to fuel aircraft at 750 GPM with the two (2) platform refueling hoses or 400 GPM with any single refueling hose with 0 PSIG back pressure in the refueling manifold, when connected to a fuel hydrant system that has the capability of operating at a flow in excess of 1,000 GPM at a nominal working pressure of 150 PSIG. All refueling system components shall be calibrated and properly set and locked so that the system will limit its rated flow rate and strictly maintain a maximum refueling pressure as specified herein when refueling from any nozzle.

The hydrant service vehicle must be able to traverse all roadways and areas at airports as necessary to service aircraft in a normal manner, without disruption of other vehicular traffic, and with no undue stresses or wear on any components or structure of the vehicle.

The vehicle shall have maximum governed speed of 25 MPH and also have the following maximum overall dimensions in normal operating conditions:

Overall Width:	96 in max
Overall Height:	
At elevating platform mast:	100 in max
All other areas of the vehicle:	90 in max
Overall Length:	As Short As Practical

The vendor shall provide a completed vehicle certificate of compliance for each vehicle certifying that it is in full compliance with all applicable regulations including appropriate FMVSS and DOT 406 requirements as though it were an on-highway vehicle, NFPA, ATA Specification 103, etc., stating all limitations and exclusions. The vendor shall be identified as the final-stage manufacturer and provide a label on the vehicle as required by 49CFR568 as though it were an on-highway vehicle.

2. Vendor Prerequisites

The vendor shall meet the following minimum qualifications to assure that it can meet the responsibilities and commitment for this purchase. The vendor shall submit a letter certifying that it has the financial ability to fully handle this purchase and meets all of the prerequisites listed below.

After the opening of proposals and within five (5) business days of receipt of request, the bidder shall submit to the manager the following documentation:

A. Proof that the bidder has been in the business of manufacturing aircraft refueling vehicles and has manufactured at least ten (10) aircraft refueling vehicles within the preceding five (5) years.

B. Proof that its units have operated satisfactorily in the field from the time that they were placed in-service and also that the bidder's latest production models have operated satisfactorily in the field for a minimum of one (1) year. Such proof shall include names phone numbers and emails of customers being used as references.

C. Proof that the bidder's manufacturing shop is an ASME certified shop with authorization to manufacture, perform alterations, or repair pressure vessels, in particular holding an R-Stamp for the repair and/or alteration of DOT 406 Motor Vehicle Cargo Tanks.

D. Proof that the bidder shall have had in its last fiscal year, or the last complete calendar year immediately preceding the opening of its bid, a minimum of $500,000.00 annual gross income from the type of Service required

E. Evidence that they have plant and equipment capacity to manufacture the quantity of units required by this agreement in the time allotted.

The Port Authority reserves the right to reject bids of bidders who cannot provide satisfactory evidence of their qualifications to the engineer.

Request of information under this clause shall not be construed as an acceptance of any bidder's proposal.

3. Procurement Requirements Of Cab-Chassis

The vendor shall be responsible to purchase the cab-chassis and to assure that it is equipped with the equipment and components required by these specifications. All cab-chassis components that are available from the cab-chassis manufacturer and required by these specifications shall be provided and installed by the cab-chassis manufacturer. Upon request by the engineer, the vendor shall submit the cab-chassis' factory line setting tickets, the manufacturer's production sheets, and/or any other documentation as requested. The vendor shall perform all required modifications and install all other components so that the vehicle complies with these specifications and all other state and federal regulations. For the ease of administering and processing all warranty claims, the vendor shall purchase all cab-chassis' from a manufacturer's authorized truck dealer located in the NY-NJ Metropolitan area, herein referred to as the cab-chassis supplier. The cab-chassis supplier shall have a warranty/service facility located within a 40 mile radius of Newark Liberty International Airport or JFK International Airport.

The vendor shall be responsible to inform the cab-chassis supplier of the intended use of these vehicles. The warranty repair shops shall be a cab-chassis manufacturer's authorized dealer, authorized to perform all warranty work on the cab-chassis'. The vendor shall have an agreement with the cab-chassis warranty repair shop that stipulates and requires them to be responsible to perform all warranty work in a professional, quality, efficient, and timely manner, and as required by the paragraph entitled "vehicle warranties." All warranty work shall be the responsibility of the vendor, who must obtain and schedule the services from the cab-chassis warranty repair shop and require them to correct any deficiencies on the cab-chassis'. The cab-chassis shall have full warranty as stipulated in the paragraph entitled "Vehicle Warranties." At the discretion of the engineer, minor cab-chassis warranty work may be performed at Newark Liberty International Airport or JFK International Airport with the approval of the Engineer and the concurrence of the contractor at the facility. Major cab-chassis warranty work as determined to be "Major" by the Engineer, shall be performed at the cab-chassis warranty repair shop. Although the cab-chassis supplier shall be responsible for all cab-chassis warranty repairs including all costs including parts, labor, and vehicle transportation to and from the repair shop, the vendor shall be the ultimate party responsible. Both the vendor and the cab-chassis supplier acknowledge that this equipment is essential to the operation of the airports and must provide the highest priority to scheduling and completing warranty or repairs whether on-site or at their designated repair facility.

4. Factory Service Representative

For the first four (4) vehicles, the vendor shall provide a factory trained qualified service representative(s) at Newark Liberty International Airport and at JFK International Airport, at the time after the first two vehicles are delivered to each airport to prepare and place them in service. For the remaining units, the vendor shall train airport personnel in procedures to prepare each of the units for service as described below. The service representative(s) shall be present prior to the arrival of each unit and shall not leave until each of the delivered units are fully serviced and placed in service. If for any reason a unit is removed from service, if deemed necessary by the engineer, the service representative(s) shall return to correct any problems that arise. The service representative(s) shall be a technician(s) qualified and familiar with all the vehicle systems; i.e., engine, transmission, axles, brakes and brake interlock, running gear, electrical, electronic, hydraulic, product pumping, etc. The service representative(s) shall be qualified to troubleshoot, service, and/or repair all of the systems. In addition, the service technician must qualify under the high security requirements detailed in the Standard Automotive Terms and Conditions.

For the remaining vehicles to be delivered, the vendor shall provide a vehicle make-ready sheet that provides a list of all items to be performed to prepare each of the remaining vehicles for service. If any problems are encountered in preparing the vehicles for service, the service representative(s) shall return to the airport and address any deficiencies. All deficiencies shall be corrected by the service representative(s). Prior to shipping each vehicle, the representative(s) shall perform a complete inspection of the unit to insure compliance with specifications and to assure that all components required to prepare each vehicle for service are shipped with each vehicle. The make-ready processes to prepare the vehicle for service shall be limited to installation of filter-separator elements, fluid level checks, verification of vehicle and refueling system performance checks for the acceptance testing requirements, and any minor adjustments as deemed appropriate by the engineer. All items as required for each vehicle to meet all Port Authority Airport Rules And Regulations and all other regulations as required by these specifications to place each vehicle in-service shall be the responsibility of the vendor.

The representative(s) shall be on site and readily available between the hours of 8:00 AM and 4:00 PM, (excluding Saturdays, Sundays, and Holidays) or as required to perform the above tasks.

CAB-CHASSIS SPECIFICATIONS

5. Cab-Chassis General Requirements

The vehicles shall have a cab-chassis suitable for use as an aircraft refueling hydrant service vehicle at commercial airports as specified herein. The cab-chassis shall be a commercially available unit with a two man tilt cab. The cab-chassis shall have a 4 x 2 axle configuration with the required front and rear gross axle weight ratings (GAWR) and gross vehicle weight rating (GVWR), required to safely and efficiently operate in all operating conditions. The cab-chassis shall have a minimum GVWR of 14,500 lbs. GVWR and GAWR ratings may be rated by the cab-chassis manufacturer for a maximum speed of 25 miles per hour.

The cab-chassis shall be an Isuzu or approved equal with a tilt-cab. The cab-chassis shall be the manufacturer's latest production model.

The cab-chassis shall be equipped with all the specified and required components and be adapted for use as an aircraft refueling vehicle. The cab-chassis and all its components shall be the latest production models that meet all latest federal and state requirements that are most current at time of delivery.

The vehicle shall have the required wheelbase to provide the proper vehicle weight distribution and location of the vehicle's center of gravity, both laden and unladen.

Note: Dimensions used throughout this specification are U.S. Standard units (i.e., inches, pounds, etc.).

6. Engine

The engine shall be the latest production manufacturer's standard electronically controlled gasoline or flex fuel engine of the same year as cab-chassis, that meets the latest EPA regulations. The engine shall have the following minimum requirements:

- 4 Cycle internal combustion engine
- 6 Or 8 Cylinders
- 295 Minimum Net HP @ Governed RPM
- Minimum Torque @ Optimum RPM Required for Vehicle GVW
- Governor for Maximum Governed RPM

The engine shall be equipped with the following:

Cooling System: Heavy Duty

- The engine shall be serviced with a 50/50 mix of antifreeze and water
- Fan
- Fan shroud
- Engine oil filters: Manufacturer's standard spin-on type

Fuel System:

- Fuel filter system: Manufacturer's standard

Controls, Monitors, And Indicators:

The engine shall be equipped with the following minimum controls, monitors, and indicators installed in the cab on the dash, unless the specifications require the control at a different location:

- Ignition switch to start/run/stop engine
- Manufacturer's standard dash to include speedometer, odometer, tachometer, warning indicators, etc.

- Coolant temperature gauge and/or indicator light
- Oil pressure gauge and/or indicator light
- Voltmeter, ammeter, and/or indicator light
- Fuel gauge
- Hourmeter: Electric
- Engine shutdown system: manufacturer's standard system with automatic override, and visual and audible alarm for:
  - Low oil pressure
  - High coolant temperature

  Installed in a location that is readily visible to the driver

All controls, monitors, and indicators shall be installed for ease of operation, properly labeled, and ready observation by the driver.

7. Engine - Noise

The engine, when installed, shall conform to federal, state, and local noise codes. The sound level at the operator's position shall not exceed 83 dB(A).

8. Transmission - Automatic

The vehicle shall be equipped with a fully automatic electronically controlled multi-speed transmission. The transmission shall be rated for the maximum net input power and torque supplied by the engine, and shall also have no less than the minimum rating required for the actual vehicle's laden GVWR and top speed. The transmission shall be equipped with the following minimum components:

- Transmission oil cooler, as required for operation
- Illuminated gear selector segment
- Neutral safety switch for starter
- A transmission shift selector inhibitor that prevents the transmission from shifting unless the vehicle is fully stopped and the service brake pedal is applied. The transmission shall shift only when the service brake pedal is applied.

9. Steering - Hydraulic

The vehicle shall be equipped with an integral hydraulic power-assisted steering system. The system shall be designed so that in the event of power assist failure, the system shall revert to the manual mode with full steering control. The power cylinder and control valve shall be an integral component of the steering system.

The power steering system and pump shall be fully equipped with all necessary components for the proper performance.

The power assist system shall be manufacturer's installed system only. Add-on or after-market kits will not be accepted.

An operator shall be able to turn the steering wheel lock-to-lock with one hand with the vehicle stopped on a paved surface, with engine idling and vehicle loaded to maximum laden weight.

10. Brakes

The vehicle shall be equipped with a power assist abs hydraulic braking system conforming to the latest motor vehicle laws of the States of New York and New Jersey and the latest Federal requirements.

The braking system shall be a dual system with parking brakes. All wheels shall be equipped with brakes, and all components shall be installed so that they properly operate and are protected from damage. The vehicle's braking system shall be approved by the cab-chassis manufacturer to have the rating required for the vehicle's GVWR and the GAWR of each axle at the rated speed of 25 miles per hour. The braking system shall include the following minimum components:

- Brake fluid reservoir: The reservoir shall be labeled with the type of brake fluid and appropriate fill level
- Non-asbestos brake linings
- Parking brake system that can be operated continuously without undue wear, heat build-up, or requiring repeated adjustments (except during preventive maintenance)
- Interlock system: Mico, Inc., Mico 691 electrohydraulic brake lock system with 4-wheel locking and all components required to properly operate the vehicle's interlock system. The interlock system shall operate as described in the paragraph entitled "Interlock System" and when activated the Mico system shall apply the vehicle's service brakes at a controlled application rate. The Mico system shall be equipped with the following minimum requirements:
    - A Mico system brake fluid reservoir full level and minimum low level and with a noticeable plastic engraved label stating the type of brake fluid.

- An emergency interlock release valve that manually releases the brakes in event the interlock override system fails. The emergency interlock release valve shall have lines that divert all brake fluid released back to the reservoir when the valve is opened. The valve shall be identified with a plastic engraved label and have a clear indication for the "Open" and "Closed" positions.
- The Mico system shall be equipped with a visible system showing that the system is operational, and a visible and audible warning system that shows when the system is not operational
- The Mico system shall be installed in full compliance with Mico, Inc. and the cab-chassis manufacturer's requirements

11. Vehicle GVWR And GAWR Requirements

The vehicle shall have a GVWR, and each axle system a GAWR, as rated by the cab-chassis' manufacturer. These ratings shall be properly selected for the design of the vehicle. The actual vehicle weight shall not exceed the vehicle's GVWR and the actual weight on each axle shall not exceed the axle's GAWR, when the vehicle is fully loaded, partially loaded, or unloaded. The vehicle weight at each axle and weight distribution shall be verified with actual scale weights and documented. The vendor shall obtain the actual scale weight certificates, with a laden and unladened vehicle, from a licensed public scale.

12. Vehicle Front Steering Axle And Suspension

The vehicle shall be equipped with a rigid front steering axle with the required suspension. The steering axle shall have a minimum GAWR of 6,600 lbs or a higher rating as required for its application rated for actual loading. The axle shall meet the requirements specified in the paragraph entitled "Vehicle GVWR and GAWR Requirements."

The front steering axle and suspension shall have the following minimum requirements:

Non-Driving Axle:

- Rated capacity: 6,800 lbs minimum and no less than the actual loading
- Heavy duty double acting shock absorbers

Springs:

- Rated capacity: 7,200 lbs minimum and no less than the actual loading
- Leaf spring type suspension system with all required components

- Stabilizer bar

Wheels:

- Type: Disc type
- Size: As required
- Capacity: As required to withstand All applied loads

Split ring type wheels will not be accepted

Tires:

- Construction: Radial
- Tread pattern: Highway
- Size: As required by manufacturer and Same size all around vehicle
- Capacity and load range/ply: Each wheel and tire assembly shall have the capacity at recommended pressure required to withstand all applied loads

All axle and suspension systems shall be factory installation only, as supplied by the cab-chassis manufacturer. Conversions, or retrofits will not be accepted. Any upgrades shall be as approved by the cab-chassis manufacturer and the engineer

13. Vehicle Rear Drive Axle And Suspension

The vehicle shall be equipped with a rigid rear drive axle, with the required suspension. The drive axle have a minimum GAWR of 9,850 lbs or higher as required for its application rated for actual loading. The axle shall meet the requirements specified in the paragraph entitled "Vehicle GVWR and GAWR Requirements."

The drive axle and suspension shall satisfy the following minimum requirements:

Driving Axle:

- Rated capacity: 11,000 lbs minimum and no less than the actual loading
- Full floating
- Single-speed
- Limited slip differential or traction assisit through the ABS system
- Single reduction
- Synthetic fluid

- Ratio to provide maximum speed of 25 mph with a fully laden vehicle at governed engine rpm. If the top vehicle speed cannot be obtained from the selection of the axle ratio, other provisions such as high gear(s) lockout or disabling shall be made to achieve this top speed requirement. Top speed must not be able to be increased by an operator or the contractor's repair facility.

Suspension:

- Rated capacity: 12,900 lbs minimum and not less than the actual loading
- Heavy duty suspension system and components
- Stabilizer bar

Wheels:

- Type: Disc type
- Size: as required
- Capacity: as required to withstand all applied loads

Split ring type wheels will not be accepted

Tires:

- Construction: radial
- Tread pattern: on/off road
- Size: As required by manufacturer and Same size all around vehicle
- Capacity and load range/ply: each wheel and tire assembly shall have the capacity at recommended pressure required to withstand all applied loads

All axle and suspension systems shall be factory installation only, as supplied by the cab-chassis manufacturer. Conversions or retrofits will not be accepted. Any upgrades shall be as approved by the cab-chassis manufacturer and the engineer

14. Frame

The vehicle shall be equipped with a chassis frame of suitable strength and rigidity to allow the vehicle to properly operate at maximum gross weight for on/off highway operations.

The frame main section shall conform to the following minimum requirements:

Yield Strength:	44,000 PSI
Section Modulus:	7.2 IN^3
Resisting Bending Moment:	316,800 IN-LBS

The chassis shall be a continuous formed steel channel. Required section modulus shall not be obtained by the use of fish plating. Cross bracing shall be provided as required for torsional resistance. The bracing shall be of a properly designed section and be properly spaced.

The use of inverted "L" inner or outer channel reinforcements to obtain required section modulus is permitted.

The frame shall have the required strength and rigidity and a sufficient factor of safety to properly support the vehicle in all conditions of loading. The frame shall be reinforced to allow the vehicle to be towed when lifted from either the rear or the front. A shear and bending moment diagram for the frame and supporting calculations shall be furnished, when requested by the engineer.

15. Cab

The vehicle shall be equipped with a fully enclosed cab. It shall be a tilt type cab with a minimum of two seating positions and it shall be equipped with the following items:

- Cab tilt mechanism: Manual tilting system and mechanical latch
- Front bumper: Manufacturer's standard
- Cab entrance step: Manufacturer's standard
- All step surfaces shall be non-skid design
- Sun visor on LH & RH
- Side view mirrors on both sides: Heated west coast mirrors with brackets, 5 inch convex mirrors on brackets at bottom of the west coast mirrors, and 5 inch convex mirrors at the top of the west coast mirrors. The mirrors shall be properly installed to provide full view of the sides of the vehicle.
- Coat hook
- Remove and blank out ash tray
- Remove and blank out lighter
- Install "No Smoking" signs
- Driver seat: Manufacturer's standard heavy duty seat
- Passenger seat: Manufacturer's standard heavy duty seat
- Vinyl seat covers: Heavy duty
- Retractable Shoulder/Lap seat belts for driver and passenger seats

- Floor mat(s): Resistant to jet-a fuel and secured to the floor in a manner that allows the floor mat(s) to be easily replaced
- Horn(s): Electric
- Tinted windshield
- Windshield wiper: LH & RH, two speed, electric
- Windshield washer: Electric
- Cab interior light(s): To provide sufficient light for night time operation of electronic meter printer
- Gauges, indicators, and switches: shall include: (1) All manufacturer's standard dash mounted gauges, indicators, and switches and (2) those specified in the paragraph entitled "Engine," in the item entitled "Controls, Monitors, And Indicators."
- Cab entrance assist handle on LH & RH
- Heater and defroster: High output
- Air conditioning: Factory installed
- Manufacturer's standard factory rust protection
- Door locks: Disconnected door locks so that the doors remain unlocked but can be readily reconnected to be operational
- All required lighting and reflectors to meet all FMVSS requirements

16. Electrical System

The vehicle shall be equipped with an integral electrical system consisting of battery, alternator, starter, wiring harness, and other necessary components and devices. The system shall conform to the following requirements:

- Nominal system voltage: 12 VDC
- Negative ground
- Heavy duty wiring
- Master battery disconnect switch: A Flaming River master battery disconnect shall be provided and installed so that it is readily accessible from the outside of the cab near the batteries. The switch shall be properly rated, heavy duty, waterproof, and installed so that the connections are fully protected with a rigid material and in accordance with NFPA 407 requirements. The shutoff switch shall have brackets so that it can be locked with a pad lock in the off position so that it disables all vehicle starting circuits for Lock-Out/Tag-Out of the vehicle for maintenance.
- PriorityStart Relay: A PriorityStart relay adequate for the application shall be provided to assure that the vehicle has sufficient battery power to start the engine by providing an automatic heavy duty computerized on/off switching system to protect the vehicle batteries so that they are able to provide the voltage and starting power without draining the batteries

beyond their ability to start the vehicle's engine. The system shall automatically disconnect battery loads if the battery voltage drains below 11.7 volts when engine is off and automatically re-connect the loads when the engine is started.

17. Alternator

An engine-driven alternator shall be installed to satisfy all electrical demands and to maintain battery charge in a continuous duty application. The alternator shall be installed using standard mounting brackets. The charging system shall conform to the following minimum requirements:

- Highest idle output factory installed alternator
- Negative ground
- Air-cooled
- Voltage (nominal): 12 VDC
- Rated output (SAE standard no. J56): 145 Amps minimum
- Proper voltage regulator for alternator supplied

18. Battery

The vehicle battery shall be mounted outside the cab in a readily accessible location for checking and replacement. It shall be protected from weather and splashing by a suitably vented box or enclosure cover and shall comply with the following specific requirements:

- Number of batteries: As required
- Voltage (nominal): 12 VDC
- Battery capacity in cold cranking amps (SAE Standard J537I at 0°F): minimum of 750 CCA or higher as required by cab-chassis manufacturer and sufficient to meet all required electrical load demands for the complete vehicle
- Rubber protective boot on all battery positive terminals

19. Fuel Tank

The vehicle shall be equipped with a fuel tank that has a minimum nominal capacity of 30 gallons.

A rectangular area that is approximately 6 inches high by 10 inches long around the filler neck and including the filler neck and cap on the fuel tank shall be painted red. A permanent white label with red lettering approximately one and

one-half (1½) inches high stating "Gasoline Only" shall be installed as close as practical to the fuel filler neck.

The fuel filler cap shall be secured to prevent loss. The method of securing not be welded, riveted or bolted to the tank.

20. Cab-Chassis Modifications And Accessories

The vehicle shall be equipped with following items and accessories, installed in a quality manner and to reflect aesthetic appearance:

A. Exhaust System

The manufacturer's required exhaust system provided so that it is in compliance with NFPA 407. The exhaust system shall meet all engine and cab-chassis manufacturer's requirements. The exhaust system shall be equipped with the required exhaust muffler and spark arrestor. The muffler and spark arrestor shall be located behind the front bumper and it shall exhaust to the front right side of the cab.

The exhaust system shall be equipped with a stainless steel spark arrestor and it shall be routed to exhaust in a well protected location, safe from spilled fuel and any hydraulic or oil system components, and with the proper ground clearance. The exhaust shall discharge in a direction that does not allow exhaust fumes to enter the cab.

The engine and piping shall be equipped with all aluminum or stainless steel heat shields to protect the hot exhaust from any fuel spills. All components shall be stainless steel and heavy duty type solid pipe, clamps, flexible hangers, and hardware.

B. Front Bumper

The front bumper shall be modified as required to permit the installation of the exhaust system and to preserve aesthetic appearance.

C. Rear Bumper

The rear bumper shall be a heavy duty rear bumper, installed and reinforced directly to the cab-chassis frame rails. The bumper shall be the full width of the body and manufactured from heavy structural steel, C-Channel. The bumper shall have a step at the required height to allow the operator to provide access to the stationary refueling platform. The bumper shall be designed so that it has approximately 20 inches of each end angled towards the front of the vehicle, and it shall include rear lights and rubber dock bumpers. The bumper and all components provided on the bumper shall be of bolt-on design only.

D. Rear Fenders

The rear wheels shall be provided with heavy duty steel fenders to retain any road splash. The fenders shall be properly supported and shall support all loads and step-on conditions. The fender assemblies and all components installed on the fenders shall be of bolt-on design only.

E. Back-Up Alarm

A vapor-proof back-up alarm conforming to SAE J994 requirements located at the rear, inside the cab-chassis frame rail.

F. Tow Hooks

Two (2) front and two (2) rear tow hooks shall be provided. The tow hooks shall be properly bolted (not welded) to the cab-chassis frame.

G. Mud Flaps

Provide all bolt on mud flaps as required to deflect all road splash. All mud flaps shall not have any advertisement.

H. Shaft Guards

All rotating drive shafts shall be equipped with guards to trap the shaft and prevent whipping in the event a shaft or universal joint breaks . The guards shall be positioned along the length of each shaft and shall provide clearance of 2 inches around the shaft.

I. Other

All other work shall be performed as required to adapt the vehicle to operate as an aircraft refueling hydrant service vehicle. This includes all modifications to the engine, chassis, cab, electrical system, brake system, etc.

21. Vehicle Rear View Camera

The vehicle shall be equipped with a Federal Signal CAMSET Model 56, color low light capable back up camera installed at the rear of the vehicle with a color monitor (minimum 5" LCD screen) in the cab providing adequate visibility at the rear of the vehicle under all conditions, including low light conditions. The camera shall be mounted at a rear location to provide rearward vision, and the monitor shall be installed in the cab in a location readily observable by the driver. The camera and monitor shall be an integrated system. The camera system shall be installed with the manufacturer's approved wiring and brackets for durable

installation for the specific application. The monitor shall only turn "On" and display the rear view of the vehicle when the transmission is in reverse.

AIRCRAFT REFUELING SYSTEM SPECIFICATIONS

22. General Requirements

The vehicle shall be equipped with an aircraft refueling system with all components as specified herein and also equipped with all the optional system and components for either Option 1 or Option 2 as specified in the section entitled "Optional Aircraft Refueling Equipment Specifications."

The vehicle shall be equipped with an elevating lift platform located behind the cab and the aircraft hydrant refueling system located behind the lift platform. The platform and the aircraft refueling system shall be equipped with all specified components and shall meet all requirements as specified herein. The platform and the refueling system shall be designed so that the vehicle is capable of refueling aircraft as per the operational requirements specified in the section entitled "Aircraft Refueling Hydrant Service Vehicle Specifications" in the paragraph entitled "Intent."

The hydrant service refueling system shall be a modular design, which has the complete refueling system installed on a structural steel frame, as feasibly possible, installed on the cab-chassis frame. All components shall be easily accessible for inspecting, servicing, testing, and replacement. The vehicle shall be designed with components and configuration to provide the vehicle the capability to perform underwing pressure refueling to any aircraft encountered at commercial airports (all narrow-body aircraft and wide-body aircraft, including Airbus A380 and the Boing 787.) All system components, controls, and equipment shall be fully installed and calibrated so that the vehicle is ready for operation.

23. Elevating Refueling Platform

The vehicle shall be equipped with an elevating aircraft refueling platform that safely and efficiently has the capability to carry a minimum of two (2) people and allowing an operator to fuel all types of wide-body aircraft at commercial airports. The platform shall be supplied complete with all of the minimum equipment and components required to fuel aircraft as required herein and ATA 103 Specifications. The refueling platform shall be installed directly behind the cab and it shall remain stable at any height up to and including its maximum height, when refueling any aircraft and regardless of where on the platform the operator

stands without the use of outriggers or other externally deployed methods of stability augmentation. The platform shall fully comply with the latest ANSI, OSHA, and SAE requirements, including the stability requirements as per the latest SAE ARP1247. The refueling platform shall be equipped with the equipment and components as specified in the paragraphs entitled "Elevating Refueling Platform Equipment."

The platform shall be a complete heavy duty hydraulic operated commercially available elevating lift system. The platform assembly shall be installed and reinforced to the vehicle frame. The platform shall be equipped with all required brackets, supports, and stiffeners as required. The platform shall be of a design configuration and installed on the vehicle so that it does not exceed the vehicle's overall height requirements as specified herein.

The lift platform system shall be a personnel lifting type unit with a lift mast system that has a minimum rating of 3,500 pounds. The lift system shall equipped with heavy duty sealed roller bearings and heavy duty channels and or structural members. The platform shall be capable of elevating from an approximate height of 48 inches in the down position to a minimum height of 182 inches in the up position, measuring from the ground to the top of the platform grating. The platform shall be approximately 7 feet wide measuring along the width of the chassis by 3½ feet long measuring along the length of the chassis. The platform shall have access steps on the left side of the vehicle as described below.

The platform shall be completely fabricated from steel and have a galvanized steel grating floor. The platform shall be of a rigid design that meets all walking areas requirements as required by OSHA and that supports a minimum load of 450 pounds on any area of the platform. The platform shall be equipped with a solid steel platform panel measuring approximately 4½ feet high by approximately 4 inches wider than the lift rails, located at the center of the platform. The platform shall be fully enclosed by a 42 inch high steel handrail and have a 24 inch wide entrance door that is spring loaded in the closed position. The entrance door shall open toward the inside of the platform only and it shall be located on the left side of the vehicle for the direct access onto the platform from the platform access steps.

The refueling system shall be equipped with a platform supply pipe assembly and a properly sized Jac Risor hose that supplies fuel to a platform fixed riser pipe assembly that supplies fuel to the two platform refueling hoses. The Jac Risor hose shall be installed with all required components and swivel(s) to provide the required movement of the hose without any undue stress on any the hose or on any platform or piping system components. The Jac Risor hose shall be equipped with flanges on both end connections. Each connection at the end of the platform fixed

riser pipe assembly that connects to the refueling hose shall be equipped with a posi-seal butterfly valve and a swivel that facilitates the movement of the hose. All valve handles shall be located so that they are easily accessible from the platform. Also the valve handles shall be in line with the piping when the valves are open. The Jac Risor hose and platform shoes shall be arranged so that the platform can be fully raised and fully lowered with the two platform hoses connected to the aircraft. The location and configuration of all piping and hoses shall also be with a configuration so that the hoses do not twist or kink, and so that they lay in a natural bend that do not exceed the minimum bending radius specified by the hose manufacturer when the hoses are stored or when the hoses are connected to the aircraft with the platform fully raiser or lowered.

The elevating refueling platform shall be designed and equipped with the following minimum components:

A. An upper physical platform stop capable of stopping the platform when it reaches its maximum height.

B. Two (2) sensors, one installed at the front and one at the rear of the platform, to deactivate the "Up" lift circuit when any point of the platform reaches an approximate distance of 12 inches from the wing of an aircraft.

C. A platform upper travel limit switch to deactivate the "Up" lift circuit, when the platform reaches a height of 180 inches from the ground.

D. A proximity sensor that activates the interlock system when the platform is raised from the complete down position as described in the paragraph entitled "Interlock System."

E. Two (2) neoprene bumpers that adequately support the platform when it is in the full down position.

F. A heavy duty automatic locking system that locks the platform in the full down position when the vehicle parking brakes are released, and unlocks the platform when the vehicle parking brakes are applied. The locking system shall be capable of holding the platform locked when the vehicle is traveling on any roads with a fair degree of potholes. The locking system shall be interlocked so that when the platform is locked, the platform cannot be raised.

G. A hose and cable carrier that contains and guides all platform hoses and electrical lines that move with movement of the platform. The carrier shall be an open plastic type of sufficient size to handle all lines and to properly guide the lines when the platform is elevated to any height.

H. A mechanical safety latch that is utilized to prevent the lift from lowering from an elevated height that allows maintenance to be performed beneath the lift platform.

The platform hydraulic system shall function from a 12 VDC power supplied from the vehicle's master electrical switch. The system shall include all necessary components properly rated for the type of service. The hydraulic reservoir, pump/motor assembly, solenoids, relays, etc. shall be located near the cab, in a protected area, easily accessible for servicing. The reservoir shall be equipped with a drain valve and plug. The bottom of the hydraulic cylinder shall be securely bolted to its supporting structure and the fluid port shall be equipped with an adjustable flow valve with lock to control and set the up/down speed of the platform. The top of the cylinder shall be enclosed to prevent any water from reaching the cylinder head. The hydraulic system shall be equipped with two (2) emergency lowering valves that lower the platform by returning hydraulic oil from the lift cylinder to the reservoir, in event of an electrical failure or emergency. One emergency lowering valve shall be a push/pull type and shall have a weather-proof boot, and shall be located at the highest point on top of the platform panel so that it can be vertically activated. The second emergency lowering valve shall be a brass ball valve located in a position that is easily accessible from the ground. Either valve shall be capable of lowering the platform.

The platform shall be equipped with a spring-loaded single momentary control switch to raise the platform and and a switch to lower the platform. Ecah switch shall be a Cole Hersee model M-490 in a sealed enclosure. The switch assembly shall be located at the upper right side of the platform panel. A second similar switch to raise and lower the platform shall be installed in an inconspicuous location so that it is accessible from the ground to perform maintenance. The assembled switches shall be vapor-proof. The platform electrical system shall function off the vehicle's master electrical shutoff switch. The system shall include all necessary components properly rated for the type of service. All solenoids, relays, fuses, circuit breakers, electrical connections, etc. shall be located near the cab, in a weatherproof electrical box located in a protected area, easily accessible for servicing.

Access steps shall be provided and located on the left side of the vehicle to provide access onto the platform's entrance gate. Steps, stairways, ladders walkways handholds, handrails, and used to access the cab, maintenance and operational areas or other parts of the equipment shall conform to the most recent edition of SAE J185 – Access Systems for Off-Road Machines, using the 'preferred' dimensions offered in this standard

24. Elevating Refueling Platform Equipment

The refueling platform shall be equipped with all required components to perform the aircraft refueling operation and shall also include the following minimum items:

A. A digital fuel pressure display as described in paragraph entitled "Digital Pressure Control System Requirements," subparagraph entitled "Refueling Nozzle Pressure Display." The display shall be installed at a location that is readily visible by the operator. The display shall be protected by a ½-inch thick Lexan bolt-on cover.

B. A 12 foot long deadman line and control as specified in the paragraph entitled "Deadman Reel And Handle Assembly" to activate/deactivate the aircraft refueling control system.

C. Wrap type bracket to store deadman line and a storage to store the deadman control.

D. Two 2½ inch refueling hoses as specified in the paragraph entitled "Refueling And Control Hoses," subparagraph entitled "Refueling Platform." Each refueling hose shall be connected to the platform supply pipe and shall be equipped with an underwing refueling nozzle as specified in the paragraph entitled "Underwing Nozzles."

E. Two underwing nozzle storage holders as specified in the paragraph entitled "Underwing Nozzle Storage Holders." The holders shall be positioned so that the refueling hoses lay in a natural bend so that the hoses are not susceptible to kinks as specified herein.

F. An emergency refueling system shutdown valve located so that it is readily accessible to the operator.

G. All stainless steel rollers if required to protect hoses.

25. Refueling System Frame

The refueling system shall be installed on a structural frame to form as much of a modular unit as possible. The modular unit shall be installed on the cab-chassis' frame.

The refueling system frame shall be of heavy duty construction and shall be of adequate strength to support all components and loads applied in normal use. The frame shall be equipped with all necessary cross members, gussets, and brackets required for its rigidity, and all necessary enclosures and splash shields to protect all components.

The refueling system frame shall be installed on the cab-chassis frame rails with the proper mounting brackets and with grade 8 bolts, washers, and elastic self-locking nuts.

All components shall be properly installed and located so that they are easily accessible for inspecting, servicing, testing, and replacement. All components shall also be arranged and positioned so that they reflect sound Engineering judgment, neat appearance, and easy accessibility for use. All components shall be positioned on the frame to provide a balanced vehicle weight distribution. All components shall also be installed so that they provide a minimum of sixteen (16) inches of ground clearance with a laden vehicle. The equipment shall also be equipped with all necessary lighting for the refueling operation and marker lights.

26. Refueling System General Requirements

The refueling system shall be equipped with an aircraft refueling system with all components as specified herein and also equipped with all the optional system and components for either Option 1 or Option 2 as specified in the section entitled "Optional Aircraft Refueling Equipment Specifications."

The vehicle shall be equipped with a complete aircraft refueling system that is equipped with control valves, control and sensing systems, hydraulic systems, electrical and electronic systems as required to refuel all aircraft as required by these specifications. All components shall be supplied and installed in accordance with all of the component manufacturer's requirements and in accordance with the applicable standards. The components shall be selected so that they operate in accordance with the component manufacturer's rated capacity and to provide the most effective, efficient, and easiest maintainable system. However, notwithstanding the fact that these specifications do not call out all the details of the system, the vendor shall furnish and install a refueling system capable to refuel aircraft as required by these specifications. The refueling system shall be designed to operate in accordance with these specifications when in continuous service under the most severe operating conditions.

27. Filter-Separator

The refueling system shall be equipped with a horizontal micronic filter/water separator unit, with coalescing filter elements and teflon separators. The filter-separator shall be installed so that all fuel dispensed from any refueling nozzle flows through the filter-separator. The filter-separator shall be located on a structural support framework, positioned to provide best accessibility for element servicing and maintenance.

The filter-separator unit shall be a Facet or Velcon model equipped with the latest EI approved coalescing filter elements and separators. The filter-separator unit shall be rated for a minimum of 800 GPM for Jet-A fuel and shall be capable of removing solid contaminants of 0.5 microns and 100% water in accordance with EI 1581 latest edition for operation in an aircraft refueling vehicle.

The filter-separator vessel shall be complete with all new coalescing filter elements and separators provided with the vehicle as required herein and shall be certified to have passed the latest performance requirements of EI 1581 latest edition for operation in an aircraft refueling vehicle when operating with Jet-A fuel.

A letter shall be furnished from the filter-separator manufacturer and vehicle manufacturer certifying that the filter-separator vessel with the provided filter elements meets or exceeds all of the latest performance requirements of EI 1581 latest edition for operation of the filtration system in an aircraft refueling vehicle and providing all certified test data as requested by the Engineer.

The filter-separator vessel shall be of carbon steel construction, be designed and labeled in accordance with ASME code, and have a rated working pressure of 150 PSIG, tested to 225 PSIG. The vessel shall have a label affixed to the vessel with the manufacturers' U1-A label.

The filter-separator vessel shall have a hinged end opening cover with swing bolt that secures the cover. It shall also have Buna-N o-ring sealing gaskets and be internally epoxy coated to Mil-C-4556D. The hinged cover shall remain level when opened and shall be properly positioned to secure in place when closed. The filter vessel shall also have changeable screw bases.

All piping and components installed in the filter-separator shall be made of non-corrosive materials. A drain valve as specified in the paragraph entitled "Filter-Separator Water Sump Control Valve" shall be provided for draining the filter-separator sump.

The filter-separator unit shall be equipped with the following minimum components:

A. Pressure Relief Valve: To prevent excessive fuel pressure build up including fuel pressure built up from thermal expansion to be automatically relieved from the filter-separator and refueling system to the fuel recovery tank. The relief valve shall be installed at the top of the filter-separator.

B. Air Eliminator: To eliminate air from the filter-separator and refueling system and be automatically relieved from the filter-separator and refueling system to the fuel recovery tank. The air eliminator shall be an Armstrong Machine Works model 21 air trap. The air eliminator shall be installed at the top of the filter/separator to expel air and prevent air from passing through the refueling system. The air eliminator shall be piped to the fuel recovery tank for venting all air, and shall be installed so that any release of fuel will not splash, spray or free fall. The connection to the fuel recovery tank shall have a spring loaded check valve to prevent any flow of liquid from the tank.

C. Vacuum Breaker: To facilitate draining and sumping the filter-separator. The vacuum breaker shall be a Gammon model GTP-9365, installed at the top of the filter-separator.

D. Differential Pressure Gauge: To indicate the differential pressure across the filter-separator elements. The gauge shall be a Gammon Technical Products model GTP-534-PBF-15A. The gauge shall be equipped with a full deflection test button or valve, and it shall be located on the control panel. The gauge shall be equipped with plugged connections to allow easy installation of an external differential pressure gauge to indicate the differential pressure across the monitor elements.

E. Filter Elements: The coalescer and separator elements shall not be installed. They shall be new with all the proper installation hardware, packaged and shipped with the vehicle for installation at the Airport. All the packages shall be marked with the vehicle number.

F. Water Drain Valve: To drain the filter-separator sump, as described in the paragraph entitled "Filter-Separator Water Sump Control Valve."

G. High Differential Pressure Shutdown: A differential pressure system that shutsdown the refueling system when the differential pressure across the filter-separator is exceeded and shall illuminate a red indicator light on the control panel to show that the system was shutdown due to a hugh differential pressure. A method to test the system shall be provided to periodically test the differential pressure shutdown system.

Each vehicle shall be provided with a new set of filters and cartridges as specified above. However, the vendor shall have one set of filter elements to test all vehicles as specified in the paragraph entitled "Refueling System Testing."

28. Filter-Separator Water Sump Control Valve

The filter-separator shall be equipped with an electronic operating water sump control, Gammon Technical Products model GTP-9330 1-CC Water Probe for water detection, equipped with the recommended n control system with adequate enclosure and operating controls for the application, installed at the bottom of the filter-separator sump. The water sump control valve system shall function to automatically stop the refueling system and prevent the flow of fuel to the aircraft and deactivate all deadman valves whenever there is an accumulation not exceeding three (3) quarts of water in the sump. Fuel overshoot upon shutdown shall not exceed 5% of flow. The sump control system shall incorporate an externally manually operated pre-check test to assure that the shutdown system is properly working when the refueling system is either stopped or operating at full flow conditions.

A minimum size of ¾ inch stainless steel line with a manually operated ¾ inch full-flow ball valve shall be provided to drain the filter-separator sump. The discharge from the sump drain valve shall be routed to a convenient location for manual draining and shall be clearly labeled. The end of the drain line shall be equipped with fitting that direct flow to the ground direction and the end of the drain line shall be equipped with a ¾ inch quick disconnect OPW male Kamlok adapter with a female dust cap that is secured to the vehicle with a cable.

29. Clean Sample And Millipore Adapter

A Gammon Sampling Kit 1, Gammon Model GTP-144, stainless steel, complete with probe, quick disconnect valve nipple, shutoff valve, and coupler shall be provided. The valve packing shall be teflon or nylon. In no case shall the packing be graphite or similar material. The coupler shall be fitted with a dust cap Gammon model GTP-1232, retained by a cable. The coupler shall be compatible with the millipore fuel test equipment connectors. Each sampling kit shall be installed on a straight section of the main refueling pipe at the following locations:

- Inlet side of the filter-separator vessel
- Discharge side of the filter-separator vessel

The sample fittings shall be equipped with a 90° elbow and shall run parallel to the piping. Each sampling kit shall be easily accessible and clearly identified "Inlet Fuel Sample" and "Outlet Clean Fuel Sample" respectively.

30. Product Flow Meter

The product flow meter shall be located downstream of the filter-separator, on the driver's side of the vehicle, near the control panel. The product meter system shall include the meter with electronic register, an electrical/electronic interconnect box, printer, and all other components as required to provide a complete operating system as described herein.

A. Product Meter With Electronic Register

The product flow meter shall be a Smith non ferrous rotary vane aircraft refueler meter equipped with the latest Veeder-Root Model EMR3 with an electronic remote meter register installed on the control panel and an electronic meter interconnect box and printer installed in the cab in an accessible locations. The meter shall be a 6 inch unit of aluminum construction with a minimum rated capacity of 750 GPM. All parts that come in contact with the product shall be of non-corrosive material. The meter shall be accurate between 50 GPM to 750 GPM. The meter with electronic register shall be certified for conformance by the National Conference on weights and measures, it shall be approved for use by the State of New Jersey Office Of Weights And Measures, and it's accuracy shall be in compliance with all applicable technical requirements of the National Institute Of Standards And Technology (NIST) Handbook 44.

The electronic meter register shall have an anti-fog nitrogen filled display with backlight. The electronic meter register shall have the following minimum features:

1. Display four individual fields with the capability of simultaneously showing the following:
   - Volume dispensed by the vehicle for each refueling job reading in large numbers in whole gallons (also capable of being set to read in tenths or hundreds of a gallon for calibration purposes). This reading shall automatically reset itself to zero whenever a refueling job is completed and before initiating a new job.
   - Totalizer showing the cumulative quantity of fuel dispensed by the vehicle reading in whole gallons. This reading shall be a minimum of eight digits and it shall not be resetable.
   - A preset volume to be dispensed reading in whole gallons.
   - A programmable three digit vehicle number that prints the vehicle number on the printed tickets.

- A message line.

2. Display icon fields that simultaneously show the various states of operation to include delivery, emergency stop, temperature compensation, and ticket printer status.

3. An integral keypad with all required keys to setup, program, and operate the electronic meter register.

4. Multi-point programmable with a minimum of three (3) points so that the meter can be programmed to automatically adjust dispensing accuracy within weights and measures accuracy requirements when refueling at any rate between 50 GPM and 750 GPM. The number of calibration points and flow rates that provide the optimum performance of the meter to meet the above requirements shall be pre-determined and provided in the vehicle manuals.

5. Automatic temperature compensation with probe installed in a probe well located downstream of the meter. The unit shall have the option of having the temperature compensation turned "ON" or "OFF" and it shall display a temperature compensation icon when the temperature compensation feature is turned "ON." The temperature probe shall be calibrated either prior to the delivery of the vehicle or after delivery by the vendor prior to the acceptance of the vehicle and the temperature compensation shall be turned "OFF."

6. Capability to store and print the following minimum data for each refueling job:
   - Ticket Number
   - Start Date and Time
   - Ending Date and Time
   - Truck Identification Number
   - Start Totalizer Reading in Gallons (Captured when job is initiated by activating Start on Meter)
   - Ending Totalizer Reading in Gallons (Captured when job is completed by activating Finish on Meter)
   - Total Quantity of Gallons Dispensed

7. Capability to store the last 50 refueling jobs.

B. **Electrical/Electronic Interconnect Box**

The interconnect box shall have an intrinsic safety barrier suitable for connecting the electronic meter register and a second electronic register head that has identical features, functionality, and display as the electronic meter register. The electronic meter register system shall be suitable for use in Class 1, Group D, hazardous environments as defined by NFPA, and it shall be installed in accordance with the manufacturer's requirements. The electronic display shall be connected to an intrinsically safe circuit located inside the interconnect box. The interconnect box shall be equipped with the following minimum capabilities:

1. 12 VDC power input with ±20% variation.
2. Voltage spike protection induced during any voltage surges or when jump starting a vehicle.
3. Minimum of four (4) relays rated at 5 Amp 24 VDC for control of other operations and direct interface to a programmable logic controller (PLC).
4. Pulse output shall be fully programmable from 1 to 1000 pulses per gallon based on a maximum output frequency of 933 Hz and shall be an open collector output with an internal pull-up resistor tied to a voltage input. The output voltage shall be settable to the system operating voltage.
5. An RS-232 serial communication capability for connecting an electronic ticket printer.
6. An RS-232 and RS-485 serial communication capability for interfacing with suitable on-board computing equipment.
7. The ability to create user defined delivery tickets, formatted in English language, without changing hardware or software.
8. Multiple programmable levels of security for various levels of operation and protection.
9. Weights & measures sealable, electrically actuated switch to protect the calibration and configuration mode of the electronic meter register.
10. Ability to store and retrieve the last 150 refueling jobs.

The meter shall be equipped with a pulser that is secured directly to the top of meter and adequately secured to prevent tampering and meet all

regulatory codes. A vapor proof LED light with switch shall be installed near the meter register to illuminate the meter's display area.

After the vehicle is delivered, the meter shall be calibrated for Jet-A fuel at Newark Liberty International Airport or JFK International Airport by a certified calibrating company, as approved by the Engineer. The vendor shall make all arrangements for the calibration and pay all expenses.

C. Printer

A product meter printer shall be a bolt-on installation located in the cab so that it is readily accessible for operation by the operator, and easily serviced, or removed for maintenance. The printer shall be protected by an enclosure manufactured from Lexan that provides access for operation and protects the printer. The printer shall meet or exceed the following specifications:

1.	Manufacturer:	Epson TM-U295
2.	Model:	M66SA
3.	Style:	Dot Matrix Slip Printer
4.	Power Input:	12 Volt DC
5.	Features:	Forward, Reverse, And Release Keys With Corresponding LED'S

D. Product Flow Meter Functionality

The product flow meter shall be set up, programmed, and configured with the operational functionality and with the set print format configuration to print a refueling ticket all as approved by the Engineer. The EMR3 shall be in the Standard Volume Mode, and operate in conjunction with the refueling system to initiate a refueling job when Start is activated on Meter, dispense fuel utilizing the deadman control, and to complete a refueling job when Finish is activated on the meter. When Finish is activated on the meter, the printer shall print the refueling ticket for the completed job.

The final operating functionality shall be approved by the engineer prior to placing the vehicle in-service.

31. Piping, Fittings, Valves & Swivels

A. Main Product Fuel System

The fuel product shall be handled through a system of rigid piping joined together by welding, victaulic, and flanged fittings with proper gaskets and seals. All gaskets and seals shall be of a material approved for use with aviation fuels. All system piping shall meet the minimum requirements as listed in SAE ARP5818. All fittings with the pipe threads shall be coated with the proper sealant(s) required to handle jet fuels.

All components, piping, and fittings shall be rated for the working pressure of the system. The piping system and each section shall also be designed to limit the fuel velocity to a safe level, when operating at maximum flow conditions as stipulated in SAE ARP5818. To provide optimum cleanliness of fuel, all piping, fittings, valves, strainers, control system components, and all other piping system components in contact with the fuel product upstream and downstream of the filter-separator shall be stainless steel or aluminum. All stainless steel fittings shall be Best Weld fittings. In addition, all components with alloys that come into contact with the jet fuel product dispensed, shall be free of copper, brass, lead, and zinc.

At least one Victaulic coupling shall be installed in selected locations of the piping system to act as vibration dampeners and to facilitate maintenance. Victaulic nipples shall be made of thick wall and installed as recommended by the manufacturer. The shoulders of victaulic nipples shall be flush with the inside of adjacent piping. All aluminum pipe flanges shall have a minimum thickness of ½ inch. Flanges shall not distort when bolts are tightened to their proper torque requirements. All flange connections shall have the proper gaskets.

All shut-off valves shall be Norris butterfly type, provided with Viton (Hycar) seat and seals, stainless steel stem, and detent stops. All valves shall be assembled so that the valve is open when the handle is in-line with the piping. All seals used in all components throughout the system shall be Viton seals.

All piping, valves, flanges, fittings, components, etc. shall conform to the best practices of the industry and shall be selected for minimum pressure loss.

The piping and complete system shall only be tested with clean jet fuel that meets ASTM D1655 specifications.

B. Swivels Handling Product

All swivel joints, except nozzle swivels or other as specified within these specifications, shall be OPW Endura swivel joints with the required eccentric tolerance to provide reliable service for the specific application where the swivel is installed. Each swivel joint shall be of the proper size, style, and rating for the application and be installed in accordance with the manufacturer's requirements and also installed so that it is easily accessible for disassembly to inspect, replace, or perform maintenance without removing any major piping from the vehicle.

C. Fuel Control Lines, Sump Drains, And Fuel Systems Components

All fuel control and sense lines that handle product shall be stainless steel with all stainless steel fittings, valves, and components.

All components, piping, and fittings shall have a minimum rating of 150 PSIG working pressure. The lines shall be full length (from component to component) or as practical for installation and maintenance, properly and neatly routed and supported. All lines, fittings and components shall be sized for minimum friction loss and shall properly function as required. All fuel control line fittings shall be threaded type fittings and all sump drain line fittings shall be either threaded or shall have compression ferrules and fitting nuts. All components shall be properly selected and rated for its service and shall operate without failure from -20°F To +120°F.

D. Sump Drains

All drain lines shall be stainless steel. All drain lines shall be equipped with brass or stainless steel fittings, valves, and components. All sump drains shall be equipped with spring-loaded shutoff valves that remain fully closed in the normal position. The end of all drain discharges of each drain line shall be equipped with fitting that direct flow to the ground direction and the end of the drain line shall be equipped with a ¾ inch quick disconnect OPW male Kamlok adapter with a female dust cap that is secured to the vehicle with a cable.

32. **Refueling Control System**

The vehicle shall be provided with a Refueling Control System with the requirements specified in either Option 1 or Option 2 as listed in the Section Entitled "Optional Aircraft Refueling Equipment Specifications."

33. **Digital Refueling System**

The vehicle shall be provided with a Digital Refueling System with the requirements specified in either Option 1 or Option 2 as listed in the Section Entitled "Optional Aircraft Refueling Equipment Specifications."

34. **Digital Pressure Control System Equipment Requirements**

The vehicle shall be provided with a Digital Pressure Control System Equipment Requirements as specified in either Option 1 or Option 2 as listed in the Section Entitled "Optional Aircraft Refueling Equipment Specifications."

35. **Surge Suppressors**

The refueling system shall be equipped with three (3) 7½ gallon surge suppressors. One (1) surge suppressor shall be located in the main fuel line upstream of the secondary control valve, and two (2) surge suppressors shall be located in the main fuel line downstream of the filter-separator and directly upstream of the ground reel and platform fuel supply lines. The surge suppressors shall be vertically mounted, and charged with nitrogen to the recommended pressures that provide the most efficient performance of the refueling system as specified in the paragraph entitled "Operation Of The Refueling Control System."

The surge suppressors shall be of the piston type and shall have a minimum rating of 150 PSIG working pressure, 225 PSIG test pressure, and 600 PSIG burst pressure. The surge suppressors shall have chrome plated cylinder walls and an aluminum piston with three teflon coated seal rings. All parts of the surge suppressors that come in contact with the product shall be of non-corrosive material as specified herein. The surge suppressors shall have a Victaulic connection. Each surge suppressor shall a have ½ inch NPT connection on the top of the outer shell and shall be equipped with a glycerin filled gauge and a fill connection. All surge suppressors shall be installed and operate as per the surge suppressor manufacturer's recommendations.

36. Strainer

The refueling system shall be equipped with a properly sized strainer located downstream of the hydrant hose shut-off valve. The strainer shall be a cone shaped 40 mesh strainer and completely manufactured from 300-Series stainless steel construction and designed as a pipe fitting section with flange and Victaulic coupling, and be of a design to provide easy maintenance access for checking, cleaning, and replacement.

The strainer shall be equipped with a flat area surface near the unit so that it is labeled "Strainer" and provide an area to label it with the "Inspection Date."

37. Check Valve

The refueling system shall be equipped with an aluminum 6 inch check valve located downstream of the meter. The check valve shall be properly rated and a have Victaulic ends. The refueling system shall have a plugged port upstream and downstream of the check valve.

38. System Pressure Relief Valve

The refueling system shall be equipped with a properly sized pressure relief valve and lines to relieve system internal pressure due to system lock-in pressure, thermal expansion, fast closing valves, etc. The relief valve(s) shall be a manually operated valve, and it shall be located on or near the control panel. The relief valves shall be installed between the main fuel line at all required locations and the fuel recovery tank to relieve the fuel pressure from the refueling system to the fuel recovery tank. The relief system shall be equipped with pressure gauges, check valves, and all other required components, and designed to operate so that the relief valve relieves the system internal pressure from 80 psig to 50 psig in less than 15 seconds.

39. Fuel Recovery System

The refueling system shall be equipped with a fuel recovery system that incorporates a fuel recovery tank to collect all fuel released from the pressure control digital system, system pressure relief valves, air eliminator, etc. The fuel recovery system shall be equipped with an automatic emptying system that is activated when the fuel recovery tank is full and empties the recovery tank by circulating the fuel collected into the refueling system upstream of the filter-separator when refueling aircraft. The automatic emptying system shall utilize an eductor system that forms a parallel circuit with the main fuel flow line, a main

fuel flow line valve with an electric motor operator that diverts the flow of all fuel through the eductor, and a control system to operate the process.

The fuel recovery system shall have the following minimum components and operational requirements:

A. Fuel recovery tank: approximate size of 30 gallon 300-series stainless steel tank with the required fittings, a minimum working pressure range from a vacuum of 30 inches of Hg to a pressure of 150 PSIG, and the tank shall be pressure tested to a minimum pressure of 200 PSIG.

B. Tank level switch: Float switch or other approved switch installed on the tank with tank level adjustment to operate the control system to automatically operate the tank draining process when the tank is deemed full and to automatically return the system to the normal operating mode when the tank is deemed empty.

C. Recovery Tank Low and High Level Shutdown Switch: A switch that shuts down the refueling system when the tank is approximately 10% below the level where the tank is deemed empty and 10% above the level where the tank is deemed full. An indicator light shall be provided for the empty level and an indicator light for the full level conditions, both located on the control panel properly labeled.

D. Access Cover: DOT approved inspection cover at the top of the tank. The cover shall be of sufficient size for inspecting and servicing the inside of the tank and equipped with a lockable inspection cover.

E. Tank pressure/vacuum vent: DOT approved tank vent installed at the top of the tank as required for the operation of the system and to facilitate draining the tank. If a vacuum breaker is required to adequately provide the ability to drain the recovery tank, the tank shall be equipped with a Gammon Technical Product model GTP-9365 vacuum breaker.

F. Tank drain: A ¾-inch stainless steel drain line with a stainless steel or brass manually operated ¾-inch spring-loaded shutoff valve that remain fully closed in the normal position to drain the tank. The tank drain line shall be located at the bottom of the tank, it shall be routed to a convenient location for manual draining, and it shall be clearly labeled. The drain shall discharge in the down direction and shall be equipped with a ¾ inch quick disconnect OPW male Kamlok adapter with a female dust cap secured to the vehicle by a cable.

G. Tank gauge: A 2½ inch, glycerin filled, dial type gauge with a range of 30 inches of Hg to 120 PSIG. The gauge shall be installed on the control panel.

H. Other components: All other fittings, valves, and components necessary to operate and also provide the ability to test the operation of the system.

I. In the normal operating condition, the main fuel flow line valve shall be in the fully open position so that fuel flow is through the main fuel flow line.

J. When the recovery tank is full, the main fuel flow line valve shall close and direct all fuel flow through the eductor.

K. When the recovery tank has been emptied, the main fuel flow line valve shall revert to the normal operating condition as listed above.

L. The control system shall automatically activate to empty the recovery tank when the fuel in the recovery tank is at a high limit (approximately 75% full or as designed by the vendor).

M. The control system shall automatically revert to the normal operating condition when the fuel in the recovery tank is at a low limit (approximately 20% full or as designed by the vendor).

N. The automatic fuel recovery system shall be equipped with all adequately sized components so that the fuel recovery tank is emptied in less than 30 seconds from full to empty conditions as specified above.

40. Hydrant Reel And Ground Refueling Hose Reel

The vehicle shall be equipped with one (1) hydrant hose reel and one (1) ground refueling hose reel. Both the hydrant hose reel and the hydrant coupler shall be located to easily operate from either the right side or the left side of the vehicle. The ground refueling hose reel shall be located on the right side of the vehicle. The reels shall be positioned so that they are installed as close as possible to the cab-chassis frame and be easily accessible for use. The reels shall be installed so that they can be easily adjusted when replacing any components that affect the exact position of the reel.

The hydrant hose reel and ground hose reel shall be single wrap type hose reels. The reels shall be the latest Hannay models. The hydrant hose reel shall have a capacity of 50 feet of 3 inch hose and the ground hose reel shall have a capacity of 50 feet of 2½ inch hose. The reels shall have drums adequately sized for the hose and capable of withstanding a pressurized hose when wound on the reel. The hose reel support structures shall be heavy duty, with access to grease bearings and for maintenance. The reels shall top wind in the location mostly used to operate in and they shall be equipped with heavy duty explosion proof electric motors, with a Crouse-Hinds vent on the motor housing. The motor shall drive the reel through a speed reducer and chain drive to rewind the refueling hose. The reel drum shall be equipped with a friction brake and position lock. Also each reel shall be equipped an auxiliary crank rewind that has a clutch with handle that

can be used to disengage the motor and manually rewind the hose from the operating position(s). The hydrant reel shall have a clutch handle on each side of the vehicle and the ground reel shall have a clutch handle on the right side of the vehicle.

Each reel motor shall be actuated by an individual rewind switch, Cole Hersee model M-490 installed in a sealed enclosure wired through a relay. The switches shall be the momentary push-button type, rewinding the hose when activated and automatically shutting off when released. The hydrant reel shall have a switch on both sides of the vehicle and the ground reel shall have a switch on the right side of the vehicle. The switches shall be installed in accessible locations, near the respective reel, so that they operate the respective reel from the any of the operating positions. All wiring shall be installed in conduit with water-tight fittings. Each hose reel motor and connecting wiring shall be protected by manual reset circuit breakers of the manufacturer's recommended rating. All wiring shall be properly sized as recommended by the reel manufacturer. All wiring shall be installed in accordance with NFPA 407 and the National Electrical Code requirements.

All internal piping in the reels shall be of corrosion resistant material and with low friction fittings. The outlet piping shall have a bolting flange with an o-ring groove at the drum opening. The flange adapter for the hydrant hose reel shall be equipped with a 3 inch male outlet to connect the hydrant hose and the flange adapter for the ground reel shall be equipped with a 2½ inch male outlet to connect the refueling hose. The outlet piping shall extend above the drum so that sufficient clearance is provided between the hose connection assembly and the drum. Also, a clamp shall be provided to prevent the last 18 inches of hose from being unwound from the reel. The piping into the reel shall be equipped with the Hannay I-Hub aluminum swivel joint and a posi-seal butterfly valve to turn off each hose reel. The hose reel piping system, swivel, and shutoff valve shall be sufficiently rated so that the hose can be tested while it is installed on the vehicle at a minimum pressure of 300 PSIG. The valves shall be installed so that they are open when the handle position is in line with the piping. Stainless steel rollers shall be provided where required to protect the hose from chafing.

41. Hydrant Pit Valve Control Hose Reel And Hydrant Coupler Control Hose Reel

The refueling control system shall be equipped with automatic spring rewind hose reel(s) for the hydrant pit valve control line and the hydrant coupler control hose. Each reel shall be equipped with a hose and dry quick disconnect as specified in the paragraph entitled "Hydrant Valve Control Hose" and "Hydrant Coupler Control Hose." The reels and hose assemblies shall be connected to the digital

control system to properly open the hydrant valve and operate the hydrant coupler during refueling operations.

The hose reels shall be located so that they can both be easily operated from either the right side or the left side of the vehicle.

The reels shall be the latest Hannay model that have a minimum capacity of 60 feet of 3/8 inch ID hose. The reels shall automatically rewind and shall have ratchet type intermediate position stops. The reels shall be equipped with all proper mounting brackets, fittings, and connectors as required for its operation. The swivel connections shall be equipped with brackets to keep the swivel connectors on the reel from spinning when the reel is turning. Reels shall be equipped with hose roller guides.

42. Deadman

The refueling control system shall be equipped with a fixed storage bracket that allows the operator to wrap the fifty (50) feet of the deadman cable and also provide storage receptacle for the deadman control. The complete assembly shall meet all NFPA 407 and NEC requirements. The bracket shall be located on the left side of the vehicle so that it can be easily operated with the ground refueling nozzle.

A storage receptacle for the deadman control shall be installed on the elevating platform to store the deadman control located on the elevated platform.

43. Static Grounding Reels

The system shall be equipped with two (2) manual rewind static grounding reels, one installed on each side of the vehicle, in locations that are easily accessible by the operator. The reels shall be Hannay model MGR-75 equipped with 75 feet of 1/8 inch High Visibility aircraft static grounding cable and 100 amp grounding clamp. In addition to the grounding clamp, the reels shall also be equipped with a grounding plug. Each reel shall have handles to rewind the reels and a protective scuff guard to protect the grounding cable.

The reels shall be electrically bonded together by means of a properly sized grounding conductor to the vehicle frame. Resistance shall not exceed 25 Ohms between the two grounding clamps of the reels.

44. Static Grounding Posts

The vehicle shall be equipped with two (2) grounding posts located near the grounding reels, one installed on each side of the vehicle, in locations that are easily accessible by the operator.

45. Refueling And Control Hoses

All refueling hoses shall be capable of handling jet fuel and shall be aviation type refueling hoses with 3 ply reinforcement, a minimum rating of 300 PSIG working pressure and 1,200 PSIG burst pressure. The hoses shall be grade 2, type C hose, and shall conform to all requirements of the latest revision of EI 1529 and NFPA 407 standards including markings. All hose ends shall be equipped with end couplings as described for each designated hose below. The couplings for the hydrant hose and refueling hoses installed on the hose reels and refueling platform shall be equipped with either brass or stainless steel couplings. All other refueling hoses shall be equipped with stainless steel couplings. All refueling hoses and couplings installed on the vehicle shall meet all latest EI 1529 requirements for their application. A certificates of compliance shall be provide for each hose for each vehicle and shall be in the tests and certificates booklet.

All refueling hoses shall conform to the above requirements and shall be supplied and properly installed on the following components:

A. Hydrant Hose Reel:

A 3 inch id by 50 foot long aircraft refueling hose shall be provided and installed on the hydrant hose reel. The end of the hose connecting to the reel shall have a 3 inch female swivel adapter to facilitate replacement, and the end of the hose connecting to the hydrant coupler shall have a 3 inch male coupling.

B. Ground Refueling Hose Reel:

A 2½ inch ID by 50 foot long aircraft refueling hose shall be provided and installed on the ground refueling hose reel. The end of the hose connecting to the reel shall have a 2½ inch female swivel adapter to facilitate replacement, and the end of the hose connecting to the nozzle shall have a 2½ inch male coupling.

C. Elevating Refueling Platform Jac Risor Hose:

A properly sized aircraft refueling hose shall be provided and installed as described in the paragraph entitled "Elevating Refueling Platform." The

hose shall have a flanged adapter at both ends. The hose shall be installed so that it lays in a natural loop arrangement, properly moving as the platform is raised to any height, without scuffing, twisting, or kinking.

D. Refueling Platform:

Two (2) 2½ inch ID aircraft refueling hoses shall be provided and installed on each refueling connection on the platform, as described in the paragraph entitled "Elevating Refueling Platform." The hoses shall have lengths as required to allow the nozzle to be connected to the airbus A380 and fully lowering the platform while connected to the aircraft. The end of the hose connecting to the swivel joint shall have a 2½ inch female swivel adapter, and the end of the hose connecting to the nozzle shall have a 2½ inch male coupling. The hoses shall be properly supported and laid in a loop arrangement so that when the nozzles are stored in their respective nozzle storage holders, they do not kink or twist. The full length of each hose shall be equipped with a continuous protective plastic spiral bead that protects the hose and supports it to prevent kinking.

E. Hydrant Pit Valve Control Hose:

The vehicle shall be equipped with the Hydrant Pit Valve Control Hose as specified in either Option 1 or Option 2 as listed in the Section Entitled "Optional Aircraft Refueling Equipment Specifications."

F. Primary Pressure Control Hose

The vehicle shall be provided with the Hydrant Coupler Control Hose as specified in either Option 1 or Option 2 as listed in the Section Entitled "Optional Aircraft Refueling Equipment Specifications."

46. Hydrant Coupler

The vehicle shall be provided with a Hydrant Coupler with the requirements specified in either Option 1 or Option 2 as listed in the Section Entitled "Optional Aircraft Refueling Equipment Specifications."

47. Hydrant Coupler Storage Holders

The vehicle shall be equipped with two (2) hydrant coupler storage holders, one installed on each side of the vehicle so that the coupler can be stored on either side. The hydrant coupler storage holder shall be of a design and configuration that provides easy storage and removal of the hydrant coupler provided with the vehicle as either Option 1 or Option 2 as listed in the Section Entitled "Optional

Aircraft Refueling Equipment Specifications." The storage holder shall be positioned in a readily accessible location. The storage holders shall be positive locking units equipped with controls that activate the interlock system when the coupler is removed.

The storage holders shall be made of heavy duty high strength aluminum, and if equipped with a cover, they shall have stainless steel hinges, pins, locking handles, springs, etc. The holders shall have quick acting and positive locking mechanisms to secure the coupler. The locking mechanism shall be of a design that is easily accessible and simple to operate. The holders shall be able to accommodate the hydrant coupler and shall be adjustable to maintain tightness of the coupler when stored. The interlock system in the holder shall be positive acting so that misalignments when storing the coupler, vibrations and a minimal amount of coupler movement will not activate the interlock system when the vehicle is being driven. The complete unit shall be easily adjusted and easily disassembled for maintenance.

The holders shall be positioned to facilitate coupler insertion and removal by the operator. The holders shall function and be used in such a manner that the coupler must be stored in either storage holder to deactivate the interlock system. Each holder's interlock shall be properly connected into the vehicle's interlock system, so that they operate as specified in the paragraph entitled "Interlock System."

48. Underwing Nozzles

The refueling hose reel and the two (2) platform refueling hoses shall each be equipped with a 2½ inch underwing refueling nozzle. The nozzles shall be a Carter model 64250C4H. The nozzles shall include 2½ inch hose swivels and a 100 mesh strainers easily removable for inspection and cleaning. The swivel retaining screws or any quick disconnect retaining latches shall be safety wired.

49. Underwing Nozzle Storage Holders

All underwing nozzles shall be stored in a positive locking nozzle storage holder that is equipped with an interlock system. Each nozzle storage holder shall be positioned in a readily accessible location and properly installed on the vehicle.

All nozzle storage holders shall be of a rigid design and shall be capable of fully securing and locking the underwing nozzle with a dust cap in the stored position so that the nozzle surface remains fully covered with when in the stored position. Bayonet type holders are not acceptable. The dust cap shall be installed with a nut and bolt type of assembly to the storage holder. The holders shall be made of heavy duty high strength aluminum and/or stainless steel. The holders shall have

quick acting and positive locking mechanisms to secure the nozzles. The locking mechanisms shall be of a design that is easily accessible and simple to operate. The holders shall accommodate the nozzle with a cap and have adjustments to maintain tightness of the nozzle when stored. The interlock system in the holder shall be positive acting so that it allows misalignments when storing the nozzles, vibrations, and a minimal amount of nozzle movement that will not activate the interlock system when the vehicle is being driven. The complete unit shall be easily adjusted and easily disassembled for maintenance.

Each holder shall be positioned so that when the nozzle is stored, it is protected from any precipitating weather conditions and to facilitate nozzle insertion and removal by the operator. Each holder shall function and be used in such a manner that when the nozzle is inserted, the respective portion of the interlock system is deactivated. Each holder's interlock shall be connected to the vehicle's interlock system, so that it operates as specified in the paragraph entitled "Interlock System."

50. Emergency Fuel Shut-Off Switches

The vehicle shall be equipped with emergency fuel shutoff switches. Activation of any one of the switches will completely shut down the refueling system. Emergency fuel shutoff switches shall be 2-position manually operated switches, properly rated for the application and meet all NFPA 407 and NEC requirements. Emergency fuel shutoff switches shall be installed at the following locations:

- Left side of the vehicle
- Right side of the vehicle
- Top of the elevating platform

The complete refueling system and all deadman controls shall be deactivated after any emergency fuel shutoff switch is activated. If the refueling system is operating, after any emergency fuel shut-off switch is activated, the refueling system shall immediately completely stop all refueling operations so that the quantity of fuel dispensed shall not exceed a quantity in gallons of 5% of steady flow, measured from the time that any emergency shutdown switch is activated.

Each switch shall have the handles painted red, be labeled "Emergency Fuel Shutoff" and "Push," and shall have additional indications as required to comply with NFPA 407.

51. Interlock System

The vehicle shall be equipped with a safety interlock system to assure the safe operation of the vehicle. All components required to properly operate the interlock system shall be supplied and properly installed. The safety interlock system shall operate as follows.

A. **Operation of Interlock System:** The safety interlock system shall operate so that when it is activated, it shall operate as follows:

1. Apply the vehicle's service brakes at a regulated application rate
2. Indicate that the interlock system is activated by an amber interlock indicator light located on the dash that is operational only when the ignition switch is in the "On" position
3. Turn "On" the vehicle's brake lights only when the ignition switch is in the "On" position
4. Allow the refueling system to be operational by allowing the deadman controls to be operational only if the following conditions are met:
   - The emergency shutoff switches are all in the deactivated position
   - The interlock system is activated
   - The vehicle's parking brakes are applied

B. **Activation of Interlock System:** The safety interlock system shall be automatically activated when any of the following conditions exist:

1. The hydrant coupler is removed from either of its hydrant coupler storage holders, or
2. Any refueling nozzle is removed from its nozzle storage holder, or
3. The lift platform is lifted from the full down position
4. The vehicle's wheel chocks are removed from their storage compartment

C. **Deactivation of Interlock System:** The safety interlock system shall be automatically deactivated when any of the following conditions exist:

1. The hydrant coupler is stored in one of its hydrant coupler storage holders
2. All refueling nozzles are stored in their nozzle storage holders, and

3. The lift platform is in the full down position

4. The vehicle's wheel chocks are stored in their storage compartment

5. Deactivate the complete refueling system so that it is not operational (Deadman controls are deactivated)

6. Release the vehicle's service brakes as applied by the interlock system

D. **Interlock Override System:** For emergency situations, the safety interlock system shall be equipped with an Emergency Interlock Override switch located on the front left side of the vehicle, above the bumper. The switch shall be safety wired in the normal position and be properly labeled "Interlock Override." The interlock override switch shall operate so that when it is activated, the interlock override system will operate as follows:

1. Deactivate the complete refueling system so that it is not operational (Deadman controls are deactivated)

2. Overrides all conditions listed in "B" above and the system releases the vehicle's service brakes as applied by the interlock system

3. Activate the vehicle's 4-way flashers, when the ignition switch is in the "On" position

4. Allow the operator to drive the vehicle

The system shall be operated with proximity sensors as specified in the paragraph entitled "Electrical System."

52. Electrical System

A. Electrical Standards

All installed electrical equipment, lighting, and electrical components shall conform to:

- All system electrical circuits shall meet all latest NEC, SAE ARP5818A, and all applicable code requirements.
- SAE Standards J1292, "Automobile, Truck, Truck-Tractor, Trailer, And Motor Coach Wiring"
- SAE Standards J1127, "Battery Cable"
- SAE Standards J1128, "Low Tension Primary Cable"

- All terminal connections shall conform to SAE Standard J163, "Low Tension Wiring And Cable, And Splice Clips"
- All lamp circuits shall meet SAE Standard J575, "Test Methods And Equipment For Lighting Devices"
- All fused circuits shall conform to SAE Standard J156, "Fusible Links"
- All circuits shall conform to SAE Standard J541, "Voltage Drops For Starting Motors"
- All lighting controls, switches and indicator lamps shall be mounted and properly labeled on a control panel.

Placement of all work lights, body lights, indicator lamps, controls, and panels shall be approved by the engineer prior to installation.

Work lights, body lights, indicator lamps, storage compartment lights and switches shall be of the shock and vibration resistant design.

The vendor shall provide a full schematic of the body electrical system for all body lighting, indicator lamps, auxiliary equipment, accessory lighting and control circuits (including automatic reset circuit breaker size, wire size with color code, switch, and indicator lamp make, model and part numbers). This diagram and schematic shall be in addition to the chassis manufacturer's furnished electrical manual.

All vehicle body lighting, reflective devices and conspicuity systems shall conform to FMVSS 108 requirements. All body lighting and wiring shall be of LED sealed lighting system design. All work lights, body lights, indicator lamps, lights and switches shall be shock and vibration resistant design.

B. <u>General Electrical System Design</u>

The electrical system shall be designed utilizing the following electrical components as needed for the design of the circuits, and any other specific functional electrical components as recommended by the vendor, to provide an easily maintainable electrical system:

1. All electrical relays, fuses, circuit breakers, and electrical service components shall be centrally located and installed on an electrical panel or enclosure
2. All circuits shall have adequately sized copper stranded wire for the current and voltage drop requirements in accordance with the applicable SAE and NEC requirements to continuously operate each component or electrical system for the required application

3. Circuits that exceed 20 Amps and are operated by a switch shall operate through a waterproof continuous duty Tyco Bosch Hi-Amp Power Relays with screw terminals with parallel and series diodes, unless the component is equipped with a manufacturer's integral operating system

4. Dash mounted switches shall first utilized the cab-chassis manufacturer's upfitter switches and if additional switches are needed the switches shall be Waytek, Inc. model 44237 Amber LED Fat Bat round rocker switches, and, when several area required, the switches shall be centrally located on the dash or installed onto a panel secured to the dash

5. Electrical system shall utilize a OptiFuse Part Number BLR-I-310 fuse block with LED indicators, 10 position fuse block utilizing APR type fuses, rated at 30A per circuit and 100A input, a fuse block cover, and each circuit properly labeled

6. Cooper Bussmann Transportation Products Series 18X Hi-Amp Circuit Breakers waterproof circuit breakers, manual reset switchable waterproof surface mount circuit breakers

7. All high amperage power supply cables for the inverter, power tailgate, winches, or other equipment where power is provided directly from the battery shall be of flexible stranded copper welding cable and be covered with high temperature wire loom with a minimum rating of -40°F to 300°F

8. All fuses, circuit breakers, relays, and connectors shall be sealed waterproof type

9. All connectors shall be covered with a protective shield, equipped with rubber boots, and battery positive terminal shall have a rubber protective cover guard

10. Whenever possible, if the OEM manufacturer offers optional switch panels for the installation of equipment, the vehicle shall be equipped with the OEM optional panel, and the OEM optional switch panel shall be used for controlling the equipment

11. All cables and wiring installed by the vendor shall be of a type, size and color or otherwise approved identification code in accordance with appropriate SAE and/or NEC standards and codes.

12. Wires shall be enclosed in protective high temperature wire loom of appropriate size and protected from chaffing or cutting by grommets or other bulkhead connections, and clamped or fixed for protection from vibration and movement wherever appropriate.

13. All equipment installed on the interior of the cab shall not interfere with the vehicle's air bag deployment zones.

All switches shall be "ON" in the up position (if the switch is a toggle switch) and shall have an indicator lamp per switch and be accessible from the driver's position. Each switch shall be properly labeled with and engraved plastic label or other permanent durable label approved by the Engineer.

Selection, location and placement of all auxiliary equipment and lighting, i.e., work lights, body lights, indicator lamps, switches, controls, relays and panels shall be approved by the engineer prior to installation.

C. Refueling System Electrical Design

The vehicle shall be equipped with a Programmable Logic Controller (PLC), 48 channel minimum, and programmed with the functionality to operate vehicle and refueling system functions as required by these specifications. The vendor shall develop and provide a logic chart that details the functionality of the PLC and the operation of each system's circuit for every possible condition (mode) of operation. The interlock system shall be completely operated with Turck, Inc. Proximity sensors and other electrical operating components necessary for the system. The proximity sensors shall be equipped with led indicators and have all sealed connections. The PLC shall be rated NEMA 6 (IP67) rated. All electrical and electronic components requiring protection shall be installed in a NEMA 4X rated enclosure(s) and shall have:

- NEMA 4X (IP66) rated couplings of the enclosure with NEMA 4X (IP66) rated electrical cabling/wiring that is run into the enclosure
- Safety barriers and insulators sufficient to protect all electrical and electronic systems
- Terminal strips and fuses as required
- Grounding post
- Label all components, each wire, and each terminal connection

All the electrical and electronic system wiring shall run full length from component to component without splicing, and shall have adequate mechanical strength for the application. All wiring shall be properly sized with proper conductor(s) to adequately carry the maximum applied current for each circuit in accordance with NEC requirements. All lighting equipment shall be the shock-mount type. Rubber grommets shall be

installed where wires go through walls or bulkheads. All adequate cables or wiring that shall be hypalon or superior insulated wire, run in suitable synflex tubing and shall terminate with weather-tight connections. All wiring connections shall be made in a weatherproof sealed electrical box. Where multiple connections are made, they shall be made on terminal junction blocks. All circuits for all components and lighting circuits shall be fused on a fuse block panel or have resettable circuit breakers. In-line fuses shall be used only if accepted by the Engineer. Each hose reel motor shall be protected with a manual reset circuit breaker and a fuse shall be installed for each hose reel switch. The vehicle shall have a main electrical box for all system components and connections, and a lighting electrical box for all lighting system components and connections. The boxes shall be weatherproof sealed electrical boxes with hinged cover, installed in locations that are readily accessible for maintenance, inspection and trouble-shooting. All electrical components including relays, fuses, fuse block panels, junction blocks, circuit breakers, etc. Shall be installed in the electrical box and properly spaced for ease of maintenance. All wiring to components shall originate from the electrical boxes. All wires, breakers, terminals, fuses, etc. Shall be properly coded or labeled to identify each circuit and to match all drawings.

Supply and install the required batteries, as specified in the cab-chassis section, in a suitable enclosure with a removable or hinged cover. The batteries shall be strapped down with sufficient clearance between the battery and the top cover. The batteries shall be installed outside the cab in a location readily accessible for checking and replacement.

The batteries shall be wired to the battery disconnect switch, properly rated and installed. The switch shall be installed as close as possible to the batteries. All connections on the switch shall be properly protected with protective rubber boots. The switch shall be located on the left side of the vehicle, behind the cab and marked "Battery Disconnect Switch" in ½ inch red letters.

All switches and warning lights shall be properly mounted and labeled on a single panel in the cab or on the control panel. All switches shall have one "On" indicator light per switch.

The complete electrical, electronic, and lighting systems shall be in accordance with NFPA 385, NFPA 407, NEC requirements, and "Port Authority Airport Rules And Regulations."

53. Lights

The vehicle shall be equipped with all lights to comply with all federal, state, and airport rules and regulations. All sets of lights shall be separately fused and controlled by switches. All body lighting shall be Betts vapor-proof snap seal system and be of the led type lights. All lights and reflectors shall be of a bolted assembly. The following vehicle lighting shall be supplied:

A. Cab

- The cab shall be equipped with all cab-chassis manufacturer's standard lighting but shall include not less than headlights, signal lights, marker lights, clearance lights, reflectors, etc. As required to comply with all FMVSS 108 requirements.

B. On Each Side Of The Vehicle

- Red and amber, Class A reflectors.

C. On The Rear Of The Vehicle

- Two assemblies of red stop, tail, backup, and turn lights with side marker lights, one on each side of the vehicle. Each assembly shall be installed so that it is flush with the rear of the bumper.
- One red brake light assembly (a 3rd stop light). The light shall be installed at the center of the vehicle and at a location and height to be determined during the production of the first vehicle.
- One white license plate lamp and bracket, installed in a visible location.

D. On The Top Of The Vehicle At The Highest Point

- A low profile amber LED flashing beacon with a switch in the cab on the dash. The beacon shall not be a strobe light.
- Rear Identification Lights

E. Other

- A Betts model 305B-07113 spot light with switch shall be installed on the elevating platform and on the stationary platform.

Conspicuity materials (i.e., retroreflective sheeting (or reflex reflectors) as required on trailers or truck tractors. Exact locations to be determined by the engineer.

Notwithstanding the other requirements of this numbered section, ensure that the lights and reflectors are located on the vehicle so that they clearly mark its dimensional extremities from all directions and as required by the "Port Authority Airport Rules And Regulations."

54. Control Panel

A control panel shall be provided on the left side of the vehicle, conveniently located for ready observation by the operator. The control panel shall be designed and manufactured so to reflect a rigid construction with aesthetic appearance. The panel shall be of stainless steel construction, of proper size, and have approximately 4 inch sides to protect all instrumentation. All instruments shall be illumination and labeled with engraved plastic labels.

The control panel shall have the following minimum displays, gauges, and indicators:

- Filter-separator differential pressure gauge
- Differential pressure gauge test switch, located in accessible location
- Digital refueling pressure display as specified in the paragraph entitled "Digital Pressure Control System Equipment Requirements" subparagraph entitled "Refueling Nozzle Pressure Display."
- Digital thermometer or a 4 inch dial type thermometer as specified below
- Amber water detection warning light, normally "On" when refueling, and "Off" when detection system is activated
- Red refueling system ready to operate light, normally "On" when refueling system is ready to operate
- Refueling system indicators required for operating, testing, and checking the operation of the system.
- Indicators that display the system operating with either the primary or the secondary system controlling.

All dial type gauges shall be liquid filled type. The thermometer shall have the probe installed approximately 6 inches downstream of the meter and the probe installed in a well. The probe shall extend to the center of the product pipe.

All instruments on the control panel shall be protected from damage by external objects. The front of the control panel shall be covered with a ¾ inch thick lexan

cover. The cover shall be secured to the control panel with stainless steel bolts and nuts.

The control panel shall have a secured area with a locking panel that is easily accessible for maintenance of any component or systems that require periodic checking, testing, or service. All controls needed to test or adjust the refueling system shall be located in this secured area.

55. Fire Extinguishers

The vehicle shall be equipped with two (2) 20 pound Ansul model IK20g Purple K (PKP) dry powder fire extinguishers, installed on each side of the vehicle. Each fire extinguisher shall be installed in an Ansul quick release bracket, assembly 14091. The fire extinguishers shall be installed in a horizontal position and be easily accessible.

56. Wheel Chocks And Holder

The vehicle shall be equipped with one set of wheel chocks and a chock holder, installed on the left side of the vehicle in an accessible location. The chock holder shall be designed to securely hold the chocks and shall be easily accessible to store and retrieve chocks for immediate use.

The wheel chock shall be equipped with a chock holder to provide a\it as a chock storage compartment that is equipped with an interlock proximity switch that operates with the interlock system so that when the wheel chocks are removed from storage the interlock system is activated.

57. Flag Storage Receptacle

The vehicle shall be equipped with a flag storage receptacle to allow to readily store and retrieve a ½ inch diameter by 6 foot long flag in an adequate readily accessible location on the vehicle. The exact location may be determined during final inspection of the vehicle.

58. Vehicle Tests And Certificates Documentation

All tests and all certifications shall be documented in a binder designated as the vehicle tests and certificates booklet. Each vehicle shall have a test and certificates booklet and it shall be identified with a general description of the vehicle, the VIN number, the Port Authority vehicle number, and vehicle manufacturer's name and identification number. All tests shall be fully

documented on separate test sheets and in separate sections. In addition, the booklet shall have a section for vehicle qualification.

Each vehicle booklet shall have documentation of all tests as performed by the vendor and as required in the paragraphs entitled "Testing Complete Vehicle Operation," "Testing Tanks And Product Piping," "Refueling System Testing," and all other tests as specified within these specifications and as required in standard industry practice.

After completion of all tests and before delivery of each vehicle, submit two (2) test booklets, an original and a copy. The original shall be sent to the Engineer and a copy shall be sent to the delivery location, as listed in Appendix D entitled "Delivery Locations For Vehicles, Manuals, & Training." The vendor shall retain a copy of the booklet for future reference. The vendor shall verify and assure that each booklet contains all final satisfactory performance and operational tests, and other certifications required to place the vehicle in-service.

59. Testing Complete Vehicle Operation

Fully test the operation and performance of each laden vehicle to assure that all function, systems and components operate perfectly and to the Port Authority's satisfaction. All components needing adjustment shall be properly set and safety wired or locked, to prevent tampering. The vehicles shall be completely tested for all different types of operations and maneuvers required at the airports.

Document all tests in the vehicle tests and certificates booklet described in the paragraph entitled "Vehicle Tests And Certificates Documentation." The tests performed on each vehicle shall include the following:

A. Service Brakes And Parking Brakes

Test the vehicle's service brakes and parking brakes with the fully laden vehicle.

B. Vehicle Lighting And Electrical System

Test the vehicle's complete lighting system and electrical system including lights, switches, gauges, electric reels, backup alarm, etc.

C. Vehicle Maneuverability

Test the driveability and maneuverability of the vehicle and include wall-to-wall turning diameter turning left and right, steering, engine operation, transmission shift, top speed, etc.

D. **Other**

Perform all other tests as required to check the integrity, operation, and performance of the vehicle.

60. Testing Tanks And Product Piping

All product tanks shall be hydrostatically tested at a minimum pressure of twice the working pressure.

The complete product piping assembly, from the coupler to all discharge nozzles, shall be hydrostatically tested at a minimum pressure of 150 psig for 20 minutes. In addition, all sump drain lines shall be hydrostatically tested at a minimum pressure of 60 PSIG for 20 minutes.

61. Refueling System Testing

The vendor shall have on its premises the required test facility with the stand to perform all refueling system tests as required in these specifications. All tests shall be performed in accordance with these specifications and the latest edition of SAE ARP5918, ATA Specification 103 requirements, and NFPA 407 requirements. The vendor shall perform all required pressure tests on all systems on the vehicle, including hydraulic, system handling the product, drains, etc. to locate any faulty connections or leaks. The vendor shall also perform all required performance tests. All components needing adjustment shall be properly set and safety wired or locked, to prevent tampering. After all adjustments are completed, test the unit for performance by simulating aircraft refueling operation, with all practical combinations of hookups. Completely test the vehicle for all different types of operations, including refueling, in all possible pressure and surge conditions. The complete system shall be tested only with clean jet fuel that meets ASTM D1655 specifications. Upon request, the vendor shall provide a laboratory test analysis of the fuel used to test the vehicles certifying that the jet fuel meets the ASTM D1655 specifications.

All tests shall be documented in the vehicle tests and certificates booklet described in the paragraph entitled "Vehicle Tests And Certificates Documentation." The tests performed on each vehicle shall minimally include the following:

A. **Refueling System Test:** Each piping sub-assemblies for the entire refueling system shall be hydrostatically tested to 200 PSIG, for a minimum of 20 minutes, without leakage. After the vehicle is complete, the entire piping system from the hydrant coupler to all nozzles shall be

hydrostatically tested as described in the paragraph entitled "Testing Components And Product Piping."

B. **Functional Flow Tests:** The system shall be flow tested at a flow rate of 750 GPM, using the two refueling nozzles on the refueling platform and 450 GPM using the refueling nozzle on the hose reel, with no back pressure on the refueling manifold. The system shall be fully tested by refueling with a single and with both nozzles on the refueling platform, and also with the ground hose nozzle, simulating a minimum of 4 different back pressure scenarios on the refueling manifold. The refueling system shall operate only when it is activated by any deadman valve. For all refueling operations scenarios, the refueling system shall shutdown within a quantity in gallons of 5% of steady flow rate when any emergency shutdown valve is activated, deadman is released, water sump control valve is activated, interlock override is activated, etc., operating either with the primary or secondary pressure control system. All pertinent pressure, flow, shudown, and other essential readings shall be recorded from the hydrant coupler to the nozzle, as well as the back pressure on the refueling manifold.

The refueling system shall also be tested by simulating aircraft refueling, by dispensing fuel with the two underwing nozzles on the platform, against a 40 PSIG back pressure, and dispensing a minimum of 5,000 gallons two (2) consecutive times without any malfunctions or disruptions.

C. **Refueling Surge Tests:** The system shall be tested by an appropriate surge pressure test. The maximum surge pressure at the nozzle shall not exceed 120 psi on a 1 second valve closing and 100 PSIG on a 5 second valve closing. Upon request by the Engineer, a competent established testing firm using the latest oscilloscope and pickup equipment shall be retained by the vendor at his expense to perform the surge tests on the vehicle(s).

D. **Interlock Test:** The complete interlock system and interlock override system shall be fully tested in accordance with the operation as specified in the paragraph entitled "Interlock System," including testing of system response to each possible single point failure mode.

The vendor shall develop and implement a functional test program, subject to approval by the Engineer, to check the operation, integrity, and performance of the refueling system and all other systems and components on each vehicle. The vendor shall perform all final tests at the vendor's plant. Any defects or failure of any component or system shall be immediately remedied by the vendor. The

vendor shall be responsible for all expenses to have the product flow meter calibrated at Newark Liberty International Airport or JFK International Airport by a meter calibrating company licensed by the State of New Jersey Department Of Weight And Measures and approved by the Engineer.

All tests requiring the use of liquids in the tank or piping system, shall be performed only with clean dry jet fuel. The final tests of each vehicle shall be performed at the vendor's plant with all filter elements, strainers, etc. installed. All tests on the first vehicle shall be performed with a new set of filter elements that are deemed test elements, and these test elements may be removed in accordance with adequate procedures for removing and storing to reuse the elements to assure that they do not become contaminated, and reuse the test elements to test subsequent vehicles. After testing each vehicle, the test elements shall be carefully drained, placed in plastic bags and cartons, and sealed to prevent contamination until they are needed for testing each of the subsequent vehicles. The vendor shall supply a set of all new elements with each vehicle as required by the paragraph entitled "Filter-Separator."

The vendor shall perform all final tests prior to the time the Engineer performs a final inspection of each vehicle. The vendor shall notify the Engineer a minimum of thirty (30) days before performing a final test on any vehicle at the vendor's plant. The first vehicle shall be completely tested at the vendor's plant, in the presence of the Engineer. At the Engineers option, the vendor shall arrange for the Engineer to witness the tests of any or all subsequent vehicles at the vendor's plant prior to delivery. The vendor shall be responsible to deliver each vehicle complete and fully tested to Newark Liberty International Airport or JFK International Airport. The vendor shall document all test results for each vehicle in the vehicle tests and certificates booklet and submit it to the Engineer prior to delivery of each vehicle. The vehicle shall be considered complete and accepted following approval by the Engineer at Newark Liberty International Airport or JFK International Airport after the Engineer has fully inspected, tested, and found the vehicle to be complete and fit for service.

After the delivery of the first vehicle, the vendor shall make arrangements that are mutually agreed to with the Engineer to provide a company qualified technician to prepare the vehicle for service herein referred to as a Make-Ready Process. The Make-Ready Process shall be the complete process to prepare the vehicle for service and shall include the filling and flushing of the vehicle with jet fuel, draining the vehicle, installing all filter elements, purging and relieving all wetted lines of air, setting up all programmable operating parameter, making all final adjustments, performing a complete final refueling flow test of the refueling system as required by these specifications, required by all applicable standards,

required by the vendor or Engineer, and a final test program approved by the Engineer.

After the delivery of the first vehicle, the vendor shall also rectify any outstanding items or corrections, make all adjustments, and review all processes and procedure to perform the complete Make-Ready Process with the Engineer and all other designated staff. Upon acceptance of the first vehicle, the Make-Ready Process shall be performed by others that are trained to perform the process by the vendor at Newark Liberty International Airport or JFK International Airport. If there are any issues found, the vendor shall be readily available to provide adequate procedures to rectify the issues.

If the vendor is unable to rectify an issue at the Engineer's request, the vendor shall be responsible to provide a company qualified technician on site at Newark Liberty International Airport or JFK International Airport to rectify the issue within a two day period or as mutually agreed to between the vendor and the Engineer. After delivery of the first vehicle, each subsequent vehicle will undergo a make-ready process by others and they will perform all items identified by the vendor as a Make-Ready Process, and in addition will also install additional decals around the vehicle and perform any other inspections and tests to assure proper operation and performance of the vehicle and the refueling system. All issues found will be immediately reported to the vendor and the vendor shall be responsible to rectify the issues as done with the delivery of the first vehicle.

62. Finishing And Painting

The complete vehicle shall be finished with a quality commercial grade finish. All surfaces shall be free of dents, gouges, buckles, surface scaling, rust, corrosion, and other surface irregularities. All surfaces shall be cleaned and conditioned in accordance with the paint manufacturer's specification.

All components shall be painted with the finished color(s) including wheels (inner and outer, bumpers, compartment interiors, ancillary equipment etc. The only exception shall be britework (chrome plated parts) grill, fusible links, grease fittings, filter membrane fittings, valve shafts, cylinder rams, vacuum breakers, components the operation of which would be impeded by painting and other components specifically designated by the engineer. Air lines, electrical tubing, cables, retaining clips, servos, solenoids, etc., and any other items as agreed to by the Engineer.

As soon as practical after completion, prime each vehicle with two (2) coats of the primer specified below. Parts which mate or join and are inaccessible after assembly shall receive an additional coat of primer before assembly.

Specified primers:

Gray Primer Approved By Finish Paint Manufacturer
Or
Zinc Chromate Primer

Note:
The zinc chromate primer must be used on all aluminum components

The final finish shall consist of three (3) coats of the paint specified below. The finish shall be of high gloss and uniform color with full hiding and shall be free from sags, runs, orange peel, crazing, pitting and other paint defects.

The vehicle shall be painted with a urethane or polyurethane finish paint with the colors specified below.

White: Dupont Imron #7372U:

- The complete cab including the front fenders

Gray: Dupont Imron #72092U

- Chassis frame rails
- The complete elevating and stationary platform including platform perimeter handrails
- The complete refueling system including all system framework, reels, rear fenders, battery box, equipment rack, control panel, filter vessels, reels, brackets, etc.

Black: Dupont Imron #99U

- Front And Rear Bumpers

Bright Yellow: Dupont Imron

- All Access Steps, Grab Handles, And Handrails To Access Platforms

Red

- All Valve Handles
- Operating Controls
- All Emergency Shut-Off Operating Controls

The vendor shall notify the engineer when each vehicle is ready for finishing and arrange upon request for him to inspect the vehicle prior to painting. Address

inquiries regarding paint to the Engineer. Upon request by the Engineer, supply a 4" x 6" paint sample for approval prior to painting.

The vendor shall ensure that all paint is polyurethane paint. The vendor shall be responsible to re-prime and re-paint any and all areas found to be painted with paint that is not polyurethane paint, all at no cost to the Port Authority.

Note: The entire vehicle and refueling system (including components, structural framework, platform, etc.) shall be painted in polyurethane paint. This is a major requirement!!!

63. Vehicle Decals And Labeling

The Port Authority shall provide the vendor with a Decal Kit for each vehicle and the vendor shall be responsible to install all decals provided in the Decal Kit, and the vendor shall also provide and install all other required striping, conspicuity markings, lettering, and labeling, including the DOT approved Flammable Liquid vehicle placards, and all other markings as required by the Port Authority Airport Rules And Regulations, ATA Specification 103, NFPA 407 and 49CFR, or as specified elsewhere in these specifications or requested by the Engineer. As the vehicles are operated by Allied Aviation, the Port Authority will make all arrangements to have Allied Aviation ship to the vendor an Allied Aviation Hydrant Service Vehicle Decal Kit packaged separately for each of the vehicles, and have Allied also provide the vendor with specific instruction on the placement of all Allied Aviation decals. Each vehicle decal kit shall have the following decals for the vendor to install on each vehicle:

A. Four (4) sets of vehicle numbers

B. Four (4) decals stating "Jet A"

C. Four (4) decals stating "Emergency Fuel Shut Off" with the decal to indicate how to operate the switch stating "Push"

D. Six (6) decals stating "No Smoking"

E. Four (4) decals stating "Flammable"

F. Two (2) decals stating "Allied Aviation Service Company"

G. Two (2) decals stating "Owned by the Port Authority of NY & NJ"

H. One (1) decal stating "Keep Exit Clear"

I. One (1) decal stating "Emergency Override" with the decals to indicate the switch positions stating "Normal" and "Override"

J. Three (3) decals stating "Did You Do Your Walk Around"

K. Two (2) decals stating "Warning Have You Disconnected"

L. One (1) decal stating "Battery Shut Off"

M. One (1) decal stating "Jet Fuel Safety Data Sheet"

N. Two (2) decal stating "Caution Do Not Fuel Over 50 PSIG"

O. One (1) decal stating "Stay Back 50 Ft"

P. One (1) decal stating "Stop Test Brakes"

Q. Two (2) decals stating "20 MPH"

R. One (1) decal stating "Gasoline Only"

S. One (1) decal stating "Battery"

T. One (1) decal stating "Vehicle Cannot Exceed 25 MPH"

The vendor shall provide a front, left side, rear, right side and top view line drawing to provide paint and decal layout. The final layout of all decals shall be reviewed with the vendor upon completion of the first vehicle, and all remaining vehicles shall be completed with the same decal layout.

All decals, shall be properly installed on properly prepared surfaces as required by the decal manufacturer. The vendor shall also provide and install all lettering, labeling, stripes, and symbols as specified below.

The vendor shall also be responsible that the vehicle is provided with decals and signage installed in all appropriate locations as required by regulatory requirements, and that there are all required decals that identify all controls, operating mechanisms, maintenance items, etc.

In addition, the vendor shall provide the following minimum components, controls, and indicators with engraved plastic plate labels with ¾-inch high letters to identify drains, sample valves, displays, gauges, indicator lights, and operating controls, etc.

The vehicles shall be identified with a vehicle number as follows:

Newark Liberty International Airport Vehicles:

The first vehicle for Newark Liberty International Airport shall be assigned vehicle number 201, the second 202, and remaining vehicles as completed for Newark Liberty International Airport shall be assigned sequential numbers.

JFK International Airport Vehicles:

The first vehicle for JFK International Airport shall be assigned vehicle number 221, the second 222, and remaining vehicles as completed for JFK International Airport shall be assigned sequential numbers.

OPTIONAL AIRCRAFT REFUELING EQUIPMENT SPECIFICATIONS:

64. General Requirements

Each vehicle shall be equipped with either Option 1 or Option 2 as listed in this section. Each vehicle shall be in full compliance with all specification requirements as stated in the Cab-Chassis Specifications, Aircraft Refueling System Specifications, and also be equipped with the specific components and equipment for as listed in Option 1 or Option 2 of these specifications. The vehicles shall also have all other equipment, parts or components that are necessary and/or appropriate for the operational intent of the vehicles to operate as an Aircraft Refueling Vehicle at either JFK International Airport or Newark Liberty International Airport.

65. Option 1: Newark Liberty International Airport Refueling System

Vehicles provided with Option 1 shall be equipped with the following components, equipment, and systems as specified herein and all other components and systems to provide the vehicle the capability to perform the aircraft refueling operations as specified in these specifications.

A. Refueling Control System

The aircraft refueling system shall be equipped with independent primary and secondary pressure control systems as described in the paragraph entitled "Digital Refueling System." The refueling system shall be activated and deactivated by an electric deadman control. When the system is activated, the hydrant control line shall open the hydrant pit valve and the coupler control line shall operate the hydrant coupler allowing fuel to flow from the fuel hydrant system through the refueling system in a fail-safe and controlled manner. The refueling control systems shall independently limit the dispensing flow rate and continuously regulate the refueling pressure at all nozzles to the limits as specified below.

The pressure and flow control systems shall be controlled by an electronic operating system to modulate product pressure and limit flow rate. The control systems shall be adjustable and repeatable within ±2 psig in any two consecutive tests, and shall have the following operational requirements and shall limit the fuel pressure and flow rate to the following limits:

1. **Flow Rate Limits**

   - Flow rate shall be limited to 750 GPM when dispensing fuel from any combination of hoses
   - Flow rate shall be limited to 400 GPM when dispensing fuel from any single hose

2. **Pressure Limits:**

   - Fuel pressure shall be limited to 38±2 PSIG measured at a point directly downstream of any nozzle dispensing fuel (aircraft manifold) when the system is controlled by the primary pressure control system
   - Fuel pressure shall be limited to 48±2 PSIG measured at a point directly downstream of any nozzle dispensing fuel (aircraft manifold) when the system is controlled by the secondary pressure control system
   - The secondary pressure control system shall maintain complete control when the primary system becomes inoperative
   - The primary and secondary control systems shall maintain a ±2 psi pressure accuracy at the refueling manifold throughout the flow range (0 to 750 GPM).

3. **Surge Pressure Limits:**

   - Maximum momentary surge pressure shall be limited to 120 PSIG measured at a point directly downstream of any nozzle dispensing fuel (aircraft manifold) during a complete aircraft refueling valve(s) closure (completely stopping fuel flow) made in a timeframe not to exceed 2 second from full open to fully closed when refueling at any flow rate up to the maximum rate of 750 GPM and with any manifold back pressure (aircraft manifold).
   - Maximum momentary surge pressure shall be limited to 100 PSIG measured at a point directly downstream of any

nozzle dispensing fuel (aircraft manifold) during a complete aircraft refueling valve(s) closure (completely stopping fuel flow) made in a timeframe not to exceed 5 seconds from full open to fully closed when refueling at any flow rate up to the maximum rate of 750 GPM and with any manifold back pressure (aircraft manifold).

- Maximum locked-in static pressure immediately after a surge shall be limited to 70 PSIG measured at a point directly downstream of any nozzle dispensing fuel (aircraft manifold).

The primary and secondary systems shall be fully tested and their performance and accuracy when dispensing from any possible combination of nozzles shall be fully checked and documented on test sheets in the Vehicle Tests And Certificates Booklet described in the paragraph entitled "Vehicle Tests And Certificates Documentation."

4. Refueling System Pressure Stability

- The refueling system shall operate in a stable manner within 15 seconds of continuous refueling and the refueling pressure shall not fluctuate greater than ±5 PSIG during startup or during any back pressure fluctuations that occur during a refueling operation.

B. Digital Refueling System

The vehicle shall be equipped with a Carter Digital IV pressure control system that provides independent primary and secondary digital pressure control systems to control refueling system operation as described in the paragraph entitled "Operation Of The Refueling Control System." The complete digital pressure control system and all lines and components shall be rated for the proper working pressure and shall be installed in strict accordance with the manufacturer's requirements and all other requirements as specified herein. The primary and secondary control systems shall each satisfy the following minimum requirements.

1. Primary Digital Pressure Control System

The vehicle shall be equipped with a Carter hydrant pressure control coupler as specified in the paragraph entitled "Hydrant Coupler." The hydrant coupler shall operate as the primary control system that operates and controls the refueling system to modulate

and limit refueling flow rate and pressure independent of the secondary digital pressure control system. The digital hydrant coupler control system shall be connected to the hydrant coupler with a dry quick-connect connector provided on the hydrant coupler hose reel.

2. **Secondary Digital Pressure Control System**

The vehicle shall be equipped with a Carter model 64514AD digital inline control valve. The inline pressure control valve shall operate as the secondary control system that operates and controls the refueling system to modulate and limit refueling flow rate and pressure independent of the primary digital pressure control system. The pressure control valve shall be located in the main fuel line downstream of the filter-separator.

The digital inline control valve shall be a 4 inch valve of aluminum construction with remote sensing, a victaulic fitting on the inlet and a flanged outlet. The valve shall be fast closing enabling it to close readily when a surge pressure signal is sensed (when the aircraft valve closes readily). The valve shall meet the maximum surge pressure limits as stipulated in the paragraph entitled "Operation Of The Refueling Control System." The valve shall be adjusted for opening and closing times so that it operates in a smooth and efficient manner on start-up, during refuelings, and during any shutdowns.

3. **Primary And Secondary Digital Controllers**

The vehicle shall be equipped with digital controllers that operate the primary and secondary systems. The controllers shall be equipped with all programmable routines and adjustments and with all operational indicators to setup and to operate the refueling system to refuel aircraft. The controllers shall handle any combination of refueling hoses at the capacities specified herein and shall comply with the requirements specified in the paragraph entitled "Operation Of The Refueling Control System," with all other requirements specified in ATA Specification 103, NFPA 407, NEMA 4X, IP66 and with all other requirements to operate the system in a fail-safe manner that shuts down the refueling system when a malfunction occurs. The system shall be equipped with a deadman timer system that requires the operator to cycle the deadman control to maintain the refueling system operational. The

deadman timer system shall be capable of being activated or deactivated when the system is setup.

The vendor shall provide three (3) sets of programming software, specific controls, cables, and accessories required to set up the complete operation of the refueling vehicle.

4. **Accumulator Hydrant Control System**

The vehicle shall be equipped with an accumulator that supplies pressurized fuel to the hydrant control system and hydrant coupler control system to initiate and operate the refueling operation. The accumulator shall have a minimum capacity of 2 gallons and shall be charged with nitrogen to the recommended pressure.

The accumulator shall have a minimum rating of 150 PSIG working pressure and 225 PSIG test pressure. All parts of the accumulator that come in contact with the product shall be of non-corrosive material. The accumulator shall be equipped with a ½ inch NPT connection on the top and with a glycerin filled gauge and a fill connection.

The accumulator shall be equipped with a shutoff valve so that it can be removed without draining the refueling system.

5. **Accumulator Charging System**

The accumulator shall be equipped with an automatic fuel charging system that charges and maintains the accumulator charged with fuel at a preset pressure range at all times when the refueling system is operational. Fuel to charge the accumulator shall be supplied from either the filter-separator or the recovery tank. The charging system shall be complete with all switches, valves, lines, and components so that the system is fully automatic and operates in a fail-safe manner. A secondary hand pump shall also be installed for manual backup if the automatic pump fails. The charging system shall be equipped with a relief valve that returns fuel to the recovery tank to protect the system from over pressurization.

The accumulator shall be equipped with an Accumulator Low Pressure Indicator light on the control panel to provide an indication that the accumulator pressure is low to start a refueling operation and requires to be charged.

The accumulator system shall be equipped with a 3-way stainless steel valve that allows the system to be tested by relieving the fuel pressure from the accumulator by discharging the fuel from the accumulator pressure to the recovery tank. The valve shall be equipped with a bracket that allows the valve to be locked in the normal position.

6. **Hydrant Control System**

The vehicle shall be equipped with a hydrant control system that supplies fuel pressure to open the hydrant pit valve when the deadman is activated. The hydrant control system shall include a hydrant control system hose reel as specified in the paragraph entitled "Hydrant Pit Valve Control Hose Reel And Hydrant Coupler Control Hose Reel."

7. **Hydrant Coupler Control System**

The vehicle shall be equipped with a refueling control system that operates the hydrant coupler. All solenoids shall be equipped with viton or low swelling buna seals. The hydrant coupler control system shall include a hydrant coupler control system hose reel as specified in the paragraph entitled "Hydrant Pit Valve Control Hose Reel And Hydrant Coupler Control Hose Reel."

The primary and secondary systems shall be calibrated to sense flow rate and refueling pressure at a point directly downstream of any refueling nozzle (aircraft manifold). The parameters for each system shall be programmable and the refueling flow rate and nozzle pressure limits shall be adjustable. Each system shall provide the refueling system performance and accuracy that meet the requirements as specified in the paragraph entitled "Operation Of The Refueling Control System." All adjustments shall be secured in a tamper-proof manner to prevent unauthorized access to any of the system settings.

The primary and secondary digital pressure control systems shall be equipped with all necessary components required to allow each of the systems to meet the performance requirements when operating in any conditions encountered during refueling including during startup, normal aircraft refueling operations, shutdowns, and any other conditions caused by either the aircraft, the vehicle systems, or the fuel hydrant system. The digital system shall have all necessary routines and/or required adjustments such as rate-of-opening, rate-of-closing, surge control,

maximum flow control, etc. for each operational mode to control and limit the refueling operating parameters when refueling with any practical combination of refueling nozzle(s) regardless of which system is controlling.

C. Digital Pressure Control System Equipment Requirements

The digital pressure control systems shall be equipped with digital displays at the required location for the operator to continuously monitor the refueling pressure and operation, and the controllers enclosed with all wiring connections in a sealed enclosure installed in an easily accessible centralized location on the vehicle to provide ease of maintenance. The digital pressure control system shall meet the following requirements:

1. Digital System Enclosure

The primary and secondary digital refueling system controller module including all associated electrical connections shall be a NEMA 6 (IP67) rated unit installed in an enclosure. The Enclosure and enclosure components shall have the following minimum requirements:

- NEMA 4X (IP66) rated enclosure
- All cables shall enter the enclosure from the bottom of the enclosure and each cable shall be secured and sealed to the enclosure with an adequately sized nylon cable gland cable connector (choke type connector). All cables and connectors shall be UL approved, have a minimum rating of NEMA 6 (IP67), and rated for a minimum temperature range of -20°F to 120°F
- Safety barriers and insulators as required to protect all electrical systems
- Terminal strips and fuses as required
- Grounding post
- Labels for all components, for each cable, and each terminal strip

2. Digital Control System Fuel Components

All components that operate in the refueling system shall be equipped with viton seals. All connections shall be assembled with threaded , victaulic, and/or flanged connections.

3. **Digital System Electrical Components**

All electrical components that operate the refueling system shall be intrinsically safe and meet all NFPA 407, NEMA 4X (IP66), and NEC requirements. All connectors and wiring shall be meet NEMA 4X or IP66 requirements and terminate at each end with NEMA 4X or IP66 connections.

4. **Refueling System Nozzle Pressure Display**

The vehicle shall be equipped with a digital refueling pressure displays that provide a reading of the actual refueling pressure and flow rate directly downstream of any refueling nozzle (aircraft manifold) throughout the refueling flow range of 0 to 750 GPM. The display shall indicate the refueling nozzle pressure and also indicate which system is controlling the refueling nozzle pressure, the primary or secondary pressure control system. Displays shall be provided at the following locations and positioned so that they are readily visible by the operator:

- Elevating refueling platform
- Control panel

The display shall have digits shall a minimum nominal size of 1 inch high digits displaying the aircraft refueling pressure in whole numbers and the reading shall be illuminated to provide visibility in all lighting conditions. The system shall have an indicator to show whether it is displaying primary or secondary information.

5. **Adjustments And Controls**

All system programming connections, switches, valves, regulators, and controls shall be located in a secure lockable location so that they are protected and not accessible by the operators. All controls to perform the setup and periodical test of the system shall be installed in an accessible location for maintenance.

D. **Refueling System Control Hoses**

All control hose on the refueling system shall be capable of handling jet fuel. The hoses shall meet all minimum specification requirements for type of hose, reinforcement, minimum working pressure and burst pressure ratings, etc. as required by the Digital System manufacturer. All hose ends shall be equipped with end couplings as described for each designated hose below for their application.

All refueling hoses shall conform to the above requirements and shall be supplied and properly installed on the following components:

1. **Hydrant Pit Valve Control Hose:**

   A 3/8 inch ID by 50 foot long hose shall be provided and installed on the hydrant pit valve control hose reel. The hose shall have a fuel resistant Buna-N tube and neoprene jacket. The hose shall have a minimum working pressure of 250 PSIG. The hose shall be of a type recommended by the pressure control system manufacturer and it shall be rated for the specified working pressure and handling jet fuel, and, have a durable cover.

   The hose shall have permanently attached couplings with synthetic rubber gaskets. The end of the hose connecting to the reel shall have a female swivel adapter to facilitate replacement and the end of the hose connecting to the hydrant pit valve shall have a Carter model 64230 Actuator quick disconnect.

2. **Primary Pressure Control Hose**

   A 3/8 inch ID by 50 foot long hose shall be provided and installed on the hydrant coupler control hose reel. The hose shall be of a type recommended by the pressure control system manufacturer and it shall be rated for the specified working pressure and handling jet fuel, and, have a durable cover.

   The hose shall have permanently attached couplings with synthetic rubber gaskets. The end of the hose connecting to the reel shall have a female swivel adapter to facilitate replacement and the end of the hose connecting to the hydrant coupler shall have a McMaster-Carr model 54245K42 male dry break quick disconnect.

   The hose shall be equipped with a rubber or polyethylene hose stop, installed approximately 10 inches from the quick disconnect.

E. Hydrant Coupler

The hydrant hose shall be equipped with a Carter model 64804DEFXY2l hydrant pressure control coupler.

The hydrant coupler shall be a 4 inch EI coupler that shall easily mate with the Carter model 61654 or 60554 hydrant pit valve as a push-on

connection. The coupler shall have a 90 degree configuration with a 3 inch NPT female swivel outlet. The coupler shall incorporate a full interlock of the flow control valve handle that operates so that the coupler cannot be opened unless it is fully connected to the hydrant, and so the coupler cannot be disconnected when it is opened. In addition, the coupler shall be equipped with a polyurethane bumper for protection against rough handling and a heavy duty aluminum strap guard to protect the hydrant coupler control line quick disconnect.

The hydrant coupler shall have a minimum operating pressure of 200 PSIG, have pilot operated pressure, excess flow, deadman control, and provide stable pressure control of ±2 PSIG when operating at any flow rate from 50 GPM to 750 GPM. The hydrant coupler's opening time, closing time, flow rate, and other critical adjustments shall be made so that it provides stable control modulation and performance that meets the operating refueling requirements as specified in the paragraph entitled "Operation Of The Refueling Control System."

The hydrant coupler shall be equipped with a McMaster-Carr model 54245K52 female dry break quick disconnect that accepts the quick disconnect on the hydrant coupler control hose. The hydrant coupler control hose shall be connected to the coupler and used to operate and control the hydrant coupler pressure control valve, when the system is activated by the deadman control valve. The hydrant coupler shall be fully adjusted and set so that it is ready for use and operation upon delivery.

66. Option 2: JFK International Airport Refueling System

Vehicles provided with Option 2 shall be equipped with the following components, equipment, and systems as specified herein and all other components and systems to provide the vehicle the capability to perform the aircraft refueling operations as specified in these specifications.

A. Refueling Control System

The aircraft refueling system shall be equipped with independent primary and secondary pressure control systems as described in the paragraph entitled "Digital Refueling System." The refueling system shall be activated and deactivated by an electric deadman control. When the system is activated, the hydrant control line shall open the hydrant pit valve and the coupler control line shall operate the primary control valve, located directly downstream of the hydrant reel, allowing fuel to flow from the fuel hydrant system through the refueling system in a fail-safe and

controlled manner. The refueling control systems shall independently limit the dispensing flow rate and continuously regulate the refueling pressure at all nozzles to the limits as specified below.

The pressure and flow control systems shall be controlled by an electronic operating system to modulate product pressure and limit flow rate. The control systems shall be adjustable and repeatable within ±2 psig in any two consecutive tests, and shall have the following operational requirements and shall limit the fuel pressure and flow rate to the following limits:

1. **Flow Rate Limits**
   - Flow rate shall be limited to 750 GPM when dispensing fuel from any combination of hoses
   - Flow rate shall be limited to 400 GPM when dispensing fuel from any single hose
2. **Pressure Limits:**
   - Fuel pressure shall be limited to 38±2 PSIG measured at a point directly downstream of any nozzle dispensing fuel (aircraft manifold) when the system is controlled by the primary pressure control system
   - Fuel pressure shall be limited to 48±2 PSIG measured at a point directly downstream of any nozzle dispensing fuel (aircraft manifold) when the system is controlled by the secondary pressure control system
   - The secondary pressure control system shall maintain complete control when the primary system becomes inoperative
   - The primary and secondary control systems shall maintain a ±2 psi pressure accuracy at the refueling manifold throughout the flow range (0 to 750 GPM).
3. **Surge Pressure Limits:**
   - Maximum momentary surge pressure shall be limited to 120 PSIG measured at a point directly downstream of any nozzle dispensing fuel (aircraft manifold) during a complete aircraft refueling valve(s) closure (completely stopping fuel flow) made in a timeframe not to exceed 2 second from full open to fully closed when refueling at any

flow rate up to the maximum rate of 750 GPM and with any manifold back pressure (aircraft manifold).

- Maximum momentary surge pressure shall be limited to 100 PSIG measured at a point directly downstream of any nozzle dispensing fuel (aircraft manifold) during a complete aircraft refueling valve(s) closure (completely stopping fuel flow) made in a timeframe not to exceed 5 seconds from full open to fully closed when refueling at any flow rate up to the maximum rate of 750 GPM and with any manifold back pressure (aircraft manifold).
- Maximum locked-in static pressure immediately after a surge shall be limited to 70 PSIG measured at a point directly downstream of any nozzle dispensing fuel (aircraft manifold).

The primary and secondary systems shall be fully tested and their performance and accuracy when dispensing from any possible combination of nozzles shall be fully checked and documented on test sheets in the Vehicle Tests And Certificates Booklet described in the paragraph entitled "Vehicle Tests And Certificates Documentation."

4. Refueling System Pressure Stability

- The refueling system shall operate in a stable manner within 15 seconds of continuous refueling and the refueling pressure shall not fluctuate greater than ±5 PSIG during startup or during any back pressure fluctuations that occur during a refueling operation.

B. Digital Refueling System

The vehicle shall be equipped with a Carter Digital IV pressure control system that provides independent primary and secondary digital pressure control systems to control refueling system operation as described in the paragraph entitled "Operation Of The Refueling Control System." The complete digital pressure control system and all lines and components shall be rated for the proper working pressure and shall be installed in strict accordance with the manufacturer's requirements and all other requirements as specified herein. The primary and secondary control systems shall each satisfy the following minimum requirements.

1. **Primary Digital Pressure Control System**

The vehicle shall be equipped with a Carter model 64514AD digital inline control valve and it shall be designated as the primary pressure control valve. This inline pressure control valve shall operate as the primary control system that operates and controls the refueling system to modulate and limit refueling flow rate and pressure independent of the secondary digital pressure control system. The pressure control valve shall be located in the main fuel line directly downstream of the hydrant reel.

The primary digital inline control valve shall be a 4 inch valve of aluminum construction with remote sensing, a Victaulic fitting on the inlet and a flanged outlet. The valve shall be fast closing enabling it to close readily when a surge pressure signal is sensed (when the aircraft valve closes readily). The valve shall meet the maximum surge pressure limits as stipulated in the paragraph entitled "Operation Of The Refueling Control System." The valve shall be adjusted for opening and closing times so that it operates in a smooth and efficient manner on start-up, during refuelings, and during any shutdowns.

2. **Secondary Digital Pressure Control System**

The vehicle shall be equipped with a Carter model 64514AD digital inline control valve and it shall be designated as the secondary pressure control valve. The inline pressure control valve shall operate as the secondary control system that operates and controls the refueling system to modulate and limit refueling flow rate and pressure independent of the primary digital pressure control system. The pressure control valve shall be located in the main fuel line upstream of the ground refueling reel and platform supply fuel lines.

The digital inline control valve shall be a 4 inch valve of aluminum construction with remote sensing, a victaulic fitting on the inlet and a flanged outlet. The valve shall be fast closing enabling it to close readily when a surge pressure signal is sensed (when the aircraft valve closes readily). The valve shall meet the maximum surge pressure limits as stipulated in the paragraph entitled "Operation Of The Refueling Control System." The valve shall be adjusted for opening and closing times so that it operates in a smooth and efficient manner on start-up, during refuelings, and during any shutdowns.

3. **Primary And Secondary Digital Controllers**

The vehicle shall be equipped with digital controllers that operate the primary and secondary systems. The controllers shall be equipped with all programmable routines and adjustments and with all operational indicators to setup and to operate the refueling system to refuel aircraft. The controllers shall handle any combination of refueling hoses at the capacities specified herein and shall comply with the requirements specified in the paragraph entitled "Operation Of The Refueling Control System," with all other requirements specified in ATA Specification 103, NFPA 407, NEMA 4X, IP66 and with all other requirements to operate the system in a fail-safe manner that shuts down the refueling system when a malfunction occurs. The system shall be equipped with a deadman timer system that requires the operator to cycle the deadman control to maintain the refueling system operational. The deadman timer system shall be capable of being activated or deactivated when the system is setup.

The vendor shall provide three (3) sets of programming software, specific controls, cables, and accessories required to set up the complete operation of the refueling vehicle.

4. **Accumulator Hydrant Control System**

The vehicle shall be equipped with an accumulator that supplies pressurized fuel to the hydrant control system and hydrant coupler control system to initiate and operate the refueling operation. The accumulator shall have a minimum capacity of 2 gallons and shall be charged with nitrogen to the recommended pressure.

The accumulator shall have a minimum rating of 150 PSIG working pressure and 225 PSIG test pressure. All parts of the accumulator that come in contact with the product shall be of non-corrosive material. The accumulator shall be equipped with a ½ inch NPT connection on the top and with a glycerin filled gauge and a fill connection.

The accumulator shall be equipped with a shutoff valve so that it can be removed without draining the refueling system.

5. **Accumulator Charging System**

The accumulator shall be equipped with an automatic fuel charging system that charges and maintains the accumulator charged with fuel at a preset pressure range at all times when the refueling system is operational. Fuel to charge the accumulator shall be supplied from either the filter-separator or the recovery tank. The charging system shall be complete with all switches, valves, lines, and components so that the system is fully automatic and operates in a fail-safe manner. A secondary hand pump shall also be installed for manual backup if the automatic pump fails. The charging system shall be equipped with a relief valve that returns fuel to the recovery tank to protect the system from over pressurization.

The accumulator system shall be equipped with a 3-way stainless steel valve that allows the system to be tested by relieving the fuel pressure from the accumulator by discharging the fuel from the accumulator pressure to the recovery tank. The valve shall be equipped with a bracket that allows the valve to be locked in the normal position.

6. **Hydrant Control System**

The vehicle shall be equipped with a hydrant control system that supplies fuel pressure to open the hydrant pit valve when the deadman is activated. The hydrant control system shall include a hydrant control system hose reel as specified in the paragraph entitled "Hydrant Pit Valve Control Hose Reel And Hydrant Coupler Control Hose Reel."

7. **Pressure Control System**

The vehicle shall be equipped with the required refueling control system that operates the hydrant pit and the primary control system. All solenoids shall be equipped with viton or low swelling buna seals. The hydrant coupler control system shall include a hydrant coupler control system hose reel as specified in the paragraph entitled "Hydrant Pit Valve Control Hose Reel And Primary Pressure Control Hose Reel."

The primary and secondary systems shall be calibrated to sense flow rate and refueling pressure at a point directly downstream of any refueling nozzle (aircraft manifold). The parameters for each system shall be

programmable and the refueling flow rate and nozzle pressure limits shall be adjustable. Each system shall provide the refueling system performance and accuracy that meet the requirements as specified in the paragraph entitled "Operation Of The Refueling Control System." All adjustments shall be secured in a tamper-proof manner to prevent unauthorized access to any of the system settings.

The primary and secondary digital pressure control systems shall be equipped with all necessary components required to allow each of the systems to meet the performance requirements when operating in any conditions encountered during refueling including during startup, normal aircraft refueling operations, shutdowns, and any other conditions caused by either the aircraft, the vehicle systems, or the fuel hydrant system. The digital system shall have all necessary routines and/or required adjustments such as rate-of-opening, rate-of-closing, surge control, maximum flow control, etc. for each operational mode to control and limit the refueling operating parameters when refueling with any practical combination of refueling nozzle(s) regardless of which system is controlling.

C. Digital Pressure Control System Equipment Requirements

The digital pressure control systems shall be equipped with digital displays at the required location for the operator to continuously monitor the refueling pressure and operation, and the controllers enclosed with all wiring connections in a sealed enclosure installed in an easily accessible centralized location on the vehicle to provide ease of maintenance. The digital pressure control system shall meet the following requirements:

1. Digital System Enclosure

The primary and secondary digital refueling system controller module including all associated electrical connections shall be a NEMA 6 (IP67) rated unit installed in an enclosure. The Enclosure and enclosure components shall have the following minimum requirements:

- NEMA 4X (IP66) rated enclosure
- All cables shall enter the enclosure from the bottom of the enclosure and each cable shall be secured and sealed to the enclosure with an adequately sized nylon cable gland cable connector (choke type connector). All cables and connectors shall be UL approved, have a minimum rating

of NEMA 6 (IP67), and rated for a minimum temperature range of -20°F to 120°F

- Safety barriers and insulators as required to protect all electrical systems
- Terminal strips and fuses as required
- Grounding post
- Labels for all components, for each cable, and each terminal strip

2. **Digital Control System Fuel Components**

All components that operate in the refueling system shall be equipped with viton seals. All connections shall be assembled with threaded , victaulic, and/or flanged connections.

3. **Digital System Electrical Components**

All electrical components that operate the refueling system shall be intrinsically safe and meet all NFPA 407, NEMA 4X (IP66), and NEC requirements. All connectors and wiring shall be meet NEMA 4X or IP66 requirements and terminate at each end with NEMA 4X or IP66 connections.

4. **Refueling System Nozzle Pressure Display**

The vehicle shall be equipped with a digital refueling pressure displays that provide a reading of the actual refueling pressure and flow rate directly downstream of any refueling nozzle (aircraft manifold) throughout the refueling flow range of 0 to 750 GPM. The display shall indicate the refueling nozzle pressure and also indicate which system is controlling the refueling nozzle pressure, the primary or secondary pressure control system. Displays shall be provided at the following locations and positioned so that they are readily visible by the operator:

- Elevating refueling platform
- Control panel

The display shall have digits shall a minimum nominal size of 1 inch high digits displaying the aircraft refueling pressure in whole numbers and the reading shall be illuminated to provide visibility in all lighting conditions. The system shall have an indicator to show whether it is displaying primary or secondary information.

5. **Adjustments And Controls**

All system programming connections, switches, valves, regulators, and controls shall be located in a secure lockable location so that they are protected and not accessible by the operators. All controls to perform the setup and periodical test of the system shall be installed in an accessible location for maintenance.

D. Refueling System Control Hoses

All control hose on the refueling system shall be capable of handling jet fuel. The hoses shall meet all minimum specification requirements for type of hose, reinforcement, minimum working pressure and burst pressure ratings, etc. as required by the Digital System manufacturer. All hose ends shall be equipped with end couplings as described for each designated hose below for their application.

All refueling hoses shall conform to the above requirements and shall be supplied and properly installed on the following components:

1. **Hydrant Pit Valve Control Hose:**

A 3/8 inch ID by 50 foot long hose shall be provided and installed on the hydrant pit valve control hose reel. The hose shall have a fuel resistant Buna-N tube and neoprene jacket. The hose shall have a minimum working pressure of 250 PSIG. The hose shall be of a type recommended by the pressure control system manufacturer and it shall be rated for the specified working pressure and handling jet fuel, and, have a durable cover.

The hose shall have permanently attached couplings with synthetic rubber gaskets. The end of the hose connecting to the reel shall have a female swivel adapter to facilitate replacement and the end of the hose connecting to the hydrant pit valve shall have a fixed a Meggitt model F571 quick disconnect socket, properly connected to the refueling system with all required components located on the refueling system and on the quick disconnect socket to operate the hydrant valve completely with fuel that allows the pit valve to open. If the vendor requires any changes to the pit valve to facilitate this operation, it shall make the recommendations to the Engineer and the recommendations shall insure that they have the approval of Meggitt as the pit valve manufacturer and that it also allows the pit valve to be used by existing vehicles that will

continue to also use the pit valve with Fuel/Air system to refuel aircraft.

2. **Primary Pressure Control**

The refueling system shall be equipped with all required components and operating systems to provide the system the ability to automatically operate to open the pit valve and operate the primary pressure control system and the secondary pressure control system as a backup system as required herein.

E. Hydrant Coupler

The hydrant hose shall be equipped with a Meggitt model F211 hydrant coupler. The hydrant coupler shall be a 2½ inch EI coupler that shall easily mate with the Meggitt model F372 hydrant pressure control pit valve as a push-on connection. The coupler shall have a 90 degree elbow with a 3 inch NPT female swivel outlet. The coupler shall incorporate a full interlock of the flow control handle, that operates so that the coupler cannot be opened unless it is fully connected on the hydrant, and the coupler cannot be disconnected when it is opened. The hydrant coupler shall have a minimum operating pressure of 200 PSIG.

APPENDIX A

AUTOMOTIVE PROCUREMENT
STANDARD CONTRACT TERMS AND CONDITIONS

67. Intent

These Contract Terms And Conditions apply to the purchase of the sixty (60) Aircraft Refueling Hydrant Service Vehicles purchased with these specifications.

68. Definitions

Authority or Port Authority:
For the purposes of this agreement, the terms "Authority" or "Port Authority" mean The Port Authority of New York and New Jersey and/or the Port Authority Trans-Hudson Corporation (PATH), as applicable.

Agreement/Contract:
For the purposes of this agreement, the terms "Agreement" and "Contract" can be used interchangeably to mean the agreement entered into by the signatories of this document, and shall consist of the Specifications, this Appendix D, and any other appendices, attachments, exhibits or addenda, as outlined in the section entitled "Entire Agreement".

Contractor/Vendor:
For the purposes of this agreement, the terms "Contractor" and "Vendor" can be used interchangeably to mean the entity entering into this Contract with the Port Authority of New York and New Jersey.

Director:
For the purposes of this agreement, Director means the Director of Procurement of the Port Authority, or successor in duties, acting personally, or her authorized representative.

Engineer:
As used in this agreement, the term "Engineer" means the Manager of the Central Automotive Division of the Port Authority, acting either personally or through his duly authorized representatives acting within the scope of the particular authority vested in them.

Manager:
As used in this agreement, the term "Manager" means the Manager of the Commodities and Services Division of the Port Authority acting either personally or through her duly authorized representatives acting within the scope of the particular authority vested in them.

69. Vendor Requirements

The Vendor must have or be closely associated with an adequate, as determined by the Engineer, service facility staffed by trained and experienced service personnel and a stock of repair parts suitable for a timely response to the Authority's vehicle service requirements. All warranty work that requires more than one half a day (four (4) hours) must be performed at the Vendor's designated repair site. All costs of moving the vehicle to and from this repair site are to be at the Vendor's expense, and included in the warranty. Warranty work that requires less than one half day's work may be performed at the local automotive shop with permission from the shop supervisor, and prior notification and mutually agreeable scheduling. In such instances, Vendor staff must work cooperatively with Port Authority shop personnel in accordance with agency labor agreements.

70. Engineer's Authority

In the performance of the Work hereunder, the Vendor shall conform to all orders, directions and requirements of the Engineer and shall perform the Work hereunder to the satisfaction of the Engineer at such times and places, by such methods and in such manner and sequence as he/she may require, and the Contract shall at all stages be subject to his/her inspection. The Engineer shall determine the amount, quality, acceptability and fitness of all parts of the Work and shall interpret the Specifications and any orders for Extra Work. The Vendor shall employ no equipment, materials, methods or staff or personnel to which the Manager objects. Upon request, the Engineer shall confirm in writing any oral order, direction, requirement or determination.

The Engineer shall have the authority to decide all questions in connection with the Services to be performed hereunder. The exercise by the Engineer of the powers and authorities vested in him/her by this section shall be binding and final upon the Port Authority and the Vendor.

71. General Requirements

The unit and associated equipment shall be furnished complete and ready for use, all as more fully required by the terms of the specifications and in strict accordance therewith.

The unit and all equipment shall be the manufacturer's latest current published stock model(s), which meet the requirements of these specifications. Wherever it is specified that sixty (60%) percent (value) of a vehicle's components and subcomponents are to have been produced in the united states or canada, with final assembly taking place in the united states, the vendor shall not substitute an equivalent make or model vehicle that does not meet such criteria, without prior express written approval by the engineer. The vendor shall submit with its bid all the brochures, drawings, and technical information necessary for a complete product evaluation.

72. Tax Exemptions And Indemnity - Customs Duties

Sales to the Port Authority, as a governmental instrumentality of the states of New York and New Jersey, are exempt from taxation, either state or municipal, in those two states, and also from federal taxation, including excise taxes. Certificate of Registry for tax-free transactions under Chapter 32 of the Internal Revenue Code is No. 13-730079k. The Vendor therefore certifies that there are no such taxes included in the prices quoted herein. The Vendor should retain a copy of this agreement to substantiate the exempt sale. If, however, any sales tax, use tax, or excise tax imposed by congress, by a state or any political sub-division thereof is now or hereafter applicable to the sale of the units to the Port Authority, such taxes will be reimbursed by the Port Authority, subject to the provisions of the tax indemnity below. In addition, the Vendor shall bear all customs duties or imposts and all export duties or imposts, if any, resulting from or in connection with the performance of this agreement.

73. Tax Indemnity

If any claim is made against the Vendor by a governmental Authority for the taxes as stated above, then the Port Authority will reimburse the Vendor in an amount equal to the amount of such tax required to be paid in accordance with the requirements of law, provided that:

The Vendor has complied with such rules and regulations as may have been promulgated relative to the claiming of any exemption from such taxes and has filed all the forms and certificates required by the applicable laws, rules, and regulations in connection therewith; and

The Port Authority is afforded the opportunity, before any payment of tax is made, to contest said claim in the manner and to the extent that the Port Authority may choose and to settle or satisfy said claim, and such attorney as the Port Authority may designate is authorized to act for the purpose of contesting, settling, and satisfying said claim; and

The Vendor gives immediate notice to the Port Authority of any such claim, cooperates with the Port Authority and its designated attorney in contesting said claim and furnishes promptly to the Port Authority and said attorney all information and documents necessary or convenient for contesting said claim.

If the Port Authority elects to contest any such claim, it will bear the expense of such contest.

74. Insurance Procured By The Vendor

The Contractor shall take out, maintain, and pay the premiums on Commercial General Liability Insurance, including but not limited to premises-operations, products-completed operations, and independent contractors coverage, with contractual liability language covering the obligations assumed by the Contractor under this Contract and, if vehicles are to be used to carry out the performance of this Contract, then the Contractor shall also take out, maintain, and pay the premiums on Automobile Liability Insurance covering owned, non-owned, and hired autos in the following minimum limits:

Commercial General Liability Insurance - $2 million combined single limit per occurrence for bodily injury and property damage liability.

Automobile Liability Insurance - $2 million combined single limit per accident for bodily injury and property damage liability.

Garagekeepers' Legal Liability: $200,000 Per location In The Comprehensive Form (Where Applicable)

In addition, the liability policy(ies) shall name The Port Authority of New York & New Jersey, its related entities, their commissioners, directors, officers, partners, employees and agents as additional insured, including but not limited to premises-operations, products-completed operations on the Commercial General Liability Policy. Moreover, the Commercial General Liability Policy shall not contain any provisions for exclusions from liability other than provisions for exclusion from liability forming part of the most up to date ISO form or its equivalent unendorsed Commercial General Liability Policy. The

liability policy(ies) and certificate of insurance shall contain separation of insured conditions and severability of interests clauses for all policies. These insurance requirements shall be in effect for the duration of the contract to include any warrantee/guarantee period and any maintenance period. An act or omission of one of the insureds shall not reduce or void coverage to the other insureds. Furthermore, the Contractor's insurance shall be primary insurance as respects to the above additional insureds. Any insurance or self-insurance maintained by the above additional insureds shall not contribute to any loss or claim

The certificate of insurance and liability policy(ies) must contain the following endorsement for the above liability coverages:

"The insurer(s) shall not, without obtaining the express advance written permission from the General Counsel of the Port Authority, raise any defense involving in any way the jurisdiction of the Tribunal over the person of the Port Authority, the immunity of the Port Authority, its Commissioners, officers, agents or employees, the governmental nature of the Port Authority, or the provisions of any statutes respecting suits against the Port Authority."

The Contractor shall also take out, maintain, and pay premiums on **Workers' Compensation Insurance** in accordance with the requirements of law in the state(s) where work will take place, and Employer's Liability Insurance with limits of not less than $1 million each accident.

Each policy above shall contain a provision that the policy may not be canceled, terminated, or modified without thirty (30) days' prior written notice to the Port Authority of NY and NJ, Att: Facility Contract Administrator, at the location where the work will take place and to the General Manager, Risk Financing.

The Port Authority may at any time during the term of this agreement change or modify the limits and coverages of insurance. Should the modification or change results in an additional premium, The General Manager, Risk Financing for the Port Authority may consider such cost as an out-of-pocket expense.

Within five (5) days after the award of this agreement or contract and prior to the start of work, the Contractor must submit an original certificate of insurance, to the Port Authority of NY and NJ, Facility Contract Administrator, at the location where the work will take place. This certificate of insurance MUST show evidence of the above insurance policy (ies), stating the agreement/contract number prior to the start of work. The General Manager, Risk Financing must approve the certificate(s) of insurance before any work can begin. Upon request

by the Port Authority, the Contractor shall furnish to the General Manager, Risk Financing, a certified copy of each policy, including the premiums.

If at any time the above liability insurance should be canceled, terminated, or modified so that the insurance is not in effect as above required, then, if the Manager shall so direct, the Contractor shall suspend performance of the contract at the premises. If the contract is so suspended, no extension of time shall be due on account thereof. If the contract is not suspended (whether or not because of omission of the Manager to order suspension), then the Authority may, at its option, obtain insurance affording coverage equal to the above required, the cost of such insurance to be payable by the Contractor to the Port Authority.

Renewal certificates of insurance or policies shall be delivered to the Facility Contractor Administrator, Port Authority at least fifteen (15) days prior to the expiration date of each expiring policy. The General Manager, Risk Financing must approve the renewal certificate(s) of insurance before work can resume on the facility. If at any time any of the certificates or policies shall become unsatisfactory to the Port Authority, the Contractor shall promptly obtain a new and satisfactory certificate and policy.

The requirements for insurance procured by the Contractor shall not in any way be construed as a limitation on the nature or extent of the contractual obligations assumed by the Contractor under this contract. The insurance requirements are not a representation by the Authority as to the adequacy of the insurance to protect the Contractor against the obligations imposed on them by law or by this or any other Contract. **[CITS #4478N]**

75. Obligation To Order Vehicle(s)

Upon award of contract, the Contractor shall take all actions necessary to facilitate on-time delivery. The Contractor must submit written proof to the Engineer within 14 days after award of contract that the vehicle(s) have been ordered. This proof shall consist of valid purchase order(s) or factory order and acceptance with production slot information from the factory. Failure of the Vendor to place a valid and binding order within the 14 days, or to ensure that its dealer places a valid and binding order within 14 days, shall be cause for the Authority to cancel the contract without any further obligation to the Vendor.

76. Pre-Manufacturing Meeting

At the Engineer's request, there will be a pre-manufacturing meeting prior to ordering/building the vehicles. It will take place at a Port Authority location and will involve Vendor personnel that are directly involved with vehicle

ordering/manufacturing. At this time, the Vendor shall give the Port Authority the appropriate phone numbers, email and contact person(s) at to enhance the communication during the construction process. At the meeting they will discuss the placement of decals, radios, lights and various other systems that will be installed by the vehicle manufacturer and/or the Port Authority.

77. Title To Units

Upon delivery and payment for each vehicle, all portions of the vehicle and all components installed on the vehicle, which had not previously become Port Authority property under the provisions the section entitled "Final Payment" shall become the property of the Port Authority. The Vendor shall furnish to the Port Authority all such bills of sale and certificates of title or origin and other instruments as may be required, assuring the Authority of title to all materials free of liens and other encumbrances.

78. Payments

After delivery, receipt of an invoice and all other required documents, and acceptance by the Engineer of a unit, the Port Authority will advance to the Vendor within thirty (30) days a payment of an amount equal to the unit price as set forth in the Pricing Sheet. Cost for approved "Changes and Extras" shall be invoiced separately, accompanied by the written approved "Changes and Extras" authorized by the Engineer and subject to any monetary deductions, as determined solely by the Port Authority Engineer.

The invoice and documents required to be submitted for each vehicle are as follows:

The invoice for the delivered vehicle, which shall indicate a full description of the vehicle, the cab-chassis' make and model, the vehicle identification number, and the Port Authority number.

A certificate of origin fully completed transferring title and ownership to the Port Authority of NY & NJ.

Two vehicle tests and certificates booklets as required by the section entitled "Vehicle Tests And Certificates Documentation".

The above invoice and certificate of origin shall serve to pass title of each complete vehicle to the Port Authority, free of liens, third party claims, or any other security interests.

79. Final Payment

The acceptance by the Vendor, or by anyone claiming by or through the Vendor, of the final payment hereunder shall be, and shall operate as, a release to the Port Authority of all claims and of all liability to the Vendor for all things done or furnished in connection with the contract and for every act and neglect, of the Authority or others relating to or arising out of the contract including claims arising out of breach of contract and claims based on claims of third persons.

The Vendor's agreement as provided in the immediately preceding paragraph above shall be deemed to be part of the consideration forming part of this contract as a whole and not to be gratuitous; but in any event even if deemed gratuitous and without consideration, such agreement as provided in the immediate preceding paragraph above shall nevertheless be enforceable. Such release shall include all claims, whether or not in litigation and even though still under consideration by the Authority. Such release shall be effective notwithstanding any purported reservation of rights by the Vendor to preserve such claim. The acceptance of any check designated as "final payment" or bearing any similar designation shall be conclusively presumed to demonstrate the intent of the Vendor that such payment was intended to be accepted as final, with the consequences provided in this numbered clause.

The Vendor agrees that he shall not be entitled to, and hereby waives any right he might otherwise have to, and shall not seek any judgment whether under this contract or otherwise for any such final payment or for an amount equivalent thereto or based thereon, or for any part thereof, if such judgment would have the effect of varying, setting aside, disregarding or making inapplicable the terms of this numbered clause or have the effect in any way of entitling the Vendor to accept such final payment or an amount equivalent thereto or based thereon or any part thereof other than the same fashion as a voluntary acceptance of a final payment subject to all the terms of this contract including this numbered clause, unless and until the Vendor should obtain a judgment on any claim arising out of or in connection with this contract (including a claim based on breach of contract) for an amount not included in said final payment. In any case in which interest is allowable on the amount of the final payment, such interest shall be at the rate of 6% per annum for the period, if any, in which such interest is due.

80. Changes And Extras

The Vendor is required to provide separate materials, supplies, equipment and personnel for Extra Work when such is deemed necessary by the Engineer. "Extra Work" as used herein shall be defined as work which differs from that expressly or impliedly required in the Specifications in their present form.

The Vendor is to supply the amount of materials, supplies, equipment and personnel required by the Engineer within twenty four (24) hours following receipt of written or verbal notice from the Engineer or, in the case of an emergency as determined by the Engineer, within four (4) hours following his receipt of the Engineer's written or oral notification.

Compensation for such Extra Work shall be determined by mutual agreement between the Engineer acting personally and the Vendor. However, should the parties fail to reach such an agreement, the Vendor's compensation shall be increased by the following amounts and such amounts only:

In the case of Extra Work performed by the Vendor itself, an amount equal to the actual net cost in money of (a) labor required for such Extra Work, plus ten percent (10%) of such net cost, (b) materials required for such Extra Work plus five percent (5%) of such net cost, and (c) such rental for equipment (other than small tools) required for such Extra Work as the Engineer deems reasonable.

In the case of Extra Work performed by a subcontractor, an amount equal to the sum of (a), (b) and (c) above, plus an additional five percent (5%) provided that any such Subcontract has been approved, in advance, by the Engineer.

As used in this numbered clause:

"Labor" means laborers and supervisors directly employed at the Site of the Work subject to the Engineer's authority to determine what employees of any category are required for "Extra Work" and as to the portion of their time allotted to Extra Work; and "cost of labor" means the wages actually paid to and received by such employees plus a proper proportion of (a) vacation allowances and union dues and assessments which the employer actually pays pursuant to contractual obligation upon the basis of such wages, and (b) taxes actually paid by the employer pursuant to law upon the basis of such wages. "Employees" as used above means only the employees of one employer.

"Materials" means temporary and consumable materials as well as permanent materials; and "cost of materials" means the price (including taxes actually paid by the Vendor pursuant to law upon the basis of such materials) for which such materials are sold for cash by the manufacturers or producers thereof, or by regular dealers therein, whether or not such materials are purchased directly from the manufacturer, producer or dealer (or if the Vendor is the manufacturer or producer thereof, the reasonable cost to the Vendor of the manufacture and production), plus the reasonable cost of delivering such materials to the Site of the Work in the event that the price paid to the manufacturer, producer or dealer does not include delivery and in case of temporary materials, less their salvage value, if

any. The cost of all Extra Work performed by the Vendor shall not exceed six percent (6%) of the Estimated Total Contract Price of this Contract unless otherwise expressly authorized in writing by the Engineer. These funds shall be used only when necessary and are not routinely spent as part of the Contract.

The Vendor shall submit all reports, records and receipts as are requested by the Engineer so as to enable him to ascertain the time expended in the performance of Extra Work, the quantity of labor and materials used therein and the cost of said labor and materials to the Vendor.

The provisions of this Contract relating generally to Work and its performance shall apply without exception to any Extra Work required and to the performance thereof. Moreover, the provisions of the Specifications relating generally to the Work and its performance shall also apply to any Extra Work required and to the performance thereof, except to the extent that a written order in connection with any particular item of Extra Work may expressly provide otherwise.

81. Times For Performance

The Vendor shall complete the performance of the delivery and acceptance of all of the units, as described in the clause hereof entitled "delivery." The Vendor's obligation for the performance within the times provided for in this agreement is of the essence of this agreement. The Vendor guarantees that he can and will complete such performance within the times hereinbefore stipulated or within the times as extended in accordance with the terms of this agreement.

Inasmuch as the damage and loss to the Authority, resulting from delay in completing the Vendor's performance within the times herein stipulated, will include items of loss whose amounts will be incapable or very difficult to accurately estimate, the damages to the Authority for each calendar day, by which the Vendor does not complete its performance within the times above stipulated, or within such times as extended in accordance with the terms of this agreement, shall be liquidated in the sum of five hundred dollars ($500.00) per calendar day per vehicle for each day (including Saturdays, Sundays, and holidays) that the Vendor fails to meet the final date established for delivery of such vehicle.

82. Intellectual Property

The right to use all patented materials, appliances, processes of manufacture or types of construction, trade and service marks and copyrights, collectively hereinafter referred to as the "intellectual property rights" in the performance of the work shall be obtained by the Vendor without separate or additional compensation. The Vendor shall indemnify the Port Authority against and save it

harmless from all loss and expense incurred as a result of any claims in the nature of intellectual property rights infringement arising out of the Port Authority's use, in accordance with the immediately preceding statement, of any protected intellectual property rights. The Vendor, if requested, shall conduct all negotiations with respect to and defend such claims. If the Port Authority be enjoined either temporarily or permanently from the use of any subject matter as to which the Vendor is to indemnify the Port Authority against infringement, then the Port Authority may, without limiting any other rights it may have, require the Vendor to supply temporary or permanent replacement facilities approved by the Engineer, and if the Vendor fails to do so the Vendor shall, at its expense, remove all such enjoined facilities and refund the cost thereof to the Port Authority or take such steps as may be necessary to insure compliance by the Port Authority with said injunction, to the satisfaction of the Port Authority.

83. Vendor's Warranties

The Vendor represents and warrants:

A. That it is financially solvent, that it is experienced in and competent to perform the requirements of this contract, that the facts stated or shown in any papers submitted or referred to in connection with its proposal are true, and, if the Vendor be a corporation, that it is authorized to perform this contract;

B. That it has carefully examined and analyzed the provisions and requirements of this contract, and that from its own investigations it has satisfied itself as to the nature of all things needed for the performance of this contract, the general and local conditions and all other matters which in any way affect this contract or its performance, and that the time available to it for such examination, analysis, inspection and investigation was adequate;

C. That the contract is feasible of performance in accordance with all its provisions and requirements and that it can and will perform it in strict accordance with such provisions and requirements;

D. That no commissioner, officer, agent, or employee of the Authority is personally interested directly or indirectly in this contract or the compensation to be paid thereunder;

E. That, except only for those representations, statements or promises expressly contained in this contract, no representation, statement or promise, oral or in writing, of any kind whatsoever by the Authority, its commissioners, officers, agents, employees, or consultants has induced the Vendor to enter into this contract or has been relied upon by the Vendor, including any with reference to: (1) the meaning, correctness, suitability, or completeness of any provisions or requirements of this contract; (2) the nature, quantity, quality, or size of the materials, equipment, labor, and

other facilities needed for the performance of this contract; (3) the general or local conditions which may in any way affect this contract or its performance; (4) the price of the contract; or (5) any other matters, whether similar to or different from those referred to in (1) through (4) immediately above, affecting or having any connection with this contract, the bidding thereon, any discussions thereof, the performance thereof or those employed therein or connected or concerned therewith.

84. Rights Of The Port Authority

If the Vendor is guilty of any breach hereof, the Port Authority shall be entitled:

A. To withhold out of monies otherwise due such sums as the Engineer deems necessary to protect it from loss or delay and to apply such sums from the Vendor's account as the Engineer deems best to secure such protection.

B. To have any work completed for the Vendor's account either itself or through others.

C. To cancel this agreement as to all or any part of the uncompleted portion thereof.

D. To obtain specific performance, an injunction or any other appropriate equitable remedy.

E. To money damages

F. To exercise any other appropriate right or remedy at law or in equity.

For the purpose of this agreement, breach shall include, but shall not be limited to, the following, whether or not the time has yet arrived for performance of an obligation under this agreement: a statement by the Vendor to the Authority indicating that it cannot or will not perform any one or more of its obligations under this agreement; any act or omission of the Vendor or any other occurrence which makes it improbable at the time that it will be able to perform any one or more of its obligations under this agreement; any suspension of or failure to proceed with any part of the work by the Vendor which makes it improbable at the time that it will be able to perform any one or more of its obligations under this agreement; any false certification at any time by the Vendor as to any material item certified pursuant to the clauses of Part II hereof (Contractor's Integrity Provisions), or the willful or fraudulent submission of any signed statement pursuant to such clauses which is false in any material respect; or the Vendor's incomplete or inaccurate representation of its status with respect to the circumstances provided for in such clauses.

The enumeration in this numbered clause or elsewhere in this agreement of specific rights and remedies of the Authority shall not be deemed to limit any other rights or remedies which the Authority would have in the absence of such

enumeration or act as a waiver of any other of its rights or remedies not inconsistent therewith or to stop it from exercising such other rights or remedies.

85. Rights Of The Vendor

Inasmuch as the Vendor can be adequately compensated by money damages for any breach of this contract which may be committed by the Authority, the Vendor expressly agrees that no fault, act or omission of the Authority shall constitute a material breach of this contract, entitling him to cancel or rescind it or to suspend or abandon performance.

86. Vendor Not An Agent

This Agreement does not constitute the Vendor the agent or representative of the Port Authority for any purpose whatsoever except as may be specifically provided in this Agreement. It is hereby specifically acknowledged and understood that the Vendor, in performing its services hereunder, is and shall be at all times an independent Vendor and the officers, agents and employees of the Vendor shall not be or be deemed to be agents, servants or employees of the Port Authority.

87. Assignments

The Vendor shall not delegate, assign, or otherwise transfer this contract or any rights or obligations hereunder or any monies due or to become due hereunder without the express written consent of the Port Authority. The Vendor may, however, subcontract portions of the work to be performed provided that the Engineer expressly so permits in writing. No subcontractor shall have any rights against the Port Authority and all subcontractors shall be deemed the Vendor's agents.

No delegation of performance by the Vendor shall relieve the Vendor either of the duty to perform or of any liability for breach.

88. No Estoppel Or Waiver

The Authority shall not be precluded or estopped by any acceptance, certificate or payment, final or otherwise, issued or made under this contract or otherwise issued or made by it, the Engineer, or any officer, agent or employee of the Authority, from showing at any time the true amount and character of work performed, or from showing that any such acceptance, certificate or payment is incorrect or was improperly issued or made; and the Authority shall not be precluded or estopped, notwithstanding any such acceptance, certificate or payment, from recovering from the Vendor any damages which it may sustain by

reason of any failure on his part to comply strictly with this contract, and any moneys which may be paid to him or for his account in excess of those to which he is lawfully entitled.

Neither the acceptance of the work or any part thereof, nor any payment therefore, nor any order or certificate issued under this contract or otherwise issued by the Authority, the Engineer, or any officer, agent or employee of the Authority, nor any permission or direction to continue with the performance of work, nor any performance by the Authority of any of the Vendor's duties or obligations, nor any aid lent to the Vendor by the Authority in his performance of such duties or obligations, nor any other thing done or omitted to be done by the Authority, its commissioners, officers, agents or employees shall be deemed to be a waiver of any provisions of this contract or of any rights or remedies to which the Authority may be entitled because of any breach thereof, excepting only a resolution of its commissioners, providing expressly for such waiver. No cancellation, rescission or annulment hereof, in whole or as to any part of the work, because of any breach hereof, shall be deemed a waiver of any money damages to which the Authority may be entitled because of such breach. Moreover, no waiver by the Authority of any breach of this contract shall be deemed to be a waiver of any other or any subsequent breach.

89. Compliance With Rules And Regulations

The units shall comply with all the latest regulations and provisions of federal, State of New York, and State of New Jersey, ordinances, codes, rules, regulations, orders, permits, and licenses and with fire underwriter's requirements, which would be applicable if the Port Authority were a private corporation and as if these units were for over-the-road use, except that, where the requirements set forth in the specifications are more stringent, those specifications shall control.

In addition, the completed units shall comply with the latest published codes and regulations of the following:

- All applicable requirements set forth in 49CFR
- DOT (Department of Transportation), requirements
- FMVSS (Federal Motor Vehicle Safety Standards)
- Regulations of the States of New York and New Jersey
- ASME (American Society of Mechanical Engineers)
- SAE (Society of Automotive Engineers)
- National Electrical Code
- NFPA (National Fire Protection Association)
- National Fluid Power Association

- Port Authority regulations entitled: "The Port Authority Airport Rules And Regulations." A copy of "The Port Authority Airport Rules And Regulations" may be obtained by calling Aviation Technical Services at (212)435-3696 or a copy may be obtained from the following location:

  Port Authority of NY & NJ
  Aviation Department
  Aviation Technical Services
  225 Park Ave. South, 9th floor
  New York, N.Y. 10003

- All other rules and regulations as required or used in standard industry practices that govern the design for the efficient and proper function of the vehicle

90. Errors And Omissions

If the Vendor discovers any errors or omissions in the specifications, in the drawings or in the work undertaken and executed by him, he shall immediately notify the Engineer and the Engineer shall promptly verify the same. If, with the knowledge of such error or omission and prior to the correction thereof, the Vendor proceeds with any work affected thereby, he shall do so at his own risk, and the work so done shall not be considered as work done under and in performance of this agreement unless and until approved and accepted.

91. Materials And Workmanship

All equipment furnished and the parts thereof shall be the manufacturer's latest listed and published stock models, except where modification is specifically permitted or required. The equipment and parts shall meet all the applicable requirements of the Specifications.

Wherever a particular brand or make or model of material or equipment is shown or specified on the contract drawings or in the specifications (and whether or not the words "or approved equal", "similar", "equal to", or words of similar import are used), (except where specifically stated otherwise) any other brand or make and model may be substituted if, in the sole opinion of the Engineer, the equipment being substituted is equal to that shown or specified. The material or equipment may be substituted only after being submitted in writing to and expressly approved by the Engineer. Notwithstanding such approval, however, the Vendor assumes the risk that the substitute brand or make or model is not equal to that shown or specified. If at any time the substitute shall not appear to be so equal, the Vendor shall replace the substitute and reimburse the Authority for any loss occurring on account of the substitute failing to be so equal. Any such submission shall not imply or impose on the Engineer any obligation

whatsoever to discuss, disclose, or justify the reasons for his opinion, approval, acceptance, or rejection. Furthermore, the acceptance of any other brand or make or model shall not in any way entitle the Vendor to additional compensation therefore, but the Authority may make such reduction in the vendor's compensation as may be equitably warranted because of such acceptance in lieu of the standard.

Whenever it is specified that sixty (60%) percent (value) of a vehicle's components and subcomponents are to have been produced in the United States or Canada, with final assembly taking place in the United States, the Vendor shall not substitute an equivalent make or model vehicle that does not meet that criteria, without prior express written approval of the Engineer.

After acceptance of the Vendor's proposal, no substitutions will be permitted, except that a substitute brand or make or model named in the Specifications may be submitted in writing to the Engineer for his approval.

All materials used shall be new unless otherwise specified. All design, workmanship, and materials shall at all times and places be subject to the inspection of the Engineer. Should they fail to meet his approval, they shall be forthwith made good, replaced, or corrected (as the case may be) by the Vendor at its own expense.

92. Approval By Engineer

The approval by the Engineer of any workmanship, materials, drawings, designs, or details of construction of the unit shall be construed merely to mean that, at that time, the Engineer knows of no good reason for objecting thereto, and no such approval shall release the Vendor from his full responsibility for the satisfactory construction and operation of the unit.

The decision of the Engineer shall be final and binding on the parties as to the quality, acceptability, and fitness of all parts of the unit, as to conformity of the unit with, and as to the interpretation of, the specifications, drawings, and technical requirements of this agreement and as to all questions in connection with the work hereunder.

Whenever the words "approved," "required," "satisfactory," "necessary," "equal," or words of similar import are used in this agreement, they shall mean approved or required by the Engineer and satisfactory, necessary, or equal in the opinion of the Engineer.

93. Vehicle Warranties

The Vendor warrants and guarantees each vehicle against any defects in design, workmanship, and materials and against failure to operate satisfactorily for a minimum period of one (1) year from the date on which the vehicle is placed in-service, other than defects or failures shown by the Vendor to have arisen solely from accident or abuse occurring after acceptance by the Engineer, and agrees to replace any part or parts, which in the opinion of the Engineer shall fail for the above reasons. In addition, if at any time after the above warranty periods any defects arise or are found in the design of the vehicles, the Vendor shall inspect the causes in detail at the Port Authority facility, report its findings to the Engineer, and correct the defects as required and in agreement with the Engineer. All repairs shall be performed within 24-hours of reporting a warranty repair item, and if a longer time is needed because of parts, redesign, or testing, additional time may be granted if the Vendor demonstrates that it is taking every possible step to resolve all issues and submits a letter indicating an estimated completion date. The Vendor shall be responsible for all costs (including parts, labor, vehicle transportation charges, etc.) required to perform any warranty work or to correct any defects. If any warranty work or work required to correct any defects requires transporting the vehicle back to the Vendor's plant or to any other shop, the Vendor shall be responsible for all costs and making the proper arrangements in a timely manner. In addition, after delivery of each vehicle, if the vehicle is to be transported out of the any Port Authority facility, the Vendor shall be fully as responsible for each complete vehicle in his possession as he was prior to its receipt by the Authority and shall provide all vehicle liability insurance as required by the Port Authority, covering the vehicle(s) until re-delivery to and acceptance.

Notwithstanding the specific requirements of this agreement, any inspection or acceptance of the vehicle, the foregoing warranty, or the existence of any patent or trade name, the Vendor nevertheless warrants and represents that the vehicle shall be of the best quality and shall be fully fit for the purposes for which it is to be used. The foregoing warranty shall not, however, be a limitation on any rights, which the Port Authority would have, either expressed or implied, in connection with this agreement in the absence of such guaranty, the said guaranty being given only for the greater assurance of the Port Authority.

In the event of a failure which places the vehicle in an "out of service" status, as determined by the Engineer, the Vendor agrees to perform an inspection within twenty-four (24) hours after the Engineer notifies the Vendor of such failure. Upon determination by the Engineer that the failure is to be repaired by the Vendor under this warranty, the Vendor agrees to either replace the failed component or repair it, the repair of same to commence within twenty-four (24)

hours after the determination of the Engineer. In the event that the component is to be replaced, the Vendor agrees to have the replacement item shipped within twenty-four (24) hours after the Engineer's determination.

94. Availability Of Spare Parts

The Vendor warrants that it shall maintain, or have maintained, a stock of spare parts at inventory levels for the period described in the immediately following paragraph.

The Vendor shall itself, or through a dealer, supply (at prices not in excess of those charged any other owners of vehicles), spare parts required to support the units to be supplied hereunder for ten (10) years from the date of delivery of the last vehicle. These parts shall be available within 72 hours of placement of an order. In order to meet this requirement, the Vendor may maintain a spare parts outlet or contract with a customs broker to expedite the customs clearance of foreign parts. It shall, however, remain the responsibility of the Vendor to meet the 72-hour delivery requirement.

95. Parts Interchangeability:

All components of each unit in this order shall be identical; i.e., alternators, filters, distributors, hydraulic pumps, hydraulic valves, etc.

96. Principles Of Design

These vehicles must be designed for maximum safety, reliability, and ease of operation. Every effort is to be taken by the manufacturer to assure that the principles of human Engineering and ergonomics are designed into the functional controls of the vehicle. Systems on the unit shall incorporate the use of fail-safe design to assure maximum safety while in operation. Adequate redundancy must be built into any system as deemed necessary. Specific applications of these principles will be evidenced in design criteria including:

A. The vehicle weight distribution shall be properly distributed with a laden or unladen vehicle to provide the proper loading on all axles, and provide the vehicle with the proper traction, steering, other driveability factors.

B. All bolts, washers, and nuts used to assemble all structural components and any high fatigue parts shall be Grade 8 with elastic self-locking type nuts. All bolts, washer, and nuts used shall be manufactured in the United States of America.

C. All electronic system wiring shall be properly shielded as required to assure that circuits are not affected by other vehicle systems or any external interferences.

D. All vehicle components and systems shall operate without being affected by interference damage or disruption including detrimental effects or interference to on-board computer modules from either vehicle generated noise, or stray Electromagnetic Frequency ("EMF") or Radiomagnetic Frequency ("RMF") fields encountered from any airport operations. EMF and RMF noise sources that may be generated by the vehicle, especially if such noise is detrimental to aircraft, Air Traffic Control, or air navigation equipment, shall be shielded. In the event a unit is found to create or encounter EMF or RMF problems, the Vendor will be responsible for remedying the problem to the satisfaction of the Authority.

E. All systems shall be designed to allow quick and efficient operation of the unit. Pneumatic, electrical, electronic, hydraulic, and other systems shall be operational within a minimum amount of temperature stabilization, and accumulator or system build-up.

F. All operating controls, light switches, and controls for auxiliary equipment shall be clearly and permanently marked and identified by means of resistant plastic identification plates with recessed lettering of a contrasting color. Should be powered to run with the ignition in a key on position.

G. The use of pilot lights or indicators for all controls or switches.

H. Venting systems for vehicle fuel, coolant, hydraulics, etc., shall not discharge or vent over any equipment, but shall direct such overflows to To a suitable recovery system in order not to cause an environmental spill.

I. All emergency shut-off valves shall be properly identifiable, as to location and operation.

J. All controls shall be immediately identifiable as to the correct positioning by logic of operation or clear indications.

K. All gauges shall be suitably marked as to the intended purpose and shall be easily visible by the operator.

L. All systems requiring servicing shall be equipped with approved self-contained checking devices. The preferred check device for hydraulic system reservoir shall be sight gauges that are clearly marked to show service level and type of fluid. Pressure gauges shall be installed on accumulators, on all other components, or elsewhere as required with easily connectable service ports in close proximity.

M. Diesel engine(s) shall be approved for continuous operation using fuel meeting specifications for No. 1 or No. 2 diesel as set forth in ASTM D-976 combined with 20% Biodiesel meeting specification ASTM D 6751 for Biodiesel fuel. If these fuels require additives or involve restrictions all such requirements, restrictions, and concerns are to be detailed in the

exceptions or deviations section of the bid, and instructions for such additives or instructions shall be detailed in a placard or decal located at the fuel fill location as close to the fill neck as practical.

N. Steps, stairways, ladders walkways handholds, handrails, and used to access the cab, maintenance and operational areas or other parts of the equipment shall conform to the most recent edition of SAE J185 – Access Systems for Off-Road Machines, using the 'preferred' dimensions offered in this standard

97. Accessibility Of Components

All parts of the unit and auxiliary equipment shall be easily accessible for inspection, operation, and maintenance. All electrical components shall be centrally located and enclosed in an airtight weatherproof electrical box. All air system components shall also be centrally located and marked. All components shall be readily removable and replaceable. These features are considered mandatory and the unit will be closely inspected to assure conformance with these requirements.

If, in the opinion of the Engineer, any part or component is not readily accessible, removable, or replaceable, the Engineer may require the Vendor to correct these deficiencies at the Vendor's own expense, before acceptance. Any departure from the requirements of these specifications shall be immediately remedied by the Vendor at his own expense.

98. Marking Of Controls

All operating controls, light switches, and accessory equipment that may be installed on the unit shall be clearly and permanently marked and identified by a metal or oil resistant plastic identification plates with stamped recessed lettering filled with a contrasting color paint. The lettering for the instrument panel controls shall be approximately one-half (1/2) inch high and approximately one (1) inch high for all other locations. The above shall apply to all controls. All switches shall be "on" in the up position.

99. Identification Cards

Each delivered vehicle shall have a 5" x 9" index card affixed to the inside of the windshield. This card shall contain the following information and shall be visible from the outside of the vehicle:

- Vendor's Name
- Purchase Order Number

- Make & Model
- Port Authority Engineer's Name (listed on purchase order)
- Vehicle Identification Number (VIN)

100. Servicing Before Delivery (Make-Ready)

Prior to delivery, each vehicle shall be completely serviced by the Vendor in its shop, including engine tune-ups, lubrication, and wheel alignment. Equipment with water-cooled engines being delivered shall be protected with permanent anti-freeze to a minimum of -40°F. The anti-freeze shall contain corrosion inhibitors. All systems on the unit shall be fully serviced and filled with all required fluids, and be ready for the full in-service operation. A copy of the Vendor's final inspection form shall be forwarded to the Engineer with the invoice.

101. Certificate Of Origin

The Vendor shall submit to the Engineer seven (7) days before delivery of each unit, the certificate of origin for a vehicle. This certificate shall be fully completed so as to enable the transfer of ownership to the Port Authority of NY & NJ.

If the Vendor or the truck dealer is based in the state of New York, the Vendor shall also submit with the above certificate of origin, the New York State Certificate Of Sale, Form MV-50, fully completed.

If the Vendor or the truck dealer is based in the state of New Jersey, the Vendor, in addition to submitting the above certificate of origin, must conform to New Jersey state motor vehicle requirements.
The above document(s) shall be sent to:

The Port Authority of NY & NJ
Port Authority Technical Center
Central Automotive Division
241 Erie Street, Room 307
Jersey City, New Jersey 07310-1397
Attn: Aldo Nuzzolese, Engineer

All licensing documents shall be sent to the above address but shall show the legal address as follows:

The Port Authority of NY & NJ
225 Park Avenue South
New York, NY 10003

102. Deviations

Minor deviations from the provisions of these specifications will be considered, to permit manufacturers to follow their standard manufacturing processes. Whenever it is specified that sixty (60%) percent (value) of a vehicle's components and subcomponents are to have been produced in the United States or Canada, with final assembly taking place in the United States, the Vendor shall not substitute an equivalent make or model vehicle that does not meet that criteria, without requesting such deviation, which shall only be permitted upon prior express written approval of the Engineer.

Such deviations will be approved, however, only in the sole discretion of the Engineer and only if in his opinion they do not adversely affect the operation, maintenance, strength, efficiency, effectiveness, or life of the unit or any of its parts. All proposed deviations, with full details, must be listed on the attached Vendor's detail sheet, which is part of the bid.

There shall be no deviations from the specifications, except those which are listed as deviations and which are expressly approved as part of the Port Authority's acceptance of the Contract. See the clause hereof entitled "Materials and Workmanship".

103. Inspection And Acceptance Testing

Inspection of workmanship, materials, designs, and performance of the unit may be made at the Vendor's factory at the sole discretion of the Engineer.

The Vendor shall provide all expenses for the Engineer, or his designated representative, to inspect the vehicle during-production, at the manufacturer's plant. This inspection is for one (1) person for each inspection. Inspections may be required during the following phases of construction:

- Completion of the chassis at the chassis manufacturer's plant.
- Production inspection of the first truck to review requirements
- Pre-paint inspection of the first truck prior to painting
- Performance Testing and Certifications
- Final Inspection of the vehicle prior to delivery
- Other inspection as may be requested by the Vendor for clarification or direction with respect to serious issues.

The Vendor shall incur all expenses for lodging, meals, and travel, but not for the staff time of agency personnel. If the inspection location is more than 200 miles

one-way, transportation will be via non-stop commercial air carrier at the economy class level, and at the Business Class level for air travel in excess of three hours. Lodging and meals shall be at a minimum of 3 "star" or "diamond" rated establishments and shall include telephone and internet connectivity, breakfast, lunch and dinner. Meal expenses shall not include alcoholic beverages. Other expenses shall include baggage fees, ground transportation to and from the airport, taxi, car service, or rental car for travel to and from the airport and the Vendor's plant and other fair and reasonable incidental expenses. The Engineer or his designated representative shall provide an expense account statement to the Vendor detailing the costs of the inspection trip within 30 days of the trip, including receipts for all expenses exceeding ten dollars ($10), and the Vendor shall reimburse the Engineer or his designated representative for these costs within 10 business days of receipt of the expense account by check payable to the submitter. Expense account may be submitted by original hard copy mail, facsimile or email with scanned receipts.

To prevent penalties to Vendors with manufacturing facilities at greater distances, inspection costs shall be listed separately on the pricing sheet; and, the bid will be evaluated on the actual bid price and not inclusive of the price of inspection costs. In the event serious problems or issues are discovered during the inspection, the Engineer may require additional inspection trip(s) prior to authorizing delivery, and the costs of the additional trip(s) shall also be incurred by the Vendor, but said costs shall not be included in the contract price.

Upon satisfactory completion of the inspection and the acceptance testing, the Engineer will advise the Vendor, in writing, of vehicle acceptance. Any defect or failure to comply with any requirements of these specifications shall be immediately remedied by the Vendor at his own expense prior to retesting of the unit.

104. Quality Control

Critical components and the complete unit must demonstrate compliance with these specifications. The Vendor shall be responsible for assuring the quality control of his suppliers and shall arrange for the required tests, certifications, and for the test location and all equipment required for testing. The Vendor shall notify the Engineer when major components are ready for testing, and the Engineer will decide whether representatives of the Authority will be present at the tests.

The Vendor shall develop and submit for the Engineer's approval test plans covering all tests required to be performed hereunder. All such tests shall be performed in accordance with the approved plans.

If the unit or any component fails a test, the unit or component must be retested when the deficiencies have been corrected. The Engineer may at his sole discretion require extra testing of the failed unit or component or of all units or components to assure that the noncompliance was not the result of a design error or indicative of the inability of the unit or component to withstand the intended service.

The Port Authority shall have the option of witnessing the following specific tests on randomly selected finished vehicles to assure that they meet minimum performance requirement:

A. Vehicle driveability to include vehicle weight distribution, braking, top speed, etc.
B. Interlock and parking brake system
C. Other tests as specified elsewhere in these specifications, required, or as requested by the Engineer.

105. Risks Assumed By The Vendor

The Vendor assumes the following distinct and several risks, whether they arise from acts or omissions (whether negligent or not) of the Vendor, of the Authority, or of third persons, or from any other cause, and whether such risks are within or beyond the control of the Vendor, excepting only risks which arise solely from affirmative acts done by the Authority subsequent to the opening of proposals on this contract with actual and willful intent to cause the loss, damage and injuries described below:

A. The risk of loss or damage to each unit and all its component parts (including parts furnished by the Authority, from the time the Vendor takes possession of such parts), occurring prior to the time the Authority takes title to such unit or occurring subsequent to the transfer of title if such unit is in the possession of the Vendor for the performance of services required hereunder.
B. The risk of claims, fines or penalties, just or unjust, made by third persons or assessed by courts or governmental agencies or entities against the Vendor or the Authority on account of injuries (including wrongful death), loss, damage or liability of any kind whatsoever arising or alleged to arise out of or in connection with the performance of this contract (whether or not actually caused by or resulting from the performance of this contract) or out of or in connection with the Vendor operations or presence at or in the vicinity of any Authority premises, including claims against the Vendor or the Authority for the payment of workers' compensation, whether such claims, fines or penalties are made or assessed and whether

such injuries, damage, loss or liability are sustained at any time both before and after final payment.

The Vendor shall indemnify the Authority against all claims described in subparagraphs (a) and (b) above and for all expenses incurred by it in the defense, settlement or satisfaction thereof, including expenses of attorneys, except where indemnity would be precluded by applicable law. If so directed, the Vendor shall defend against any claim described in subparagraphs (a) and (b) above, in which event it shall not without obtaining express advance permission from the General Counsel of the Authority raise any defense involving in any way jurisdiction of the tribunal, immunity of the Authority, governmental nature of the Authority or the provisions of any statutes respecting suits against the Authority, such defense shall be at the Vendor's cost.

The provisions of this numbered clause shall also be for the benefit of the commissioners, officers, agents and employees of the Authority, so that they shall have all the rights which they would have under this numbered clause if they were named at each place above at which the Authority is named, including a direct right of action against the Vendor to enforce the foregoing indemnity, except, however, that the Authority by action of its board of commissioners may at any time in its sole discretion and without liability on its part cancel the benefit conferred on any of them by this numbered clause, whether or not the occasion for invoking such benefit has already arisen at the time of such cancellation.

The making of final payment shall not release the Vendor from his obligations under this numbered clause. Moreover, neither the enumeration in this numbered clause nor the enumeration elsewhere in this contract of particular risks assumed by the Vendor or of particular claims for which he is responsible shall be deemed (1) to limit the effect of the provisions of this numbered clause or of any other clause of this contract relating to such risks or claims, (2) to imply that he assumes or is responsible for risks or claims only of the type enumerated in this numbered clause or in any other clause of this contract, or (3) to limit the risks which he would assume or the claims for which he would be responsible in the absence of such enumerations.

106. High Security Areas

Services under the Contract may be required in designated secure areas, as the same may be designated by the Manager from time to time ("Secure Areas"). The Port Authority shall require the observance of certain security procedures with respect to Secure Areas, which may include the escort to, at, and/or from said high security areas by security personnel designated by the Contractor or any subcontractor's personnel required to work therein. All personnel that require

access to designated secure areas who are not under positive escort by an authorized individual will be required to undergo background screening and personal identity verification.

Forty-eight (48) hours prior to the proposed performance of any work in a Secure Area, the Vendor shall notify the Manager. The Vendor shall conform to the procedures as may be established by the Manager from time to time and at any time for access to Secure Areas and the escorting of personnel hereunder. Prior to the start of work, the Vendor shall request a description from the Manager of the Secure Areas which will be in effect on the commencement date. The description of Secure Areas may be changed from time to time and at any time by the Manager during the term of the Contract.

107. Notification of Security Requirements

The Authority has the responsibility of ensuring safe, reliable and secure transportation facilities, systems, and projects to maintain the well-being and economic competitiveness of the region. Therefore, the Authority reserves the right to deny access to certain documents, sensitive security construction sites and facilities (including rental spaces) to any person that declines to abide by Port Authority security procedures and protocols, any person with a criminal record with respect to certain crimes or who may otherwise poses a threat to the construction site or facility security. The Authority reserves the right to impose multiple layers of security requirements on the Contractor, its staff and subcontractors and their staffs depending upon the level of security required, or may make any amendments with respect to such requirements as determined by the Authority.

These security requirements may include but are not limited to the following:

- Contractor / Subcontractor Identity Checks And Background Screening

  The Port Authority's designated background screening provider may require inspection of not less than two forms of valid/current government issued identification (at least one having an official photograph) to verify staff's name and residence; screening federal, state, and/or local criminal justice agency information databases and files; screening of any terrorist identification files; access identification to include some form of biometric security methodology such as fingerprint, facial or iris scanning, or the like.

  The Contractor may be required to have its staff, and any subcontractor's staff, material-men, visitors or others over whom the Contractor/subcontractor has control, authorize the Authority or its designee to perform background checks, and a personal identity

verification check. Such authorization shall be in a form acceptable to the Authority. The Contractor and subcontractors may also be required to use an organization designated by the Authority to perform the background checks.

As of January 29, 2007, the Secure Worker Access Consortium (S.W.A.C.) is the only Port Authority approved provider to be used to conduct background screening and personal identity verification, except as otherwise required by federal law and/or regulation (such as the Transportation Worker Identification Credential for personnel performing in secure areas at Maritime facilities). Information about S.W.A.C., instructions, corporate enrollment, online applications, and location of processing centers can be found at http://www.secureworker.com, or S.W.A.C. may be contacted directly at (877) 522-7922 for more information and the latest pricing. The cost for said background checks for staff that pass and are granted a credential shall be reimbursable to the Contractor (and its subcontractors) as an out-of-pocket expense as provided herein. Staff that are rejected for a credential for any reason are not reimbursable.

- Issuance of Photo Identification Credential

No person will be permitted on or about the Authority construction site or facility (including rental spaces) without a facility-specific photo identification credential approved by the Authority. If the authority requires facility-specific identification credential for the Contractor's and the subcontractor's staff, the Authority will supply such identification at no cost to the Contractor or its subcontractors. Such facility-specific identification credential shall remain the property of the Authority and shall be returned to the Authority at the completion or upon request prior to completion of the individual's assignment at the specific facility. It is the responsibility of the appropriate Contractor or subcontractor to immediately report to the Authority the loss of any staff member's individual facility-specific identification credential. The Contractor or subcontractor shall be billed for the cost of the replacement identification credential. Contractor's and subcontractor's staff shall display Identification badges in a conspicuous and clearly visible manner, when entering, working or leaving an Authority construction site or facility.

Employees may be required to produce not less than two forms of valid/current government issued identification having an official photograph and an original, unlaminated social security card for identify and SSN verification. Where applicable, for sensitive security construction sites or facilities, successful completion of the application, screening and identify verification for all employees of the Contractor and

subcontractors shall be completed prior to being provided a S.W.A.C. ID Photo Identification credential.

- Access Control, Inspection, And Monitoring By Security Guards

  The Authority may provide for Authority construction site or facility (including rental spaces) access control, inspection and monitoring by Port Authority Police or Authority retained contractor security guards. However, this provision shall not relieve the Contractor of its responsibility to secure its equipment and work and that of its subconsultant/subcontractor's and service suppliers at the Authority construction site or facility (including rental spaces). In addition, the Contractor, subcontractor or service provider is not permitted to take photographs, digital images, electronic copying and/or electronic transmission or video recordings or make sketches on any other medium at the Authority construction sites or facilities (including rental spaces), except when necessary to perform the Work under this Contract, without prior written permission from the Authority. Upon request, any photograph, digital images, video recording or sketches made of the Authority construction site or facility shall be submitted to the Authority to determine compliance with this paragraph, which submission shall be conclusive and binding on the submitting entity.

- Compliance with the Port Authority Information Security Handbook

  The Contract may require access to Port Authority information considered Confidential Information ("CI") as defined in the Port Authority Information Security Handbook ("Handbook"), dated October, 2008, corrected as of February, 2009, and as may be further amended. The Handbook and its requirements are hereby incorporated into this agreement and will govern the possession, distribution and use of CI if at any point during the lifecycle of the project or solicitation it becomes necessary for the Contractor to have access to CI. Protecting sensitive information requires the application of uniform safeguarding measures to prevent unauthorized disclosure and to control any authorized disclosure of this information within the Port Authority or when released by the Port Authority to outside entities. The following is an outline of some of the procedures, obligations and directives contained in the Handbook:

  (1) require that the Contractor and subcontractors, when appropriate, sign Non-Disclosure Agreements (NDAs), or an Acknowledgment of an existing NDA, provided by the Authority as a condition of being granted access to Confidential Information categorized and protected as per the Handbook;

(2) require that individuals needing access to CI be required to undergo a background check, pursuant to the process and requirements noted in § 3.2 of the Information Security Handbook.
(3) require Contractors and commercial enterprises to attend training to ensure security awareness regarding Port Authority information;
(4) specific guidelines and requirements for the handling of CI to ensure that the storage and protection of CI;
(5) restrictions on the transfer, shipping, and mailing of CI information;
(6) prohibitions on the publication, posting, modifying, copying, reproducing, republishing, uploading, transmitting, or distributing CI on websites or web pages. This may also include restricting persons, who either have not passed a pre-screening background check, or who have not been granted access to CI, from viewing such information;
(7) require that CI be destroyed using certain methods, measures or technology pursuant to the requirements set forth in the Handbook;
(8) require the Contractor to mandate that each of its subcontractors maintain the same levels of security required of the Contractor under any Port Authority awarded contract.
(9) prohibit the publication, exchange or dissemination of CI developed from the project or contained in reports, except between Contractors and subcontractors, without prior approval of the Port Authority;
(10) require that CI only be reproduced or copied pursuant to the requirements set forth in the Handbook.

- Audits for Compliance with Security Requirements

  The Port Authority may conduct random or scheduled examinations of business practices under this section entitled "NOTIFICATION OF SECURITY REQUIREMENTS" and the Handbook in order to assess the extent of compliance with security requirements, Confidential Information procedures, protocols and practices, which may include, but not be limited to, verification of background check status, confirmation of completion of specified training, and/or a site visit to view material storage locations and protocols.

108. Equal Employment Opportunity, Affirmative Action, Non-Discrimination

A. The Vendor is advised to ascertain and comply with all applicable federal, State and local statutes, ordinances, rules and regulations and, federal

Executive Orders, pertaining to equal employment opportunity, affirmative action, and non-discrimination in employment.

B. Without limiting the generality of any other term or provision of this Contract, in the event of the Vendor's non-compliance with the equal opportunity and non-discrimination clause of this Contract, or with any of such statutes, ordinances, rules, regulations or Orders, this Contract may be cancelled, terminated or suspended in whole or in part.

109. Shipment

The Vendor shall ship the units under bills of lading designating the consignee as the Port Authority of New York and New Jersey, c/o Vendor, said bills of lading to provide that the Vendor will pay the insurance and freight charges, and the Port Authority will be the named insured on said insurance but risk of loss or damage until delivery shall be the Vendor's. In such case, the Vendor's obligations under the clause entitled "Risks Assumed by the Vendor" shall not be impaired.

If the Vendor's plant is located more than four hundred (400) miles from the designated delivery point, the Vendor shall ship the unit(s) by railroad or flatbed truck and the Vendor's obligations under the clauses entitled, "delivery" and "risks assumed by the Vendor" shall not be impaired.

If the Vendor's plant is more than four hundred (400) miles from the designated delivery point, at the Vendors request the Engineer may approve over-the-road transportation of the completed unit to the Port Authority, with an associated cost savings. In all such instances, the Vendor must utilize his own drivers, or the services of a licensed and bonded driveaway service having a Federal Motor Carrier Safety Administration rating of not less than "Satisfactory". In addition, his driver or the driveaway service must be specifically instructed, in writing, with copies provided to the Engineer prior to approval, as to all truck chassis, power train, tire, and other manufacturer's restrictions on speed, fuel, continuous hours of operation, and any other 'break-in' or operational restrictions. A driver's log and receipts shall be provided demonstrating compliance with the above stated restrictions. Finally, the vehicle must be cleaned, fueled, and prepared in accordance with requirements of this contract after transportation and prior to delivery to the Port Authority.

110. No Third Party Rights

Nothing contained in this agreement is intended for the benefit of third persons except to the extent that this agreement specifically provides otherwise by use of the words "benefit" or "direct right of action."

111. Production Plan

After the opening of proposals and within ten working days of receipt of request, the bidder shall submit to the Engineer:

A. A detailed production plan for the manufacture and completion each vehicle. The plan shall include the delivery of major components to be acquired, production start and completion dates, test completion date, and delivery date for each vehicle, based on an award date of 120 days after the date of the opening of the bid. The plan shall include a Program Evaluation and Review Technique (PERT) or Critical Path Method (CPM) chart and any other items requested by the Engineer.

B. A sample drawings and schematics of a manufacturer's production model similar to the vehicle described in the specifications.

C. A spreadsheet listing vehicle completion, delivery, and in-service schedule, based on paragraph "A" above.

112. Delivery

The Vendor shall deliver the vehicles to the delivery locations indicated in Appendix D entitled "Delivery Locations For Vehicles, Manuals, & Training."

The Vendor shall deliver the first four (4) vehicles complete and ready for service, within 210 calendar days after receipt, by it, of the acceptance of its proposal, two (2) vehicles at Newark Liberty International Airport and two (2) vehicles at JFK International Airport. The operation of each of the vehicles shall be closely monitored for a minimum period of thirty (30) calendar days after the Engineer's acceptance the delivery of any other vehicles, and the Vendor shall make all adjustments, corrections, etc. as required for the satisfactory operation of all units. All identical corrections shall be performed to all vehicles. The Vendor shall deliver the remaining vehicles, making deliveries of four (4) vehicles at a time, at intervals not to exceed thirty (30) calendar days, commencing thirty (30) days after the Engineer's acceptance of the first four (4) vehicles first completing the delivery of all twenty (20) vehicles at Newark Liberty International Airport, then completing the delivery of all forty-three (43) vehicles at JFK International Airport.

The Vendor shall develop and maintain a weekly updated manufacturing and delivery schedule. Upon request, the Vendor shall submit to the Engineer, within two (2) days of the request, a copy of the updated manufacturing and delivery schedules.

The vehicles shall be shipped for sidewalk delivery to the location(s) indicated in the table at the end of this Appendix. Sidewalk delivery is defined as the Vendor's responsibility for removing the vehicles from the truck and placement onto the ground at a location designated by receiving personnel.

Vehicles shipped by other than the Vendor's own truck shall not abrogate this responsibility. The Port Authority shall not be responsible for re-delivery charges as a result of failure to comply with this clause. Port Authority personnel will not be available to assist in off-loading vehicles.

The Vendor shall notify the Engineer of delivery, at least three (3) working days in advance. The deliveries shall be made to the location(s) indicated in the table at the end of this appendix.

All deliveries shall be made during the hours of 9:00 am to 2:00 pm Monday through Friday excluding holidays celebrated in the state of delivery. The equipment shall be deemed to have been delivered only if it is complete and in readiness for use and if it meets with the acceptance of the Engineer as elsewhere provided in this agreement. The times above-provided for delivery may be extended (subject, however, to the provisions of this numbered clause) only if in the opinion of the Engineer the Vendor is necessarily delayed in delivery solely and directly by a cause which meets both of the following conditions:

A. Such cause is beyond the Vendor's control and arises without his fault.
B. Such cause arises after the opening of proposals on this agreement and neither was, not could have been, anticipated by investigation before such opening.

The Vendor shall provide the above conditions in writing and shall have an approval by the Engineer in writing. In any event, even though a cause of delay meets the above conditions, an extension shall be granted by the Engineer only to the extent that:

C. The delivery is actually and necessarily delayed.
D. The effect of such cause cannot be anticipated and avoided or mitigated by the exercise of all reasonable precautions, efforts, and measures (including planning, scheduling, and re-scheduling) whether before or after the occurrence of the cause of delay.

Notwithstanding the above, no extension of time shall be granted for a delay which would not have affected the time of delivery were it not for the fault of the Vendor or for other delay for which the Vendor is not entitled to an extension of time.

Any reference herein to the Vendor shall be deemed to include subcontractors and materialmen, whether or not in privity of contract with the Vendor, and employees of all the foregoing. Therefore, the Vendor shall be charged with a delay caused by a subcontractor, materialmen or their employees.

The period of any extension of time shall be that necessary to make up the time actually lost, subject to the provisions of this numbered clause, and shall be only for those units actually delayed. The Engineer may defer all or part of his decision on an extension, and any extension may be rescinded or shortened if it subsequently is found that the delay can be overcome or reduced by the exercise of reasonable precautions, efforts, and measures.

As a condition precedent for an extension of time, the Vendor shall give written notice to the Engineer within forty-eight hours after the time when he knows or should know of a cause which might under any circumstances result in delay for which he claims or may claim an extension of time (including those causes for which the Authority is responsible or has knowledge of). The written notice shall specifically state that an extension is or may be claimed and shall identify such cause and describe, as fully as practicable at the time, the nature and expected duration of the delay and its effect on the delivery of various units. Since the possible necessity for an extension of time may materially alter the scheduling, plans, and other actions of the Authority, and since, with sufficient opportunity, the Authority might, if it so elects, attempt to mitigate the effect of a delay for which an extension of time might be claimed, and since merely oral notice may cause disputes as to the existence or substance thereof, the giving of written notice as above required shall be of the essence of the obligations of the Vendor, and failure of the Vendor to give written notice as above required shall be a conclusive waiver of an extension of time.

It shall in all cases be presumed that no extension, or further extension, of time is due unless the Vendor shall affirmatively demonstrate to the satisfaction of the Engineer that it is due. To this end, the Vendor shall maintain adequate records supporting any claim for an extension of time and, in the absence of such records, the foregoing presumption shall be deemed conclusive.

It is the intent of this agreement that the Vendor shall assume the responsibility for manufacturing the units in a manner acceptable to the Engineer and, consequently, no disapproval by the Engineer of any drawings submitted by the Vendor or of any other act or omission of the Vendor shall be cause for an extension of time.

The Vendor assumes the risk of damages due to delay arising from any acts and causes whatsoever, including, but not limited to, wrongful acts and omissions of

the Authority, its officers, employees, Vendors, and agents, and its sole remedy against the Authority shall be an extension of time as set forth herein.

113. Drawings, Schematics, And Functionality Charts

Within six (6) weeks after acceptance of its bid, the Vendor shall deliver to the Engineer for approval complete and fully detailed and dimensioned drawings in triplicate showing how it proposes to construct the complete unit with all equipment, the pumping system, the weight distribution of the complete unit both loaded and unloaded, and any other drawings, sketches and calculations requested by the Engineer. These drawings shall show the size and exact location of all principal parts as well as the method of mounting and other data necessary or desirable to provide complete information on what the Vendor proposes to furnish.

The Engineer will approve the drawings or require additions or corrections to be made therein, returning a copy of those drawings on which additions or corrections are required. The Vendor shall promptly make the required additions and corrections and resubmit such drawings within ten (10) days of their return to the Vendor in triplicate to the Engineer for his approval. Each unit as finally furnished and delivered shall be in strict accordance with the drawings as finally approved. Any work performed by the Vendor before approval of the drawings relating to such work shall be at the Vendor's risk and the work so done shall not be considered as work done under and in performance of this agreement unless and until approved and accepted by the Engineer.

All drawings, parts lists, data, and other papers of any type whatsoever, whether in the form of writing, figures, or delineations, which are prepared in connection with this agreement and submitted to the Authority, shall become the property of the Authority, except to the extent that rights are reserved to others under existing valid patents and are not given the Authority under the clause hereof entitled "intellectual property". Subject to the above, the Authority shall have the right to use or permit the use of all such drawings, data, and other papers, and any oral information received by the Authority, any ideas or methods represented by such papers and information for any purpose and at any time, without other compensation than that specifically provided herein. No such papers or information shall be deemed to have been given in confidence, and any statement and/or legend to the contrary on any of the said drawings, data, or other papers shall be void and of no effect.

The Vendor's drawings shall include but not be limited to the following:

A. General layout of the complete unit, showing all dimensions of the general configuration, position of the major components, turning clearances, weight distribution (laden and unladen), and the location of the vehicle's center of gravity.

B. Schematic of the following systems, showing all components with full make and part numbers (manufacturer's specification data shall be submitted with drawings): color coded for Identification of systems

- Electrical and electronic system(s)
- Pneumatic System(s)
- Hydraulic System(s)
- Functionality chart showing detailed operation of all systems in all modes of operation

C. Any other drawings, schematics, charts, etc. As requested by the Engineer.

114. Approval By Engineer

The approval by the Engineer of any workmanship, materials, drawings, designs, or details of construction of the unit shall be construed merely to mean that, at that time, the Engineer knows of no good reason for objecting thereto, and no such approval shall release the Vendor from his full responsibility for the satisfactory construction and operation of the unit.

The decision of the Engineer shall be final and binding on the parties as to the quality, acceptability, and fitness of all parts of the unit, as to conformity of the unit with, and as to the interpretation of, the specifications, drawings, and technical requirements of this agreement and as to all questions in connection with the work hereunder.

Whenever the words "approved," "required," "satisfactory," "necessary," "equal," or words of similar import are used in this agreement, they shall mean approved or required by the Engineer and satisfactory, necessary, or equal in the opinion of the Engineer.

115. Operation, Maintenance,Repair Data And Propriatary Diagnostic Equipment And Programs

The Vendor shall provide operations, parts and service manuals. The manuals shall cover the diagnosis and repair of all vehicle systems, specifically including, chassis, powertrain, wiring, emissions, vocational equipment, and all subsystems and components. Manuals shall be provided electronically on cd-roms, and if cd-

roms are not available, on microfiche, or as bound "hard" copies if not available electronically. All paper manuals shall be bound and assembled. Manuals are to be shipped per delivery instructions (see attached appendix). Do not ship the manuals with the unit.

The operating and maintenance or shop manual shall be the latest manufacturer's handbook, covering in detail the recommended operating, maintenance, and service procedures.

The repair or shop manual shall include detail drawings, schematic electric and hydraulic or other piping diagrams, and complete parts lists for all components of the unit and associated equipment furnished. The Vendor shall include a complete set of shop drawings as part of each shop manual.

Where components or equipment of several manufacturers have been used in assembling the unit, the manuals shall include operating, maintenance, and repair manuals and parts lists of all manufacturers, covering all of the components used.

Where the Vendor or manufacturer uses components manufactured by others in building equipment which it sells under its own trade name, the Vendor shall furnish the parts numbers and full data from the original manufacturers for all components used, as well as the part numbers it may assign to these components as being parts of its product.

In addition to the manuals, all proprietary diagnostic tools, equipment, software and programs (soly provided by the manufacturer and not available as an aftermarket product) shall be provided as recommended by the manufacturer for diagnostics and maintenance of the unit(s). When such diagnostic tools, equipment, software and programs require updating, maintenance contracts, or subscriptions, the Vendor will offer such services to the Port Authoity as though the Port Authority was a dealer or distributer, at dealer or distributer pricing, for as long as the vehicles are owned by the Port Authority.

The manuals diagnostic tools, equipment, software and programs shall be furnished in sets. Each set shall include an operator's manual, parts catalog, shop repair manual, and diagnostic tools, equipment, software and programs.

The total number of sets of manuals diagnostic tools, equipment, software and programs furnished under these specifications shall be as follows:

Required Manuals:	Four (4) complete sets of manuals shall be delivered to each location as listed in Appendix D entitled

"Delivery Locations For Vehicles, Manuals, & Training in Appendix E."

All manuals shall be in the English language. All dimensions, measurements, and other pertinent data shall be given in U.S. Standard units (i.e., inches, pounds, etc.). (foreign language terms and metric measurements shall not be accepted.)

All technical support documentation diagnostic tools, equipment, software and programs required by this section shall be delivered at least two weeks prior to the delivery of the first unit. In the event the manuals diagnostic tools, equipment, software and programs are not delivered as specified above, a retainage amount of 10% will be held by the Port Authority from any payments due under the clause entitled "Final Payments", and will be held until such time that all of the required documentation has been received to the satisfaction of the engineer.

The Vendor shall send Parts & Service Manuals diagnostic tools, equipment, software and programs directly to the Port Authority Automotive Shops, as designated at the end of this section. Vendors shall send to the engineer receipts of delivery from each shop, to expedite payment release.

The manuals diagnostic tools, equipment, software and programs shall be shipped separately and not with the vehicles. Final payment will not be released prior to receipt of these materials.

116. Preventive Maintenance Instructions

In addition to the manuals specified above, the Vendor shall furnish an equal number of condensed preventive maintenance frequency and instructions for each preventative maintenance routine required for the unit. These frequencies and instructions shall consist of manufacturer's recommendations for periodic lubrication, cleaning, and other preventive maintenance, and shall be made up in a compact form to cover the particular unit delivered. The Preventative Maintenance Instructions must include a listing of all part numbers and part descriptions necessary to perform the specific preventative maintenance task such as filter descriptions and part numbers, special tools needed to perform the task, and replacement fluid specifications and quantities.

117. Training

The vendor shall provide training sessions as listed below on the operation, maintenance, repair, troubleshooting, and inspection of the vehicles. The training listed below shall be performed at Newark Liberty International Airport and also

at JFK International Airport at the locations listed in Appendix E entitled "Vehicles, Manuals, & Training."
The vendor shall provide a minimum training as follows:

A. After delivery of the first two (2) vehicles and prior to placing the two (2) vehicles both in-service at Newark Liberty International Airport and also at JFK International Airport:

- Operator Training: Four (4) separate four (4) hours of training sessions at Newark Liberty International Airport and also at JFK International Airport at the locations listed in Appendix E entitled "Vehicles, Manuals, & Training."
- Maintenance Training: Four (4) separate four (4) hours of training sessions at Newark Liberty International Airport and also at JFK International Airport at the locations listed in Appendix E entitled "Vehicles, Manuals, & Training."

B. After delivery of the last vehicle and placing the last vehicle in-service at Newark Liberty International Airport and also at JFK International Airport:

- Maintenance Training: Four (4) separate four (4) hours of training sessions at Newark Liberty International Airport and also at JFK International Airport at the locations listed in Appendix E entitled "Vehicles, Manuals, & Training."

All training sessions shall be performed at each Airport at a time as designated by the Engineer and as listed above. The Engineer shall designate the times when all training sessions will be conducted to cover all shifts that cover 24 hour / 7 day operation at each Airport.

Prior to performing the training, the Vendor shall prepare the complete training curriculum and send it to the Engineer for approval, ten (10) days prior to the delivery of the units.

The Port Authority shall designate when the session will be conducted, and will provide classrooms and/or shop space for the training. The instructor must speak and write in English.

118. Delivery Locations For Vehicles And Manuals

The Vendor shall deliver vehicle(s) and parts and service manuals directly to the locations as designated in Appendix D entitled "Delivery Locations For Vehicles, Manuals, & Training."

119. Right To Purchase Additional Unit(s)

As used in this clause:

"Model Year" shall mean the vehicle model year of the manufacturer of the vehicles ending on the production cut-off date for the vehicles. In the event there is no defined model year or production cut-off date for the vehicles, then for purposes of this numbered clause "model year" shall mean the period commencing on the date of the Port Authority's acceptance of the Vendor's bid and ending on the three hundred sixty-fifth (365th) day thereafter.

"Initial Model Year" shall mean the model year applicable on the Port Authority's date of acceptance of the Vendor's bid.

"Subsequent Model Years" shall mean the three (3) consecutive annual periods immediately following the initial model year.

Initial model year: By written notice from the Director or a duly authorized representative to the Vendor given at any time during the initial model year, the Port Authority shall have the right, but not the obligation, to purchase from the Vendor additional unit(s) of initial model year vehicles originally purchased hereunder at the same unit prices, conforming to the same specifications, and upon the same terms and conditions as contained herein with respect to such vehicles.

Subsequent model years: For up to three subsequent model years, by written notice from the Director or a duly authorized representative to the Vendor, the Port Authority shall have the further right, but not the obligation, to purchase from the Vendor additional unit(s) of vehicle(s) originally purchased hereunder but of subsequent model years at the same unit prices but as adjusted as set forth below, conforming to the same specifications, and upon the same terms and conditions as amended by the following:

A. If price changes are in effect for such vehicles during the subsequent model years, the Vendor may, within ten (10) days following the receipt of the Port Authority's notice of exercise of this option, submit a request to

the Port Authority for the application of price changes to the additional unit(s) proposed to be purchased.

B. All such requests must include an appropriate explanation and justification for such price changes, including the published price lists for the vehicles and their components in effect at the time of the Vendors original bid hereunder, the equivalent published price lists for the vehicles and their components in effect at the time of the Port Authority's notice, and any additional evidence which the Port Authority deems necessary for its evaluation of the Vendor's request for the price changes.

C. No price changes shall exceed the change in the price calculated utilizing the Consumer Price Index – All Urban Customers (CPI-U); Series ID: CUURA101SA0L2; Not Seasonally Adjusted; Area: New York – Northern New Jersey – Long Island, NY-NJ-CT-PA; Item: All Items Less Shelter; Base Period: 1982-84=100, published by the Bureau Of Labor Statistics of the United States Department Of Labor (herein called the "Price Index").

D. The Vendor shall include all backup materials and calculations with the request for increased pricing.

E. Specifically, the requested price adjustment may not exceed the percentage change in the consumer price index by using as the numerator the index three months prior to the most recent anniversary of the contract, and as the denominator the said index three months prior to the commencement of the contract. This adjustment limitation shall apply for each subsequent model year. The new prices shall remain constant for all subsequent purchases made in the same model year. In the event the said index is no longer published or its basis is changed, the parties shall in good faith choose a substitute index or agree on another basis for escalation.

Notwithstanding the above terms and conditions, within sixty (60) days following its receipt of the foregoing submission of the price adjustment request, the Port Authority shall have the right, in its sole discretion, to reject the price changes and withdraw its offer to purchase the additional unit(s). The rejection of the Vendor's request for price changes shall be in writing.

Nothing in this numbered clause shall be construed to obligate the Port Authority to purchase any additional unit(s) of vehicle(s), or any minimum number of additional unit(s) of vehicle(s), from the Vendor, or to preclude the Port Authority from purchasing any additional vehicles from any other source whatsoever using such procurement methods as it may in its sole discretion deem appropriate to best serve the public interest.

The Vendor represents that the last day on which orders may be placed for the model year currently in effect is:

_____/_____/_____
(date to be inserted by Vendor)

Acknowledged for Vendor:

By: _____

Title: _____

Date: _____

120. Confidential Information/Non-Publication

A. As used herein, confidential information shall mean all information disclosed to the Vendor or the personnel provided by the Vendor hereunder which relates to the Authority's and/or PATH's past, present, and future research, development and business activities including, but not limited to, software and documentation licensed to the Authority or proprietary to the Authority and/or PATH and all associated software, source code procedures and documentation. Confidential information shall also mean any other tangible or intangible information or materials including but not limited to computer identification numbers, access codes, passwords, and reports obtained and/or used during the performance of the Vendor's Services under this Contract.

B. Confidential information shall also mean and include collectively, as per The Port Authority of New York & New Jersey Information Security Handbook (October 15, 2008, corrected as of February, 9 2009), Confidential Proprietary Information, Confidential Privileged Information and information that is labeled, marked or otherwise identified by or on behalf of the Authority so as to reasonably connote that such information is confidential, privileged, sensitive or proprietary in nature. Confidential Information shall also include all work product that contains or is derived from any of the foregoing, whether in whole or in part, regardless of whether prepared by the Authority or a third-party or when the Authority receives such information from others and agrees to treat such information as Confidential.

C. The Vendor shall hold all such confidential information in trust and confidence for the Authority, and agrees that the Vendor and the personnel

provided by the Vendor hereunder shall not, during or after the termination or expiration of this Contract, disclose to any person, firm or corporation, nor use for its own business or benefit, any information obtained by it under or in connection with the supplying of services contemplated by this Contract. The Vendor and the personnel provided by the Vendor hereunder shall not violate in any manner any patent, copyright, trade secret or other proprietary right of the Authority or third persons in connection with their services hereunder, either before or-after termination or expiration of this Contract. The Vendor and the personnel provided by the Vendor hereunder shall not willfully or otherwise perform any dishonest or fraudulent acts, breach any security procedures, or damage or destroy any hardware, software or documentation, proprietary or otherwise, in connection with their services hereunder. The Vendor shall promptly and fully inform the Director in writing of any patent, copyright, trade secret or other intellectual property rights or disputes, whether existing or potential, of which the Vendor has knowledge, relating to any idea, design, method, material, equipment or other matter related to this Contract or coming to the Vendor's attention in connection with this Contract."

D. The Vendor shall not issue nor permit to be issued any press release, advertisement, or literature of any kind, which refers to the Port Authority or to the fact that goods have been, are being or will be provided to it and/or that services have been, are being or will be performed for it in connection with this Agreement, unless the Vendor first obtains the written approval of the Port Authority. Such approval may be withheld if for any reason the Port Authority believes that the publication of such information would be harmful to the public interest or is in any way undesirable.

121. Entire Agreement

The agreement between the Port Authority and the Vendor consists of this document, the Request For Quotation ("RFQ"),the Specifications, any Appendices, and all other documents required to be submitted by the Vendor with its proposal, and the Authority's acceptance of the Vendor's proposal.and constitutes the complete and exclusive statement of the terms of the agreement between the parties, and the agreement may not be explained or supplemented by course of dealing, usage of trade, or course of performance; and this document shall supersede all other communications, written or oral.

122. Changes In Agreement

Except as specifically provided in the clause hereof entitled "Rights of the Port Authority," no change in or termination or modification of this agreement shall be effective unless in writing and signed by the party to be charged therewith.

123. Applicable Law

This agreement shall be construed in accordance with the laws of the state of New York. The Vendor hereby consents to the exercise by the courts of the states of New York and New Jersey of jurisdiction in personam over it with respect to any matter arising out of or in connection with this agreement and waives any objection to such jurisdiction which it might otherwise have; and the Vendor agrees that mailing of process addressed to it, at the address of the Vendor indicated herein by certified mail, shall have the same effect as personal service within the state of New York upon a domestic corporation of the state of New York.

124. No Personal Liability

Neither the Commissioners of the Port Authority, nor Directors of the Port Authority Trans- Hudson Corporation ("PATH,") nor any of them, nor any officer, agent or employee thereof, shall be charged personally by the Vendor with any liability, or held personally liable to the Vendor under any term or provision of this Contract, or because of its execution or attempted execution, or because of any breach, or attempted or alleged breach, thereof.

125. Part II - Contractor's Integrity Provisions

A. Certification of No Investigation (criminal or civil anti-trust), Indictment, Conviction, Debarment, Suspension, Disqualification and Disclosure of Other Information

By bidding on this Contract, each Bidder and each person signing on behalf of any Bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, that the Bidder and each parent and/or affiliate of the Bidder has not

a. been indicted or convicted in any jurisdiction;
b. been suspended, debarred, found not responsible or otherwise disqualified from entering into any contract with any governmental agency or been denied a government contract for failure to meet standards related to the integrity of the Bidder;
c. had a contract terminated by any governmental agency for breach of contract or for any cause based in whole or in part on an indictment or conviction;
d. ever used a name, trade name or abbreviated name, or an Employer Identification Number different from those inserted in the Bid;
e. had any business or professional license suspended or revoked or, within the five years prior to bid opening, had any sanction imposed in

excess of fifty thousand dollars ($50,000) as a result of any judicial or administrative proceeding with respect to any license held or with respect to any violation of a federal, state or local environmental law, rule or regulation;

f. had any sanction imposed as a result of a judicial or administrative proceeding related to fraud, extortion, bribery, bid rigging, embezzlement, misrepresentation or anti-trust regardless of the dollar amount of the sanctions or the date of their imposition; and
g. been, and is not currently, the subject of a criminal investigation by any federal, state or local prosecuting or investigative agency and/or a civil anti-trust investigation by any federal, state or local prosecuting or investigative agency.

B. Non-Collusive Bidding, and Code of Ethics Certification, Certification of No Solicitation Based On Commission, Percentage, Brokerage, Contingent or Other Fees

By bidding on this Contract, each Bidder and each person signing on behalf of any Bidder certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, that

a. the prices in its bid have been arrived at independently without collusion, consultation, communication or agreement for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;
b. the prices quoted in its bid have not been and will not be knowingly disclosed directly or indirectly by the Bidder prior to the official opening of such bid to any other bidder or to any competitor;
c. no attempt has been made and none will be made by the Bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition;
d. this organization has not made any offers or agreements or taken any other action with respect to any Authority employee or former employee or immediate family member of either which would constitute a breach of ethical standards under the Code of Ethics dated April 11, 1996, (a copy of which is available upon request) nor does this organization have any knowledge of any act on the part of an Authority employee or former Authority employee relating either directly or indirectly to this organization which constitutes a breach of the ethical standards set forth in said Code;
e. no person or selling agency other than a bona fide employee or bona fide established commercial or selling agency maintained by the Bidder for the purpose of securing business, has been employed or

retained by the Bidder to solicit or secure this Contract on the understanding that a commission, percentage, brokerage, contingent, or other fee would be paid to such person or selling agency; and

f. the Bidder has not offered, promised or given, demanded or accepted, any undue advantage, directly or indirectly, to or from a public official or employee, political candidate, party or party official, or any private sector employee (including a person who directs or works for a private sector enterprise in any capacity), in order to obtain, retain, or direct business or to secure any other improper advantage in connection with this Contract.

g. no person or organization has been retained, employed or designated on behalf of the Bidder to impact any Port Authority determination, where the solicitation is a Request for Proposals, with respect to (i) the solicitation, evaluation or award of this Contract, or (ii) the preparation of specifications or request for submissions in connection with this Contract.

The foregoing certifications shall be deemed to be made by the Bidder as follows:

* if the Bidder is a corporation, such certification shall be deemed to have been made not only with respect to the Bidder itself, but also with respect to each parent, affiliate, director, and officer of the Bidder, as well as, to the best of the certifier's knowledge and belief, each stockholder of the Bidder with an ownership interest in excess of 10%;
* if the Bidder is a partnership, such certification shall be deemed to have been made not only with respect to the Bidder itself, but also with respect to each partner.

Moreover, the foregoing certifications, if made by a corporate Bidder, shall be deemed to have been authorized by the Board of Directors of the Bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of such certification as the act and deed of the corporation.

In any case where the Bidder cannot make the foregoing certifications, the Bidder shall so state and shall furnish with the signed bid a signed statement which sets forth in detail the reasons therefor. If the Bidder is uncertain as to whether it can make the foregoing certifications, it shall so indicate in a signed statement furnished with its bid, setting forth in such statement the reasons for its uncertainty. With respect to the foregoing certification in paragraph "2g", if the Bidder cannot make the certification, it shall provide, in writing, with the signed bid: (i) a list of the name(s),

address(es), telephone number(s), and place(s) of principal employment of each such individual or organization; and (ii) a statement as to whether such individual or organization has a "financial interest" in this Contract, as described in the Procurement Disclosure policy of the Authority (a copy of which is available upon request to the Director of the Procurement Department of the Authority). Such disclosure is to be updated, as necessary, up to the time of award of this Contract. As a result of such disclosure, the Port Authority shall take appropriate action up to and including a finding of non-responsibility.

Failure to make the required disclosures shall lead to administrative actions up to and including a finding of non-responsiveness or non-responsibility.

Notwithstanding that the Bidder may be able to make the foregoing certifications at the time the bid is submitted, the Bidder shall immediately notify the Authority in writing during the period of irrevocability of bids and the term of the Contract, if Bidder is awarded the Contract, of any change of circumstances which might under this clause make it unable to make the foregoing certifications, might render any portion of the certifications previously made invalid, or require disclosure. The foregoing certifications or signed statement shall be deemed to have been made by the Bidder with full knowledge that they would become a part of the records of the Authority and that the Authority will rely on their truth and accuracy in awarding and continuing this Contract. In the event that the Authority should determine at any time prior or subsequent to the award of this Contract that the Bidder has falsely certified as to any material item in the foregoing certifications, has failed to immediately notify the Port Authority of any change in circumstances which might make it unable to make the foregoing certifications, might render any portion of the certifications previously made invalid, or require disclosure, or has willfully or fraudulently furnished a signed statement which is false in any material respect, or has not fully and accurately represented any circumstance with respect to any item in the foregoing certifications required to be disclosed, the Authority may determine that the Bidder is not a responsible Bidder with respect to its bid on the Contract or with respect to future bids on Authority contracts and may exercise such other remedies as are provided to it by the Contract with respect to these matters. In addition, Bidders are advised that knowingly providing a false certification or statement pursuant hereto may be the basis for prosecution for offering a false instrument for filing (see e.g. New York Penal Law, Section 175.30 et seq.). Bidders are also advised that the inability to make such certification will not in and of itself disqualify a Bidder, and that in

each instance the Authority will evaluate the reasons therefor provided by the Bidder. Under certain circumstances the Bidder may be required as a condition of Contract award to enter into a Monitoring Agreement under which it will be required to take certain specified actions, including compensating an independent Monitor to be selected by the Port Authority, said Monitor to be charged with, among other things, auditing the actions of the Bidder to determine whether its business practices and relationships indicate a level of integrity sufficient to permit it to continue business with the Port Authority.

C. Bidder Eligibility for Award of Contracts - Determination by an Agency of the State of New York or New Jersey Concerning Eligibility to Receive Public Contracts

Bidders are advised that the Authority has adopted a policy to the effect that in awarding its contracts it will honor any determination by an agency of the State of New York or New Jersey that a Bidder is not eligible to bid on or be awarded public contracts because the Bidder has been determined to have engaged in illegal or dishonest conduct or to have violated prevailing rate of wage legislation.

The policy permits a Bidder whose ineligibility has been so determined by an agency of the State of New York or New Jersey to submit a bid on a Port Authority contract and then to establish that it is eligible to be awarded a contract on which it has bid because (i) the state agency determination relied upon does not apply to the Bidder, or (ii) the state agency determination relied upon was made without affording the Bidder the notice and hearing to which the Bidder was entitled by the requirements of due process of law, or (iii) the state agency determination was clearly erroneous or (iv) the state determination relied upon was not based on a finding of conduct demonstrating a lack of integrity or violation of a prevailing rate of wage law.

The full text of the resolution adopting the policy may be found in the Minutes of the Authority's Board of Commissioners meeting of September 9, 1993.

D. Contractor Responsibility, Suspension of Work and Termination

During the term of this Contract, the Contractor shall at all times during the Contract term remain responsible. The Contractor agrees, if requested by the Port Authority to present evidence of its continuing legal authority to do business in the States of New Jersey or New York, integrity,

experience, ability, prior performance, and organizational and financial capacity.

The Port Authority, in its sole discretion, reserves the right to suspend any or all activities under this Contract, at any time, when it discovers information that calls into question the responsibility of the Contractor. In the event of such suspension, the Contractor will be given written notice outlining the particulars of such suspension. Upon issuance of such notice, the Contractor must comply with the terms of the suspension order. Contract activity may resume at such time as the Port Authority issues a written notice authorizing a resumption of performance under the Contract.

Upon written notice to the Contractor, and an opportunity to be heard with appropriate Port Authority officials or staff, the Contract may be terminated by Port Authority at the Contractor's expense where the Contractor is determined by the Port Authority to be non-responsible. In such event, the Port Authority or its designee may complete the contractual requirements in any manner he or she may deem advisable and pursue available legal or equitable remedies for breach, including recovery of costs from Contractor associated with such termination.

E. No Gifts, Gratuities, Offers of Employment, Etc.

At all times, the Contractor shall not offer, give or agree to give anything of value either to a Port Authority employee, agent, job shopper, consultant, construction manager or other person or firm representing the Port Authority, or to a member of the immediate family (i.e., a spouse, child, parent, brother or sister) of any of the foregoing, in connection with the performance by such employee, agent, job shopper, consultant, construction manager or other person or firm representing the Port Authority of duties involving transactions with the Contractor on behalf of the Port Authority, whether or not such duties are related to this Contract or any other Port Authority contract or matter. Any such conduct shall be deemed a material breach of this Contract.

As used herein "anything of value" shall include but not be limited to any (a) favors, such as meals, entertainment, transportation (other than that contemplated by the Contract or any other Port Authority contract), etc. which might tend to obligate the Port Authority employee to the Contractor, and (b) gift, gratuity, money, goods, equipment, services, lodging, discounts not available to the general public, offers or promises of employment, loans or the cancellation thereof, preferential treatment or

business opportunity. Such term shall not include compensation contemplated by this Contract or any other Port Authority contract. Where used herein, the term "Port Authority" shall be deemed to include all subsidiaries of the Port Authority.

The Contractor shall insure that no gratuities of any kind or nature whatsoever shall be solicited or accepted by it and by its personnel for any reason whatsoever from the passengers, tenants, customers or other persons using the Facility and shall so instruct its personnel.

In the event that the Contractor becomes aware of the occurrence of any conduct that is prohibited by this section entitled "No Gifts, Gratuities, Offers of Employment, Etc.", it shall report such occurrence to the Port Authority's Office of Inspector General within three (3) business days of obtaining such knowledge. (See "http://www.panynj.gov/inspector-general" for information about to report information to the Office of Inspector General). Failing to report such conduct shall be grounds for a finding of non-responsibility.

In addition, during the term of this Contract, the Contractor shall not make an offer of employment or use confidential information in a manner proscribed by the Code of Ethics and Financial Disclosure dated April 11, 1996, (a copy of which is available upon request to the Office of the Secretary of the Port Authority).

The Contractor shall include the provisions of this clause in each subcontract entered into under this Contract.

F. Conflict of Interest

During the term of this Contract, the Contractor shall not participate in any way in the preparation, negotiation or award of any contract (other than a contract for its own services to the Authority) to which it is contemplated the Port Authority may become a party, or participate in any way in the review or resolution of a claim in connection with such a contract if the Contractor has a substantial financial interest in the contractor or potential contractor of the Port Authority or if the Contractor has an arrangement for future employment or for any other business relationship with said contractor or potential contractor, nor shall the Contractor at any time take any other action which might be viewed as or give the appearance of conflict of interest on its part. If the possibility of such an arrangement for future employment or for another business arrangement has been or is the subject of a previous or current discussion, or if the Contractor has reason

to believe such an arrangement may be the subject of future discussion, or if the Contractor has any financial interest, substantial or not, in a contractor or potential contractor of the Authority, and the Contractor's participation in the preparation, negotiation or award of any contract with such a contractor or the review or resolution of a claim in connection with such a contract is contemplated or if the Contractor has reason to believe that any other situation exists which might be viewed as or give the appearance of a conflict of interest, the Contractor shall immediately inform the Director in writing of such situation giving the full details thereof. Unless the Contractor receives the specific written approval of the Director, the Contractor shall not take the contemplated action which might be viewed as or give the appearance of a conflict of interest. The Director may require the Contractor to submit a mitigation plan addressing and mitigating any disclosed or undisclosed conflict, which is subject to the approval of the Director and shall become a requirement, as though fully set forth in this Contract. In the event the Director shall determine that the performance by the Contractor of a portion of its Services under this Agreement is precluded by the provisions of this numbered paragraph, or a portion of the Contractor's said Services is determined by the Director to be no longer appropriate because of such preclusion, then the Director shall have full authority on behalf of both parties to order that such portion of the Contractor's Services not be performed by the Contractor, reserving the right, however, to have the Services performed by others and any lump sum compensation payable hereunder which is applicable to the deleted work shall be equitably adjusted by the parties. The Contractor's execution of this document shall constitute a representation by the Contractor that at the time of such execution the Contractor knows of no circumstances, present or anticipated, which come within the provisions of this paragraph or which might otherwise be viewed as or give the appearance of a conflict of interest on the Contractor's part. The Contractor acknowledges that the Authority may preclude it from involvement in certain disposition/privatization initiatives or transactions that result from the findings of its evaluations hereunder or from participation in any contract, which results, directly or indirectly, from the Services provided by the Contractor hereunder. The Port Authority's determination regarding any questions of conflict of interest shall be final.

G. Definitions

As used in this section, the following terms shall mean:

Affiliate - Two or more firms are affiliates if a parent owns more than fifty percent of the voting stock of each of the firms, or a common shareholder or group of shareholders owns more than fifty percent of the voting stock

of each of the firms, or if the firms have a common proprietor or general partner.

Agency or Governmental Agency - Any federal, state, city or other local agency, including departments, offices, public authorities and corporations, boards of education and higher education, public development corporations, local development corporations and others.

Investigation - Any inquiries made by any federal, state or local criminal prosecuting and/or law enforcement agency and any inquiries concerning civil anti-trust investigations made by any federal, state or local governmental agency. Except for inquiries concerning civil anti-trust investigations, the term does not include inquiries made by any civil government agency concerning compliance with any regulation, the nature of which does not carry criminal penalties, nor does it include any background investigations for employment, or Federal, State, and local inquiries into tax returns.

Officer - Any individual who serves as chief executive officer, chief financial officer, or chief operating officer of the Bidder by whatever titles known.

Parent - An individual, partnership, joint venture or corporation which owns more than 50% of the voting stock of the Bidder.

If the solicitation is a Request for Proposal:

Bid - shall mean Proposal;
Bidder - shall mean Proposer;
Bidding - shall mean submitting a Proposal.

In a Contract resulting from the taking of bids:

Bid - shall mean bid;
Bidder - shall mean Bidder; except and until the Contract has been awarded, then it shall mean Contractor
Bidding - shall mean executing this Contract.

In a Contract resulting from the taking of Proposals:

Bid - shall mean Proposal;
Bidder - shall mean Proposer;
Bidding - shall mean executing this Contract.

APPENDIX B

VENDOR'S DETAIL SHEET

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY
OPERATIONS SERVICES DEPARTMENT
CENTRAL AUTOMOTIVE DIVISION
241 ERIE STREET, ROOM 307
JERSEY CITY, NEW JERSEY 07310-1397

DATE: May, 2014
CODE: 049-G7G814-4794

SPECIFICATIONS FOR:

AIRCRAFT REFUELING
HYDRANT SERVICE VEHICLE SPECIFICATIONS

Vendor:_____ **Tel No.**_____

Representative: _____

Address: _____

_____

_____

Cab-Chassis Sub-Contractor: _____ **Tel No.**_____

Representative: _____

Address: _____

_____

_____

Estimated Delivery: **1st Four (4) Vehicles:** _____ **Days,**

Remaining Vehicles: **Delivered at a Rate of:** _____ **Vehicles per Month**

1. **General**

Vehicle Make: _____ **Model:** _____

Model Year: _____

2. **Cab-Chassis**

GVWR: _____ **LBS**

GCWR: _____ **LBS**

Front GAWR: _____ **LBS**

Rear GAWR: _____ **LBS**

Payload: _____ **LBS**

3. **General Aircraft Refueling Vehicle**

Vehicle Manufacturer: _____

Model: _____

Refueling Capability Using
Two (2) Platform Nozzles: _____ **GPM @ 0 PSI**

Refueling Capability Using
The Ground Refueling Nozzle: _____ **GPM @ 0 PSI**

Vehicle GVWR: _____ **LBS**

Vehicle Overall Width: _____ **IN**

Vehicle Overall Length: _____ **IN**

Vehicle Overall Height:
At Elevating Platform Mast: _____ **IN**

At Any Other Area Of Vehicle: _____ **IN**

Vehicle Wall-To-Wall Turning Diameter: _____ **FT**

Vehicle Governed Top Speed: _____ **MPH**

4. **Vehicle Drawings**

Attach the following drawings:

A. **A drawing showing the vehicle general configuration, size, refueling platform elevations, and general location of all major equipment.**

B. **A drawing showing the capacity of each axle and the laden and unladen vehicle weight distribution.**

CAB-CHASSIS

5. **General**

Make: _____

Model: _____

Year: _____

Cab type: _____

Axle configuration: _____

GVWR: _____ **LBS**

6. **ENGINE**

Make: _____

Model: _____

Number of cylinders: _____

Net HP: _____ **HP @** _____ **RPM**

Net Torque: _____**LB-FT @** _____ **RPM**

Displacement: _____ **CU IN**

Aspiration: _____

Governor Type: _____

Engine Protection System: _____

Type Cold Start Aid: _____

7. **Transmission - Automatic**

Make: _____

Model: _____

Number of speeds forward/reverse: _____ / _____

Gear(s) locked out to obtain 25 MPH Top Speed _____

8. **Brakes**

Type of braking system: _____

Front brakes: type/size: _____

Rear brakes: type/size: _____

Parking brakes: type/size: _____

ABS / Traction Assist _____

Brake interlock system: _____

9. **Vehicle Front Axle**

Front Axle GAWR: _____ **LBS**

Axle:
Make: _____ **Model #** _____

Rated Capacity: _____ **LBS**

Springs:
Make: _____ **Model #** _____

Rated Capacity: _____ **LBS**

Wheels:
Type:_____**size:**_____

Tires:
Type of construction: _____

Size: _____

Tread pattern: _____

Load range/ply: _____ / _____

Wheel and tire assembly:
Rated capacity: _____ **LBS @** _____ **PSI**

10. **Vehicle rear drive axle(s)**

Rear Drive GAWR: _____ **LBS**

Axle:
Make:_____ **model #**_____

Rated capacity: _____ **LBS**

Track Dimension: _____

Ratio: _____

Springs:
Make:_____ **model #**_____

Rated capacity: _____ **LBS**

Wheels:
Type:_____**size:**_____

Tires:
Type of construction: _____

Size: _____
Tread pattern: _____

Load range/ply: _____ / _____

Wheel and tire assembly:
Rated capacity: _____ **LBS @** _____ **PSI**

11. **Frame**

Section Modulus: _____ **CU IN**

Tensile Strength: _____ **PSI**

Resistance To Bending: _____ **IN - LBS**

Reinforcement: _____

12. **Electrical System**

Voltage: _____ **VOLTS**

Batteries:

Group Size:_____**Quantity:**_____

Total CCA Capacity: _____ **CCA**

Alternator:

Make:_____ **Model #**_____

Output Capacity @ Idle:_____ **AMP @** _____**Engine RPM**

13. **Steering**

Type: _____

Make: _____

14. **Fuel tank**

Type: _____

Capacity: _____ **GAL**

HYDRANT SERVICER BODY & EQUIPMENT

15. **General**

Refueling Capability
From Two Platform Hoses: _____ GPM @ _0_ PSI

Refueling Capability Using
The Ground Refueling Nozzle: _____ GPM @ _0_ PSI

16. **Elevating Refueling Platform**

Brief description of the overall design,
include size and elevation(s) of each working area,
accessibility, etc. and attach drawings:_____

_____

_____

_____

_____

_____

_____

_____

_____

17. **Refueling Control System for Newark Liberty International Airport**

Design type of
Refueling control system: _____

Indicate major components:

C. Component: _____

Make:_____ **model #**_____

D. Component: _____

Make:_____ **model #**_____

E. Component: _____

Make:_____ **model #**_____

F. Component: _____

Make:_____ **model #**_____

G. Component: _____

Make:_____ **model #**_____

126. <u>Refueling Control System for JFK International Airport</u>

Design type of
Refueling control system: _____

Indicate major components:

H. Component: _____

Make:_____ **model #**_____

I. Component: _____

Make:_____ **model #**_____

J. Component: _____

Make:_____ **model #**_____

K. Component: _____
Make:_____ **model #**_____

L. Component: _____

Make:_____ model #_____

18. Filter-separator

Make:_____ model #_____

Rated Capacity: _____ GPM

List ei compliance: _____

Does the filter-separator
Fully comply with all
Specification requirements: _____

19. Water Sump Control

Type: _____

Make:_____ model #_____

20. Clean Sample And Millipore Adapter

Make:_____ model #_____

21. Meter

Make:_____ model #_____

Rated Capacity: _____ GPM

Register Make: _____ Model #_____

22. Product Piping, Fittings, & Valves

Fuel Upstream Of Filter-Separator:

Material of all
Pipes & fittings: _____

Material of all valve bodies
In contact with the product: _____

Fuel Downstream Of Filter-Separator:

Material of all
Piping & fittings: _____

Material of all components
In contact with the product: _____

23. **Newark Liberty International Airport Refueling Control System**

Primary Pressure Control Valve:

Size of valve: _____

Material of
Valve body: _____

Make: _____ **model #** _____

Secondary Pressure Control Valve:

Size of valve: _____

Material of
Valve body: _____

Make: _____ **model #** _____

24. **JFK International Airport Refueling Control System**

Primary Pressure Control Valve:

Size of valve: _____

Material of
Valve body: _____

Make: _____ **model #** _____

Secondary Pressure Control Valve:

Size of valve: _____

Material of Valve body: _____

Make:_____ **model #**_____

25. **Refueling Hose Reels**

Make: _____

26. **Refueling Hoses**

Make: _____

Size:_____ **type:**_____

Make: _____

Size:_____ **type:**_____

Make: _____

Size:_____ **type:**_____

27. **Deadman Control**

Make:_____ **Model #**_____

28. **Underwing Nozzles**

Make:_____ **Model #**_____

29. **Underwing Nozzle Storage Holders**

Make:_____ **Model #**_____

30. **Lights**

Make: _____

31. **Finish Paint**

Make: _____

Type of paint: _____

32. **Cab-Chassis Warranty**

Powertrain Limits Of Warranty:

_____ **Years /** _____**Miles /** _____ **Engine Hours**

Aircraft Refueling System Warranty:

_____ **Years /** _____**Miles /** _____ **Engine Hours**

33. **Deviations, if any:**

_____

_____

_____

_____

_____

_____

_____

_____

APPENDIX C
BIDDER'S PRICING SHEET
BID EVALUATION PRICING

The Bid Evaluation shall be based on the Price listed by the vendor in the Grand Total Bid Price For Sixty-Three (63) Vehicles (Line C) below that shall be used to evaluate the bids.

Twenty (20) Vehicles With Option 1
Delivered To Newark Liberty International Airport:

Total Bid Price

Vehicle Unit Price:
$_____

Option 1: Newark Liberty International Airport Refueling System
+ $_____

Total Vehicle Price: **= $**_____

X 20 Vehicles = **(A) $**_____

Forty-Three (43) Vehicles Without Option 2
Delivered To JFK International Airport:

Vehicle Unit Price:
$_____

Option 2: JFK International Airport Refueling System **+ $**_____

Total Vehicle Price: **= $**_____

X 43 Vehicles = **(B) $**_____

Total Bid Price For Sixty-Three (63) Vehicles: **(C) $**_____

Bid Evaluation Price (C) = Sum of (A) +(B)

NOTE: In the event of any calculation error (s), the Total Price entered in (C) by the vendor shall prevail.

APPENDIX D

DELIVERY LOCATIONS FOR VEHICLES, MANUALS, & TRAINING

The vendor shall deliver vehicle(s), parts, service manuals, and perform all training at the Port Authority of NY & NJ locations as listed below. Vendors shall send to the Engineer receipts showing delivery of vehicles and manuals from each location. Payment will not be released without these documents.

Location	Address
Engineering Office	Central Automotive Division 241 Erie Street, Room 301 Jersey City, NJ 07310 Attn: Aldo Nuzzolese Tel: 201-216-2367
Newark Liberty International Airport	Allied Aviation Service Company Of New Jersey, Inc. Newark Liberty International Airport Fuel Farm Road, Building 116 Elizabeth, New Jersey 07201 Telephone: (201)961-3690
JFK International Airport	Allied Aviation New York Services, Inc. Building 90 JFK International Airport Jamaica, New York 11430 Telephone: (718)995-9769

APPENDIX E

OPTIONAL ITEMS

Note: Bid evaluations will be based on lowest cost as listed in Appendix C, (not including any of the Optional Items listed in Appendix E.) However, at the sole discretion of the Port Authority, if one or more option(s) are selected the bids may be evaluated based on the lowest cost for those option(s) the Agency deems appropriate.

Option 1: Fuel Density Meter

The vendor shall furnish and install a fuel density meter that automatically determined the density of the fuel product dispensed during an aircraft refueling operation. The density meter shall be an Intergated Sensing Systems, Inc. (ISSYS) MassSense MS-LDM that is intrinsically safe for installation and operation on an aircraft refueling vehicle operating on the airport that is in full compliance with NFPA 407. The unit shall be stainless steel and rated for operation for Jet-A fuel. The unit and system shall have the following minimum requirements:

- Complete unit and all installation components and accessories shall be intrinsically safe, have an IP 67/NEMA4X rating, and have a minimum operating pressure of 150 PSIG
- Provide the required temperature operating stability during all operating conditions from -10°F to 120°F for ambient and product fuel temperature range
- Be shock mounted and capable of maintain calibration for vehicle application
- Capable of providing instantaneous and average density reading, and instantaneous and average temperature readings during all static and continuous flow conditions when activated to operate, and, also have the capability of data logging to store all collected data
- If available, the unit shall provide a date and time stamp for each data collection refueling job
- Ability to sense flow when the unit is active in taking readings and displays an alarm if there is flow interruption
- Provide a minimum readings with a minimum of 10 density readings per second each with a minimum accuracy of 0.0001g/cc with the corresponding temperature readings that also have a minimum accuracy of 0.1°F

- Provide digital display readings of density and temperature data
- Provide ability to display density in gm/cc and temperature in °C, lbs/gal and temperature in °F, and also the corrected STP density for each data collection refueling job

The unit shall be fully installed in accordance with manufacturer's requirements and it shall be fully calibrated and tested to assure proper operation. The unit shall be capable of being reset and shall be installed to operate as per the Engineer's requirements to allow the meter to provide instantaneous or average fuel density reading during a refueling job when initiated to begin density readings and end density readings.

Price for Density Meter System: $ _____

Option 2: Centralized Automatic Lubrication System

The vendor shall furnish and install a centralized automatic lubrication system to provide periodic lubrication. The system shall be designed to utilize lubricants of Grades NLGI 00 or NLGI 000, and to lubricate all points requiring periodic greasing, except those where rotation or other dynamic considerations preclude automatic lubrication. The system shall include an electric gear pump, grease reservoir, control module, and distribution lines and fittings, properly installed in the vehicle. The system shall be as provided by Vogel Lubrication, Incorporated, Chassis Systems, Sales & Service, 1008 Jefferson Avenue, Newport News, Virginia 23607 Phone: (757)380-8585 fax: (757)380-0709, or Groeneveld, 1130 Industrial Parkway North, Brunswick, OH 44212, (320)225-4949, www.groeneveltusa.com, or approved equal.

Price for Centralized Lubrication System: $ _____

Approximate Number of Lubrication Points: _____ Points

Option 3: Fire Detection/Suppression System

A fire detection and suppression system shall be furnished and installed. It shall be a Fogmaker water mist fire suppression system or approved equal. Fire detection shall be of a hydro-mechanical design and be able to activate automatically without electricity. The detection temperature of the system shall be established between 300°F to 390°F. A panel will be provided in the operator area with an audible and visible alarm to warn of low pressure or activation. When a fire is detected in the engine compartment, the system will release the entire

contents of extinguisher with no less than 50 seconds of actuation time. Water mist will reduce the temperature of effected area to reduce risk of re-fire. The extinguisher system shall utilize a water-based environmentally friendly extinguishing fluid. The extinguisher shall be a high-pressure piston accumulator constructed from anodized aluminum AA and DOT approved. The time required to release the fluid should take at least 50 seconds. The nozzles shall deliver water droplets between 5-80μm and be constructed of brass or stainless steel. System to be interlocked with HVAC blowers so that blowers shut off if the system is activated.

Fire Detection/Suppression System Offered: _____

Price for Fire Detection/Suppression System $ _____

Option 4. Available Energy Diversity and Pollution Reduction Technology

The vendor shall quote available technologies that either:

1. Displace traditional petroleum-based fuels by utilization of alternative sources of propulsion (e.g. electric, fuel cell, ethanol, hybrid)
2. Or, provide improved air quality and health by reducing emissions from mobile sources of air pollution (e.g. optional exhaust treatment, cleaner engine equipment) that are available for the vehicle, and which exceed federal or state requirements. The purpose of this option is to attempt to gain additional emissions reductions beyond mandatory Clean Air Act programs by changes that will result in reducing mobile source emissions.

If any of these also offer cost sharing, grants, or other financial incentives available to the Port Authority to offset costs for these technologies, the vendor shall so indicate with each stating such on the line "Available Financial Incentive(s).

Description of Optional Technology:

Benefit (check all that apply):

☐ Displace Petroleum Dependence ☐ Improve Air Quality

Describe the benefit:

_____

_____

Cost per vehicle:
Initial Cost Increase to base Vehicle: $ _____

Life cycle recurring costs / frequency $ _____ / _____

Available Financial Incentive(s) $ _____

Description of Optional Technology:

_____

Benefit (check all that apply):
☐ Displace Petroleum Dependence ☐ Improve Air Quality

Describe the benefit:

_____

_____

Cost per vehicle:
Initial Cost Increase to base Vehicle: $ _____

Life cycle recurring costs / frequency $ _____ / _____

Available Financial Incentive(s) $ _____

Description of Optional Technology:

_____

Benefit (check all that apply):
☐ Displace Petroleum Dependence ☐ Improve Air Quality

Describe the benefit:

_____

_____

Cost per vehicle:
Initial Cost Increase to base Vehicle: $ _____

Life cycle recurring costs / frequency $ _____ / _____

Available Financial Incentive(s) $ _____

Description of Optional Technology:

_____

Benefit (check all that apply):
☐ Displace Petroleum Dependence ☐ Improve Air Quality

Describe the benefit:

_____

_____

Cost per vehicle:
Initial Cost Increase to base Vehicle: $ _____

Life cycle recurring costs / frequency $ _____ / _____

Available Financial Incentive(s) $ _____

APPENDIX F

WARRANTIES

WARRANTY FOR CAB-CHASSIS AND REFUELING SYSTEM

LIST ALL WARRANTIES PROVIDED FOR THE CAB-CHASSIS AND THE REFUELING SYSTEM. IDENTIFY EACH BELOW, AND ATTACH ALL TERMS AND CONDITIONS FOR EACH VEHICLE.

STANDARD WARRANTIES	Months	Miles	Hours
1.			
2.			
3.			
4.			

Details of standard warranties delineating items covered and not covered by the warranty as well as terms and conditions of the coverage to be provided with RFQ

OPTIONAL EXTENDED WARRANTIES FOR CAB-CHASSIS & REFUELING SYSTEM	MONTHS	MILES	HOURS	COST PER VEHICLE

Details of optional warranties delineating items covered and not covered by the warranty as well as terms and conditions of the coverage to be provided if requested.