



CITY OF DULUTH INVITATION TO BID

PROJECT NAME/DESCRIPTION: FIRE RESCUE SQUAD

BID NUMBER: 16-01AA

BID OPENING: WEDNESDAY JANUARY 20, 2016 AT 2:00 PM

PROJECT DESCRIPTION: Leasing of a Fire Department Rescue Squad

PRE-BID/WALK-THROUGH: An optional pre-bid meeting will be conducted on Wednesday, January, 6, 2016 at 9am. This can be attended in person at 4825 Mike Colalillo Drive, Duluth, MN 55807 or via conference call at 218-730-5950. All interested bidders are encouraged to attend by either method. Please contact Erik Simonson at 218-730-4391 with pre-bid meeting questions.

QUESTIONS: Please submit any questions regarding this vehicle via e-mail to purchasing@duluthmn.gov. Responses will be provided to all interested bidders as an addendum to this solicitation.

ADDITIONAL INFORMATION: Please see attached specifications. In the bid provide lease to purchase and turn back lease program.

INSTRUCTIONS TO BIDDERS

All bids must be complete, signed, and transmitted in a sealed envelope plainly marked with the bid number, subject matter, and opening date. The City of Duluth reserves the right to split the award where there is a substantial savings to the City, to waive informalities and to reject any and all bids. Bidder must state in their proposal if bid price is based on acceptance of the total order. Do not include sales tax in the unit price. Price may not be the only consideration for bid award. Bids must be firm for a minimum of 60 days.

Bids must be received in Purchasing before 2:00 PM local time on the bid opening date specified on the Invitation for Bids. The City Purchasing Agent or her designee will conduct a public bid opening in Room 100 immediately following receipt of the bids.

No alternatives to the specification will be considered unless specifically requested. Erasures or other changes to the bid must be initialed and dated.

The following documents must be submitted with your bid:

1. **Acknowledgment of Addendum** (if applicable) – any changes to this solicitation will be announced via Addendum. A signed copy of the Addendum(s) must be submitted with your bid.

Please note that the following requirements also apply to this project, and any additional required documents must be submitted prior to award/contract execution. Submitting these documents with your bid will assist in expediting the process.

1. **Affidavit of Non-Collusion** – The successful bidder shall be required to execute the attached affidavit stating that he/she has not entered into a collusive agreement with any other person, firm, or corporation in regard to any bid submitted.

2. **Affirmative Action/EEO** - The contractor must take affirmative action to ensure that the employees and applicants for employment are not discriminated against because of their race, color, creed, sex or national origin, and must meet the affirmative action goals. Contractors are encouraged to subcontract with Disadvantaged Business Enterprises (DBEs) when possible. A current list of certified DBEs is available on the Minnesota Unified Certification website at <http://mnucp.metc.state.mn.us> . Contractor will comply with all applicable Equal Employment Opportunity laws and regulations. Awarded contractor will submit the attached Equal Employment Opportunity (EEO) Affirmative Action Policy Statement & Compliance Certificate.

CITY OF DULUTH

Andrew Field	Amanda Ashbach
Financial Analyst	Purchasing Agent

16-01AA Bid Form

	Annual Payment	Interest Rate
Lease to Purchase Program	\$	%
Turn Back Lease Program	\$	%

Date of first payment in relation to contract award/delivery

Name and Title:

Vendor Name:

Address:

Phone Number:

Email:

Signature:

**EQUAL EMPLOYMENT OPPORTUNITY EEO AFFIRMATIVE ACTION
POLICY STATEMENT & COMPLIANCE CERTIFICATE**

TO: City of Duluth, MN PROJECT NUMBER & DESCRIPTION _____

FROM: _____

(Vendor's name, address, telephone number)

A) Employment: It is the policy of the above named FIRM to afford equal opportunity for employment to all individuals regardless of race, color, creed, religion, national origin, ancestry, age, sex, marital status, status with respect to public assistance and/or disability. The FIRM will take affirmative action to ensure that we will: (1) recruit, hire, and promote all job classifications without regard to race, color, creed, religion, national origin, ancestry, age, sex, marital status, status with respect to public assistance, and/or disability, except where sex is a bona fide occupational qualification; (2) base decisions on employment so as to further the principle of equal employment opportunity; (3) ensure that promotion decisions are in accord with the principles of equal employment opportunity by imposing only valid requirements for promotional opportunities; (4) ensure that all personnel actions such as compensation, benefits, transfers, layoffs, return from layoff, FIRM sponsored training, education tuition assistance, social and recreational programs will be administered without regard to race, color, creed, religion, national origin, ancestry, age, sex, marital status, status with respect to public assistance, and/or disability. The FIRM also intends full compliance with Veteran affirmative action requirements. Additionally, minority and female employees shall be encouraged to participate in all FIRM activities and refer applicants.

I have designated (name) _____ to direct the establishment of and to monitor the implementation of personnel procedures to guide the FIRM's affirmative action program. Where PROJECTS exceed \$500,000, this official shall also serve as the liaison officer that administers the FIRM's "Minority Business Enterprise Program." This official is charged with designing and implementing audit and reporting systems that will keep management informed on a monthly basis of the status of the equal opportunity area.

Supervisors have been made to understand that their work performance is being evaluated on the basis of their equal opportunity efforts and results, as well as other criteria. It shall be the responsibility of the FIRM and its supervisors to take actions to prevent harassment of employees placed through affirmative action efforts.

B) Reports: Unless exempted by law and regulation, the FIRM shall make available and file those reports related to equal opportunity as may be required by the City of Duluth and State and Federal compliance agencies. Requirements and Reports are defined in 41CFR60 "Compliance Responsibility for Equal Opportunity" published by the U. S. Department of Labor which is incorporated herein by reference. Additional requirements are defined in various State and Federal Civil Rights Legislation and Rules promulgated thereunder.

C) Nonsegregated Facilities: The FIRM certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The FIRM certifies that it will not maintain or provide for its employees any segregated facilities at any of its establishments and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The FIRM agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this certificate. As used in this Certification, the term "segregated

facilities" means any waiting rooms, work area, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation for entertainment area, transportation, and housing facilities provided for employees which are segregated by explicit directive or are, in fact, segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise.

- D) Affirmative Action Compliance Program:** Unless exempted by regulation and law, the FIRM—if the FIRM has 50 or more employees and if the value of current contracts with the City of Duluth exceeds \$50,000—shall prepare and maintain a written affirmative action compliance program that meets the requirement as set forth in 41CFR60.
- E) Non-Compliance:** The FIRM certifies that it is not currently in receipt of any outstanding letters of deficiencies, show cause, probable cause, or other such notification of non-compliance with EEO Laws and Regulations.
- F) Employment Goals - "Construction" Projects:** It shall be the goal of the FIRM if the PROJECT is of a construction nature that in all on-site employment generated that no less than 3% of the on-site workforce will be minority employees and that no less than 7% of the on-site workforce will be female employees. Further, it is the goal of the FIRM if the PROJECT is of a construction nature that in all on-site employment generated that no less than 3% of the work hours generated shall be worked by minority employees and that no less than 7% of the work hours generated shall be worked by female employees.
- G) Subcontractors:** The FIRM will for all its PROJECT subcontractors regardless of tier (unless exempted by law and regulation) that received in excess of \$2,500 require that: (1) the subcontractor shall execute an "EEO Statement and Certification" similar in nature to this "Statement and Certification", (2) said documentation to be maintained on file with the FIRM or subcontractor as may be appropriate.

Executed this _____ day of _____, 20__ by:

Printed name and title

Signature

NOTE: In addition to the various remedies prescribed for violation of Equal Opportunity Laws, the penalty for false statements is prescribed in 18 U.S.C. 1001.

AFFIDAVIT AND INFORMATION REQUIRED OF BIDDERS

Affidavit of Non-Collusion:

I hereby swear (or affirm) under penalty of perjury:

- 1) That I am the bidder (if the bidder is an individual), a partner in the bidder (if the bidder is a partnership), or an officer or employee of the bidding corporation having authority to sign on its behalf (if the bidder is a corporation);
- 2) That the attached bid or bids have been arrived at by the bidder independently and have been submitted without collusion with and without agreement, understanding, or planned common course of action with any other vendor of materials, supplies, equipment or services described in the invitation to bid, designed to limit independent bidding or competition;
- 3) That the contents of the bid or bids have not been communicated by the bidder or its employees or agents to any person not an employee or agent of the bidder or its surety on any bond furnished with the bid or bids and will not be communicated to any such person prior to the official opening of the bid or bids;
- 4) That a family relationship between a City of Duluth employee and bidder/proposer are in non-collusion; and
- 5) That I have fully informed myself regarding the accuracy of the statements made in this affidavit.

Signed: _____

Firm Name: _____

Subscribed and sworn to me before this _____ day of _____, _____

NOTARY PUBLIC _____

My commission expires: _____

Bidder's Federal Identification Number _____

DULUTH FIRE DEPARTMENT HEAVY RESCUE COMPANY

December 17th, 2015

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The City of Duluth is requesting bids for a Heavy Rescue apparatus with all appurtenances in accordance with the following:

1.0 LETTER OF EXCEPTIONS

Any proposals submitted without "Full Compliance" with these advertised specifications shall so state on the bid proposal page, followed by a detailed "Letter of Exceptions" listing the areas of noncompliance and equipment or designs being substituted. In addition, the specific reasons for the requested exception(s) shall be described. Materials that are commercially available to all manufacturers may not be substituted.

2.0 GENERAL REQUIREMENTS

It is the intent of these specifications to cover the furnishing and delivering to the City, a complete apparatus equipped as specified. Minor details of construction and materials where not otherwise specified are left to the discretion of Contractor who shall be solely responsible for the design and construction of all features. Such details and other construction not specifically covered herein or not at variance with these specifications should conform to the intent of the specifications as outlined in Booklet No. 1901 dated 2009. Any test equipment required or expense incurred for the Certification Tests shall be borne by Contractor supplying this equipment.

The following additional design criteria shall be applicable to this specification as appropriate:

- a. American Society for Testing and Materials (ASTM) A-36 specification for structural steel
- b. Society of Automotive Engineers, Inc. (SAE) Handbook
- c. American Society of Non-Destructive Testing (ASNT)
- d. ASNT Guidelines; Procedure SNT-TC_IA
- e. American Welding Society (AWS) AWS014.4-77 Classification and Application of Welded Joints for Machinery and Equipment

3.0 RELIABILITY OF CONTRACTOR:

Contractor shall furnish satisfactory evidence of the ability to design, engineer, and construct the apparatus specified and shall state the location of the factory where the apparatus is to be manufactured and tested. The apparatus design shall be an "original" generated by Bidder and not reproductions of fire/rescue apparatus designs previously engineered by other Contractors/Manufacturers.

4.0 DESIGN:

The design of the equipment shall be in accordance with the best engineering practices. The equipment design and accessory installation shall permit accessibility for use, maintenance, and service. All components and assemblies shall be free of hazardous protrusions, sharp edges, cracks or other elements which might cause injury to personnel or equipment. NOTE: Where "nibbled" or non-continuous cutting methods are used to machine the body material, all edges shall be reworked/machine smoothed for injury prevention and appearance reasons.

All oil, hydraulic, and air tubing lines and electrical wiring shall be located in protective positions, properly attached to the frame or body structure and shall have protective loom and grommets at each point where they pass through structural members. All air lines and electrical wiring shall remain above the chassis frame rails as much as possible to protect them from damage.

Parts and components shall be located or positioned for rapid and simple inspection and recognition of excessive wear or potential failure. Whenever functional layout of operating components determines that physical or visual interference between items cannot be avoided, the item predicted to require the most maintenance shall be located for the best accessibility.

Cover plates which must be removed for component adjustment or part removal will be equipped with disconnect fastenings or hinged panels.

Drains, filler plugs, grease fittings, hydraulic lines, bleeders and check points for all components will be located so that they are readily accessible and do not require special tools for proper servicing. Design practices shall minimize the number of tools required for maintenance.

All components shall be designed and protected so that heavy rain or other adverse weather conditions will not interfere with normal servicing or operation.

All specified stainless steel shall be type 304, 2-B on exterior painted panels and #4-brushed where specified for pump panel overlays and unpainted compartment panels. All specified .125" or heavier smooth painted or swirl finish aluminum shall be 5052-H32 alloy. All specified 4-way aluminum treadplate shall be "polished" treadbrite or equal type 3003 of specified thickness. All specified bolted fasteners shall be coated stainless steel "low profile" button socket head cap screws. All nut fasteners to be Ny-Lok or approved equal, designed to prevent loosening.

Aluminum cannot be substituted for any specified stainless fabrications.

NOTE: Lighter gauges of specified materials will not be substituted, stainless steel body fabrications shall be minimum 12-gauge nominal thickness - all basic requirements must be complied with.

Each bidder shall be prepared, if so requested by purchaser, to present evidence of their design experience/capabilities and manufacturing ability to carry out the terms of the contract.

5.0 SERVICEABILITY:

To insure the Purchaser a source of service and parts over a 20 year anticipated life of the apparatus, the bidder shall provide factory service, fabrication/manufacturing, and testing facilities within a reasonable distance of the Duluth Fire Department Fleet Maintenance facility. This same facility must stock a complete line of all firefighting equipment and parts for this apparatus.

The bidder must also be equipped to offer prompt service on the product at the purchaser's facility if required.

Records as to the purchase source for all auxiliary components of the specified apparatus shall be available to Purchaser upon request. This purchase information shall include manufacturer name, model number, authorized distributor, current part number, and special installation instructions.

6.0 GENERAL WARRANTY

The new fire apparatus manufactured per these specifications shall be warranted for a period of ONE (1) YEAR, BEGINNING ON THE FIRST DAY AFTER THE "IN-SERVICE TRAINING", including the chassis and other components noted herein.

Under this warranty, Bidder agrees to furnish any parts to replace those that have failed due to defective material or workmanship where there is no indication of abuse, neglect, unusual or other than normal service providing that such parts are, at the option of Bidder, made available for inspection upon request, returned to the Bidders factory or other location designated by Bidder with transportation prepaid within 30 days after the date of failure or within ONE (1) year beginning on the first day after the "in-service training" for the original purchaser, whichever occurs first, and inspection indicates the failure was attributed to defective material or workmanship. Accessories/components warranted by their original manufacturer may be subject to reinstallation charges under the terms of their respective warranties, especially if such warranties exceed the above 1-year warranty terms.

The warranty on the chassis and chassis supplied components, storage batteries, generators, electrical lamps and other devices subject to deterioration is limited to the warranty of the manufacturer thereof and adjustments for the same are to be made directly with the chassis manufacturer by the Purchaser.

This warranty will not apply to any fire apparatus which has been repaired or altered outside the Manufacturer factory or designated (approved) facility in any way, which, in manufacturer's opinion might affect its stability or reliability. Each warranty claim needing repair or service at the designated facility must receive preauthorization by Manufacturer prior to performance of any work.

OPTIONS: Bidders may submit pricing based on extending this warranty period to three (3) years and to five (5) years.

25-YEAR WARRANTY ON STAINLESS STEEL BODY FABRICATIONS

The fire apparatus manufacturer (body builder) shall warrant to the original purchaser only, that the stainless steel body components as fabricated by the body builder, under normal use and with reasonable maintenance, be structurally sound and shall remain free from corrosion perforation for a period of TWENTY FIVE (25) years.

The body builder shall replace, without charge, repair at the factory, or make a fair allowance for any defect in material or workmanship demonstrated to the satisfaction to have existed at the time of delivery or not due to misuse, negligence, or accident. If the body builder elects to repair the body, the extent of such repair shall be

determined solely by the body builder, and shall be performed solely at the body builder's factory, or at an approved facility. The expense of any transportation to or from such repair facility shall be borne by the purchaser and is not an item covered under this warranty.

10-YEAR APPARATUS PAINT WARRANTY

The TEN (10) year paint performance guarantee will cover the areas of the vehicle as are originally finished by the apparatus body builder with the specified product for a period of TEN (10) years beginning the first day after the in service training.

The areas as outlined on the Guarantee Certificate, will be covered for the following paint failures:

GUARANTEE INCLUSIONS:

FULL APPARATUS BODY:

- * Peeling or delaminating of the topcoat and/or other layers of paint.
- * Cracking or checking
- * Loss of gloss caused by cracking, checking, or hazing.
- * Any paint failure caused by defective finishes which are covered by this guarantee.

All guarantee exclusions, limitations, and methods of claims are covered in the full certificate provided to the original owner.

The warranty on the chassis paint is limited to the warranty of the chassis manufacturer thereof and adjustments for the same are to be made directly with the chassis manufacturer by the Purchaser.

7.0 PRINTED PROPOSALS/BIDS

All proposals/documents are submitted in typed format. The only handwriting on the proposal forms will be on the signature lines. Each bid proposal must disclose the legal business address of the bidding Partnership/Corporate Entity, and the address of the factory where the proposed apparatus body is to be manufactured, assembled, and tested/certified.

8.0 PROPOSAL SIGNATURES REQUIRED

All pertinent bid documents **MUST BE** signed by a Company Manager/or LLC overseeing the facility which will manufacture the proposed apparatus.

9.0 CHASSIS PREPAYMENT DISCOUNT

The bid shall list any discount that will be provided for prepayment of the chassis or complete apparatus upon delivery to the Bidder's factory location.

10.0 DETAILED PROPOSAL SPECIFICATIONS

All bidders shall furnish complete "Detailed Proposal Specifications", describing methods and materials of apparatus manufacture. Each and every specification page shall be printed on "Corporate/LLC Letter Head", with same pages numbered in sequence.

Proposal Specifications shall be in the "same sequence" (category and individual feature) as these attached Advertised Specifications, for ease of comparison and evaluation, by the Truck Committee/Purchaser.

11.0 PROPOSAL PRINT/DRAWING

A complete detailed print of the apparatus as is specified shall be provided. The print shall be to scale, 1" = 15", of the exact apparatus being proposed, and not a stock print of a similar unit. All dimensions are subject to a +/- 1/4 inch tolerance. The print shall have complete views of the driver side with chassis cab, passenger side with chassis cab, rear of the body, top view, and front view.

11.1 COMPLIANCE:

The drawing as described is part of the Bid Proposal.

12.0 AWARD OF CONTRACT

The contract will be awarded, as soon as possible to the most “responsible bidder”, provided their bid is reasonable and it is in the best interest of the City of Duluth. The City of Duluth reserves the right to waive informalities and to reject any and all bids. The City also reserves the right to accept any item in the bid found to be of superior quality or otherwise preferred by the purchaser.

Price will not be the only basis for award. The competency and responsibility of bidder along with the content of bid specification, accuracy/quality of bid drawing(s), prior experience with specified construction methods, and previous use of stainless steel as a construction material will also be considered. The City does not, in any way, obligate itself to accept the lowest or any bid.

Bidders must state any exceptions to the specifications in their Bid. Bidders who take “Total Exception” to these advertised specifications are hereby advised that such statement will result in immediate REJECTION of their bid.

Prior to award, the bidder representative will meet with purchasing officials (at Purchasers location) to personally discuss all facets of these specifications to insure a complete and satisfactory understanding of the City of Duluth specifications and the bid

12.1 SCORING MATRIX

Bid Specification Criteria Matrix	
Criteria	Maximum Weight
1. Respondent Profile <ul style="list-style-type: none">* General Capabilities* Customer Service and Commitment to needs* Details of service ability* References* ISO and other Certifications	20%
2. Specification Compliance <ul style="list-style-type: none">* Areas in excess of specification* Areas not meeting specification* Completeness of proposal* General commitment to RFP	30%
3. General <ul style="list-style-type: none">* Delivery time* Terms and conditions of payment* Warranties* Details of warranties* Cost* Past performance (if applicable)	50%

13.0 INSPECTION TRIPS

The City of Duluth Truck Committee members will be advised as to the date of the following phases of construction: Pre-Construction (prior to bending of metal), Pre-Paint (final design/equipment layout), and Pre-Delivery. Truck Committee members reserve the right to travel to the factory during these or any other stages of construction.

Bidder shall arrange for the above specified "Pre-Construction Conference", to be held at the manufacturer's factory, at which time all final designs and equipment mounting locations will be approved. Any changes to original proposal specifications, as approved at the Pre-Construction Conference, will be noted on a "revised specification", and distributed to Truck Committee members within five working days after Pre-Construction Conference.

14.0 ACCEPTANCE TESTS AND REQUIREMENTS

Acceptance tests on behalf of the purchaser shall be prescribed and conducted prior to delivery by the manufacturer's representative in the presence of such person or persons as the purchaser may designate in the requirements for delivery.

15.0 ALTITUDE REQUIREMENTS:

The apparatus shall be designed to meet the specified rating at 2000 feet altitude above sea level.

16.0 ROADABILITY:

PER NFPA 1901.

17.0 MANUALS/CERTS:

A Certificate of Testing shall be furnished to the Purchaser, both for the Manufacturer's Preliminary Tests and the third party Certification Tests.

The Manufacturer must supply at the time of delivery, at least **THREE COPIES** of:

1. Engine manufacturer's certified brake horsepower curve showing the maximum no-load governed speed.
2. Manufacturer's record of rescue construction details, per NFPA 1901.
3. Manufacturer's Run-In Certification with preliminary test results.
4. Weight documents from four (4) individual certified scales showing actual loading on the sides of front axle, sides of rear axle(s), and overall (four total) vehicle (without personnel, equipment) shall be supplied with the completed vehicle to determine compliance with NFPA section 10-1. Weights shall be for each tire or dual set of tires, so as to verify side-to-side loading, to be in compliance with NFPA
5. At least **THREE COPIES** of the complete operation and maintenance manual covering the completed apparatus as delivered including the pump, emergency lighting and siren, generator, or other furnished accessories.
6. Wiring diagrams of 12-volt electrical systems, installed by apparatus body manufacturer (prime contractor). Diagrams must be "vehicle specific", describing all 12-volt electrical functions as furnished on this **and only this** apparatus.
7. A finalized drawing of apparatus as completed.
8. A "Delivery Manual", consisting of a 3-ring notebook type binder with reference tabs for each section, shall be furnished to include the following items: invoice copy(ies), proof of insurance, Manufacturer's Statement of Origin, acceptance forms, certifications, specifications, individual component manufacturer instructions and parts manuals, warranty forms for body, warranty forms for all major components, warranty instructions and format to be used for compliance with warranty obligations, routine service forms/publications, technical publications or training guide for major components, and apparatus body print "as built".
9. Paint numbers of all color coatings.
10. Certifications of water tank capacity.
11. Written load analysis of 12-volt electrical system as installed by body builder.

A test data plate will be provided at the pump operator's position which gives the rated discharges and pressures together with the speed of the engine as is determined by the manufacturer's test for this particular unit. Plate shall also include delivery date, pump serial number(s), original Customer, and the apparatus manufacturer's serial number.

The contractor shall affix a permanent plate in the driver's compartment specifying the quantity and type of fluids used in the vehicle.

All nameplates and instruction plates shall be metal or plastic with the information permanently engraved, stamped, or etched thereon. Metal nameplates to be installed with plated screws. All nameplates are to be mounted in a conspicuous place.

18.0 FAILURE TO MEET TESTS:

In the event that the apparatus fails to meet the test requirements on first trials, a second trial may be made at the option of the Contractor, within thirty days of the date of the first trials. Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection. Failure to make such changes as the Chief of the Fire Department and/or the purchaser may consider necessary to conform to any clause of the specifications within thirty days after notice is given to make such changes shall also be cause for rejection of the apparatus.

19.0 DELIVERY/CONSTRUCTION:

The period for construction of the vehicle shall be clearly stated, not to exceed 300 working days, and shall include the time required for delivery of the chassis to the bidder's factory.

The completed unit shall be delivered to the purchaser at the Fleet Services Facility, 4825 Mike Calallao Drive, Duluth, MN 55807 with full instructions provided to Fleet Services on operation, care, and maintenance of apparatus.

20.0 DELIVERY ENGINEER:

Delivery training shall be performed by a factory Delivery Engineer who shall remain with the acceptance committee for up to three (3) days for training and making normal adjustments.

Delivery shall be considered to include, but not be limited to: conducting day or evening classes for instruction of Fire Department personnel and Drivers for operation.

The Delivery Engineer shall be factory trained, fully capable of conducting informative classes on the complete operation of the vehicle. This means familiarity with engine, running gear, transmission, driving skill, as well as handling of pump equipment and all controls.

The Delivery Engineer shall set delivery and instruction schedule with the person appointed by Purchaser, recognizing the need for either daytime or evening classes. Advance notice of at least one (1) week will be given, advising the specific day on which the new apparatus will be ready.

21.0 APPARATUS SIZE - CAPACITY – SEATING

Total overall length of apparatus shall not exceed 34 ft., highest point of apparatus shall not exceed 120 inches, total overall width of apparatus shall not exceed 101 inches, chassis wheelbase shall not exceed 210 inches (cab to axle of approx 70") , and GVWR shall be a minimum of 42,000 lbs.

The GAWR, and GCWR or GVWR of the chassis shall be adequate to carry the fully equipped apparatus including unequipped personnel weight (The unequipped personnel weight shall be calculated at 200 lb. per person times the maximum number of persons to ride the apparatus as specified.), ground ladders, and a miscellaneous equipment allowance. An equipment list shall be provided to the bidder to calculate weight.

22.0 CUSTOM STYLE CHASSIS

The appropriate attached specified commercial chassis shall be furnished, by the apparatus body builder, and its price is included in the total Bid Proposal Package.

CHASSIS: New 4 Door Custom-built "tilt style" Cab Design with an approximately 20" raised roof crew cab section.

22.1 ENGINE

The chassis engine shall be a Cummins ISL9 450 horse power engine.

The engine shall include Citgo brand Citgard 500, or equivalent SAE 15W40 CJ4 low ash engine oil which shall be utilized for proper engine lubrication.

A wiring harness shall be supplied ending at the back of the cab. The harness shall include a connector which shall allow an optional harness for the pump panel. The included circuits shall be provided for a tachometer, oil pressure,

engine temperature, hand throttle, high idle and a PSG system. A circuit for J1939 data link shall also be provided at the back of the cab.

The engine shall be equipped with: engine mounted oil check and fill with one piece valve cover.

The vehicle shall be equipped with an automatic high-idle speed control. It shall be pre-set so when activated, it will operate the engine at the appropriate RPM to increase alternator output. This device shall operate only when the master switch is activated and the transmission is in neutral with the parking brake set. When automatically engaged the high idle shall disengage when the operator depresses the brake pedal, or the transmission is placed in gear, and shall be available to manually or automatically re-engage when the brake is released, or when the transmission is placed in neutral.

22.1.1 ENGINE PROGRAMMING ROAD SPEED GOVERNOR

The engine shall include programming which will govern the top speed of the vehicle.

GVG Fire and Emergency Service Vehicle Engine Warning System to be furnished.

22.2 EXHAUST

A single driver side mounted horizontal muffler shall be furnished with horizontal under frame exhaust pipe. An insulation "blanket" wrap shall be provided on the exhaust delivery pipe for reduction of heat into the cab. Where the horizontal exhaust is provided, the last 18.00" of the tail pipe (outlet) shall be without any restriction of hangers or clamps to ensure an easy deployment of an exhaust extraction hose. Exhaust shall exit on passenger side of vehicle 16" ahead of the rear wheel and 4.00" beneath the rub rail, perpendicular with the body.

The exhaust pipe outlet shall be square cut at the end and be Plymovent magnetic compatible.

22.3 DIESEL EXHAUST FLUID TANK

The exhaust system shall include a molded cross linked polyethylene tank for Diesel Exhaust Fluid (DEF). The tank shall have an approximate capacity of five (5) to six (6) usable gallons and shall be mounted on the left hand side of the chassis frame. A system shall be in place to prevent freezing of the fluid due to cold weather and winter operations.

22.4 ENGINE COOLANT

Coolant to be Fleetguard, pre-charged SCA, with filter

A remote engine coolant overflow bottle shall be provided in the case of over filling the coolant system. The overflow bottle shall capture the expansion fluid or overfill rather than allow the fluid to drain on the ground. The overflow bottle provided on the cooling system shall only be a catch bottle and shall not return excess coolant back into the surge tank.

22.5 GATED AUXILIARY HEATER COOLANT LINES

Engine cooling system chassis cab heater return line shall be equipped with 1/2" i.d. bronze NRS screw type gate valves and 5/8" i.d. neoprene rubber heater hoses extending to specified auxiliary heaters. An additional 1/2" bronze NRS gate valve to be provided on auxiliary heater-to-engine return line. Gate valves shall allow shut down of any or all of the remote auxiliary heating systems that are downstream of the chassis cab heater, should a leak develop.

22.6 ENGINE BLOCK HEATER

A Phillips-Temro 1000-watt, 115 volt block heater or approved equal shall be furnished and installed. It shall be wired to the shore power plug in on the drivers side of the apparatus.

22.7 CAB PAINT:

Cab exterior to be painted Red, to match PPG FBCH 35377 (formerly PPG High Solids Basecoat/Clearcoat Code DUH575377 Red).

Chassis, including: frame rails, cross members, axles, and suspension, to be painted Black.

23.0 TRANSMISSION

The transmission shall be a heavy duty Allison Gen IV model EVS 3000PR 6 speed or model suggested by builder.

A touch screen control shall be provided for gear selection of transmission. Control shall be within easy reach and sight of the driver.

A transmission temperature gauge, with red light and audible alarm, shall be installed on the cab instrument panel.

The transmission, upon start-up, will automatically select a four (4) speed operation. The fifth and sixth speed over drive shall be available with the activation of the mode button on the shifting pad. The transmission retarder control shall be activated by letting off of the throttle pedal. Percentage of activation shall be determined after bid award but prior to ordering of the chassis by the Bidder. The retarder shall be activated 100% @2 PSI by applying the brake pedal.

The transmission retarder shall have a master "On/Off" switch on the instrument panel. A red indicator light shall be provided to warn that the transmission is being over worked.

The retarder shall be wired to the brake lights so they are energized when the retarder is slowing the vehicle down.

If Chassis is equipped with ABS, the ABS system shall automatically disengage the auxiliary braking device when required.

The transmission shall have a five (5) year/unlimited mileage warranty covering 100% parts and labor. The warranty is to be provided by Allison Transmission and not by the apparatus builder.

23.1 TRANSMISSION ACCESSORIES

Transmission shall include a Fire/Emergency PTO provisions, mounting pads left and right sides, designed for (not factory equipped with) mounting of Chelsea 277 style of PTO.

Electronic Transmission Access Connector to be provided.

TranSynd synthetic automatic transmission fluid is to be furnished.

Transmission to include magnetic drain plug, Dash Mounted Push-Button Electronic shift controls, oil check/fill tube, and Electronic Oil Level Check feature.

An external transmission oil cooler shall be provided in addition to the bottom tank cooler in the radiator.

TRANSMISSION COOLER WARRANTY

The transmission cooler will carry a five (5) year parts and labor warranty (exclusive to the transmission cooler). In addition, a collateral damage warranty will also be in effect for the first three (3) years of the warranty coverage and will not exceed \$10,000 per occurrence. A copy of the warranty certificate will be submitted with the bid package.

24.0 INDEPENDENT FRONT SUSPENSION AND EQUIPMENT

An Independent Air Ride Front Suspension shall be provided with a load weight rating suggested by manufacturer awarded bid. Front axle shall have all heavy duty parts for long life and shall have the largest brakes allowed on for that system. Camber at load shall be zero degrees for optimum tire life.

Front axle shall have Heavy Duty disc brakes that activate with the parking brake of the vehicle. This parking brake system shall be in addition to the main parking brakes on the rear axle due to the excessive hills in the city.

25.0 REAR AXLE, SUSPENSION AND EQUIPMENT

The rear axle shall be a Meritor brand "single" rated at suggestion of manufacturer.

Driver controlled traction differential, with differential lock control valve, will be furnished. Control will be on the dash and in easy reach of the driver. A dashboard mounted large red indicator light shall be furnished to indicate "Rear Axle Differential Lock Engaged".

The successful bidder shall review the ratio selection with representatives of the City of Duluth Fleet Services and Fire Department to assure the best selection for the best performance in the City of Duluth.

The rear suspension shall be an air ride system capable of handling the weight of a fully loaded apparatus.

25.1 TIRE CHAINS

Onspot brand six (6) strand automatic ice chains shall be installed on the rear axle of the chassis to provide instant traction while traveling on ice and snow at speeds below 35 MPH.

The tire chain system shall be activated by a locking switch on the dash to deter accidental activation. The light on the switch shall illuminate when the tire chains are engaged. The tire chains shall be interlocked with the transmission and shall engage only if the vehicle is traveling 30 MPH or less. After traveling over 30 MPH, the vehicle must be reduced to a speed below 5 MPH for the tire chains to be engaged or re-engaged.

In addition 2 sets of 2 tire chains (total of 4 chains), one for each of the outside rear duals, built specifically for the size tires of this apparatus shall be supplied. Chain cross links to be "V" bar style.

26.0 FRONT AND REAR TIRES AND WHEELS

Front tires shall be Continental HSU2 315/80R 22.5. The front tire stamped load capacity shall be 17,640 pounds per axle with a speed rating of 75 miles per hour.

Rear tires shall be GOODYEAR 12R-22.5 16PR "H" tubeless radial G622 RSD mixed service tread.

Front wheels to be correctly sized Alcoa (preferred) or Accuride, 10-stud-hole aluminum disc with outsides polished, tubeless type, hub piloted.

Rear wheels to be correctly sized Alcoa (preferred) or Accuride, 10-stud-hole aluminum disc, tubeless type, hub piloted with outsides of outer rear wheels polished. Rear inside duals to have air valve extensions provided and installed. Rear duals to also have air gauges that are clearly visible. Gauge type and brand to be provided by Fire Department.

Stainless Steel front and rear wheel hubs to be furnished with oil viewing window on front.

Front tires to be single (two each). Rear tires shall be dual (four each).

26.1 LUG NUT AND CENTER HUB COVERS, FOR CHASSIS' ALUMINUM WHEELS

The specified front and rear driver's and passenger's side aluminum wheels shall be equipped with chrome plated plastic or polished stainless steel (non-corrosive) friction fit lug nut covers and center hub cap covers. Covers to be installed after proper torque of wheel lug nuts has been reached.

27.0 AIR BRAKING SYSTEM

Brake systems shall comply with current regulations and NFPA 1901.

All brake rotors, drums, shoes, or pads shall be the largest possible on the chosen axle for maximum braking without driving or handling deficiencies.

Color-coded nylon brake lines shall be provided. The lines shall be wrapped in a heat protective loom where necessary in the chassis.

FMVSS-121 compliant brakes must be furnished.

27.1 AIR RESERVOIRS

Steel air reservoirs shall be furnished that are sized to handle the braking system. One (2) additional air tanks with approximately 1400 cubic inch displacement, or size recommended by manufacturer, shall be provided for the use of powering air tools.

27.2 BRAKING PERFORMANCE AND PARKING BRAKE

The apparatus parking brakes shall operate the FRONT and REAR wheels. Park-Release brake control to be furnished should control both front and rear. Placement of control should be easily accessible to a seated driver.

Neither a lock-up device, nor a "Park" position on an automatic transmission can be used to substitute for a separate parking brake system. Brake performance shall comply with all applicable regulations; IE: NFPA, MNDOT, ETC.

NOTE: NFPA requires at a minimum: "the service and parking brake system operating independently shall be capable of positively holding the fully loaded vehicle on all City of Duluth streets, or a maximum grade specified (Approx. 28 degree street) when the vehicle is performing any of its designed stationary functions.

28.0 FRAME AND WHEELBASE

Chassis outboard **SINGLE** frame rails, left and right sides, shall be clear of protrusions, from back of cab to rear suspension. Frame mounted chassis accessories must be located inside the frame rails, and removable.

The chassis wheelbase shall be approximately 190", with a minimum cab-to-axle distance of 65". Rear of axle frame rails shall be "square-end", extending at least 60" behind centerline of rear axle.

***Bidders shall provide all options available for corrosion protection and warranty for frame rails and under carriage.**

29.0 BUMPER/TOW HOOKS

The chassis shall be equipped with a severe duty front bumper constructed from 80,000 PSI structural steel channel. The bumper shall be one piece and material shall be 0.38 thick ASTM A36 steel which shall measure approximately 12.00 inches high with a 3.05 inch flange and shall be 99.00 inches wide with angled front corners. Ends of bumper shall extend rearward toward cab to provide added protection. The bumper shall be backed the full width with a quarter inch thick steel reinforcement channel supported on each side outboard of the main chassis frame rails. Bolting of the bumper shall be accomplished with grade 8 bolts.

The bumper shall be primed and painted to match red of cab unless specified by Fire Department.

Front bumper extension shall extend approx. 24" from the front of the chassis to encompass the air horns, sirens, warning lights, hydraulic/air/electric reels, and receiver hitch. A Skid Plate shall be installed to prevent damage to reels from below.

Bumper reels shall be Two (2) Custom Machine Works Model 6011 dual reel. Reels shall consist of one air hose, one electric, and two hydraulic. All reels shall be 100 feet in length. Location shall be outside of frame rails on both sides.

Bumper shall have an approximately 12" deep center well. There shall be a full length one piece, latching weather tight cover high enough to protect reels and tools stored underneath. Cover shall close over 90 degree formed up 2" lip around entire bumper to keep out weather. Gaskets will be provided to protect from weather. Cover shall have hold open cylinders to prevent cover closing during reel use. Hydraulic cutter and spreader shall be stored on top of lift out shelf in order to access tools stored in center well. Gravel shield and cover shall be constructed of minimum .188" bright aluminum treadplate. The gravel shield and well shall be supported from the underside to prevent flexing and vibration of the treadplate.

Two (2) tow eyes with rounded edges for anchor system, front frame mounted or easily accessed, shall be included. A receiver hitch shall be mounted below the front bumper. Power options to this location shall be discussed with Duluth Fire Department. Power connectors with protective covers to be Anderson Power Products SBX 175 2-pole connectors with auxiliary contacts. Connectors shall be on the left side of the hitch below bumper and be 20" from the center of the hitch to the center of the connector to accommodate the winch cord length.

Receiver hitch and tow eyes shall be rated at 12,000 lbs.

30.0 FUEL TANK

One (1) minimum 50 gallon capacity stainless steel fuel tank shall be provided and mounted to fill on the drivers side of the vehicle at the rear of the chassis.

An Alliance Fuel/Water Separator or approved equal shall be furnished, with heated bowl.

31.0 CHASSIS AND CAB EQUIPMENT

- A custom cab design with four doors and retractable safety glass windows shall be provided.
- The cab shall be specifically built for the fire service and have rubber or air suspension mounts.
- Cab shall have compartments located behind both rear passenger doors that is approximately 12" X 24" in size. Doors shall have d-ring style slam latches.
- The cab shall be full tilt style.
- All cab and crew entry doors shall have electric windows controlled at the window and at the driver side instrument panel.
- All cab glass shall be tinted, with front doors to have HEATED glass if available.
- A glove box with a drop-down door shall be installed in the front dash panel in the front of the officer's position.
- Electric windshield wipers, Arctic Type, shall be furnished with delay and power integral blade windshield washers.
- The washer reservoir shall be able to be filled without raising the cab.
- The engine cover (dog house) shall be insulated for protection from heat and sound. The noise insulation shall keep the DBA level within the limits stated in the current NFPA series 1900. There shall be an access cover at the side or rear that allows all engine fluids to be easily checked. The engine cover shall be as built to allow the most usable space possible in the cab area. The engine tunnel shall be modified on the passenger side to fit the turbo and related components.
- There shall be double automotive type rubber seals around the perimeter of the door framing and the door edges to ensure a weather tight fit.
- Two (2) window defrost fans shall be provided. Fans shall be mounted to the ceiling of the cab centered above the front dash area.
- A single electric horn to be furnished, steering wheel button controlled.
- Four (4) cup holders to be provided and installed. Two (2) in front and two (2) in rear.
- Adjustable "tilt" and "telescope" steering wheel column is to be furnished with steering wheel.
- One (1) 12-volt LED RED courtesy light shall be installed under driver dash to illuminate area of regen switches and diagnostic port. Light to be activated with ignition switch.
- Three (3) 12-volt power sources shall be furnished, exact location to be determined at pre-build meeting. Power to originate from the battery and specified battery conditioner.

32.0 CAB EXTERIOR

Four (4), exterior NFPA compliant tubular hand-grab rails shall be furnished. They shall be etched, without rubber inserts, and have a drain hole on the bottom. They shall be located on the left and right sides to the rear of the doors.

Handle type, placement, and options to match existing engine company. Handrail brackets shall have 3" standoff to allow for fire gloves and stainless scuff plates attached to cab.

A chromed front grille shall be provided. A custom red vinyl cold weather front shall be provided. The vinyl cover shall cover only the front cab grill and shall be firmly held in place to prevent it from blowing off.

Bright aluminum treadplate shall be overlayed on the outside rear wall of the crew cab except for areas that are not typically visible when the cab is lowered.

Paint schematic, single color, red, to match existing fleet. Paint numbers to be provided upon award. Chassis, including: frame rails, cross members, axles, and suspensions, to be painted black.

32.1 MIRRORS

Retrac Aerodynamic West Coast style dual vision mirror heads model 613315 shall be provided and installed each of the front cab doors. The adjustment control switches for both top and bottom mirrors shall be mounted within easy reach of the driver. The flat and convex mirrors shall both be heated for defrosting in cold weather conditions. The heat for the rearview mirrors shall be controlled through a rocker switch on the dash in the switch panel. The mirror backs shall include an amber marker light.

32.1.1 AUXILIARY EXTERIOR MIRRORS

The cab exterior shall include three (3) Retrac convex mirrors. The mirrors shall measure 5.50 inches X 7.50 inches. One (1) passenger side down-view mirror shall be furnished above officer's door. Two (2), one on each side in front of rear passenger doors, to allow for occupants to see oncoming traffic before exiting vehicle. Mirrors shall be placed high enough so as not to interfere with vision of the side rear view mirrors.

32.2 SIDE SCENE LIGHTS

The cab shall include two (2) Whelen model Pioneer PCPSM1C semi-recess mount lights installed one (1) on each side of the cab. Each lamp head shall have one (1) 12 volt high intensity LED panel. Each lamp head shall be mounted within a semi-recessed fifteen (15) degree housing featuring a chrome flange. The lamp heads shall be powder coated white.

32.2.1 SIDE SCENE LIGHT LOCATION

The scene lighting located on the left and right sides of the cab shall be mounted rearward of the cab "B" pillar in the 20.00 inch raised roof portion of the cab between the front and rear crew doors.

32.2.2 SIDE SCENE ACTIVATION

The scene lights shall be activated by two (2) rocker switches located in the switch panel, one (1) for each light, the two door switches (front and rear) on each side of the cab and with setting the parking brake.

33.0 CAB INTERIOR AND SEATING

The cab and dash fascia shall be a flat faced design to provide for ease of maintenance. The engine tunnel shall be covered with a fire department approved material that is resistant to oil, grease, and mildew. It shall be a compact as possible to allow for the most room available for the driver and officer. The headliner shall be installed in both forward and rear cab sections. Headliner material shall be of an approved material. A sound barrier shall be part of its composition. Forward portion of the cab headliner shall provide easy access for servicing electrical wiring or for other maintenance needs without removing entire unit. Gray interior or approved color shall be furnished.

Drivers seat shall be a H.O Bostrom Sierra Air or approved equal with 5" travel option, fore and aft adjustment, suspension cover, and Black Duracoat Vinyl seat covering. Space below seat shall incorporate the largest heater possible with an on/off switch on the dash within easy reach of the driver similar to current engine.

Officers seat shall be a H.O. Bostrom Tanker 450 Air or approved equal with 5" travel option, fore and aft adjustment suspension cover, cavity cover, and Black Duracoat Vinyl seat covering. SCBA bracket shall be Smartdock Gen 2 for Scott 4500 45 minute SCBA. Space below seat shall incorporate the largest heater possible with an on/off switch on the dash within easy reach of the officer similar to current engine.

Rear outboard forward facing seats shall be two (2) H.O. Bostrom Tanker 400 Air or approved equal. They shall have cavities for Scott 4500 45 minute SCBA, with cavity covers, and suspension covers. The seat covering shall be Black Duracoat Vinyl. SCBA bracket shall be Smartdock Gen 2 for Scott 4500 45 minute SCBA. Final location shall be decided at preconstruction.

In order to maximize leg room Officers and drivers seats shall be set back as far as practical.

Five (5), large 7" or approved equal 12-volt clear cab dome/red map lights with a switch on each side of the light to allow choice of the clear light, the red light, or both. Two light fixtures will be located in the front of the cab and

three lights will be mounted in the rear of the cab. The lights will be activated by the door switch and can be turned on manually with the switches located on the lights.

Seat belts and/or safety straps shall be red and conform to all applicable regulations, all 3-point type.

33.1 CAB HEAT

A ceiling mounted combination defroster and cabin heating and air conditioning system shall be located above the engine tunnel area. The system covers and plenums shall be made of aluminum which shall be coated with a customer specified covering. The design of the system's covers shall provide quick access to washable air intake filters as well as easy access to other serviceable items.

The system shall provide heater performance that will meet or exceed the performance requirements of SAE J1612 as well SAE J381 for defroster performance.

Six (6) adjustable louvers will be provided for the front seat occupants and ten (10) adjustable louvers will be provided for the rear crew occupants.

The defroster ducts will be designed to provide maximum defrosting capabilities for the front cab windows.

A gravity drain system shall be provided that is capable of evacuating condensate from the vehicle while on a slope of up to a 13% grade in any direction.

Two (2) auxiliary heaters with at least 13,000 BTU each will be provided in the cab below the driver and officer seats. Fan speed and temperature controls shall be within easy reach of the driver and officer for that seats heater. Airflow is provided by louvers located below the driver and officer seats.

Separate heater and A/C blower controls for the front and rear of cab if possible.

A separate auxiliary rearward facing heater with at least 50,000 BTU's that is mounted on the floor in the rear of the cab under the specified interior cabinet shall be provided and installed with heat and fan controls on the unit.

33.2 AIR CONDITIONING

A high-performance, customized air conditioning system will be furnished inside the cab and crew cab. A 19.10 cubic inch compressor will be installed on the engine to supply the system.

The air conditioning system will be capable of cooling the average cab temperature from 100 degrees Fahrenheit to 72 degrees Fahrenheit at 50 percent relative humidity within 30 minutes. The cooling performance test will be run only after the cab has been heat soaked at 100 degrees Fahrenheit for a minimum of 4 hours.

A roof-mounted condenser that meets and exceeds the performance specification will be installed on the cab roof. Mounting the condenser below the cab or body would reduce the performance of the system and will not be acceptable.

A gravity drain system shall be provided that is capable of evacuating condensate from the vehicle while on a slope of up to a 13% grade in any direction.

An evaporator unit that meets and exceeds the performance specification will be installed in the cab, located in the center of the cab ceiling over the engine tunnel. The evaporator will include two (2) high performance cores and plenums with multiple outlets.

The air conditioner will be controlled by a single electronic control panel. For ease of operation, the control panel will include variable adjustment for temperature and fan control and be conveniently located on the dash in clear view of the driver. The control panel will include robust knobs for both fan speed and temperature adjustment.

33.3 RADIO

One AM/FM/CD/WB cab mounted radio to be provided with four (4) radio speakers, two in front and two in rear, and an AM/FM antenna mounted on forward driver side roof. Isolated in-line fuse protected wiring shall be provided, extending direct from battery to chassis cab AM/FM/CD/Weatherband Radio so as to support preset stations and clock, if any.

34.0 NFPA MODIFICATIONS TO CHASSIS:

The following modifications shall be made by the apparatus body builder, to the furnished fire apparatus truck chassis. Each modification shall be described within the Manufacturers proposal specifications so as to prove compliance or non-compliance with the following:

34.1 AUDIBLE DEVICE INSTALLATION STANDARDS

Where furnished, air horns, electric siren, electronic siren speakers, and other audible emergency equipment will be mounted as low and as far forward on the apparatus as practical. Audible warning equipment will not be mounted on the roof of the chassis cab, or the roof of any crew cab.

34.2 GROUND CLEARANCE STANDARDS

Axle housings will clear the road surface by at least 8" and an angle of departure of at least 8 degrees will be maintained at rear of the vehicle, even when fully loaded.

34.3 NON-REMOVABLE IGNITION DEVICE

The chassis ignition actuation will be by a rotary/toggle keyless switch.

34.4 "OPEN DOOR" INDICATOR

An indicator light shall be furnished and installed within clear vision of the driver, wired to all compartment light automatic door switches so as to indicate "OPEN" apparatus body compartment door. Indicator light to be Red, minimum 2" diameter, visible to driver and officer, identified with permanent engraved nameplate to read; "DO NOT MOVE APPARATUS WHEN LIGHT IS ON".

34.5 OVERALL HEIGHT/WIDTH/LENGTH/WEIGHT DATA PLATE

There shall be a high-visibility placard located in direct view of the seated Driver, which shall indicate, in feet-and-inches; the overall height of the vehicle (to the highest permanent point-except antennas), the overall width (at steps, fenders, and rubrails-not retractable mirrors), and overall length of vehicle (bumper to tailboard). The data plate shall also indicate, in pounds, the vehicle's total "as delivered" weight.

35.0 CHASSIS MODIFICATIONS:

35.1 SPEED GOVERNOR TEST

Engine limiting speed governor will be tested, upon arrival to the apparatus body builder's factory for compliance with the maximum no-load engine operating speed, as determined on appropriate engine power curve sheet.

35.2 SUSPENSION AND FRAME CORROSION PROTECTION

Rear axle suspension brackets, left and right sides, front and rear, will be caulked with silicone sealant preventing build-up of road salts and moisture that may cause future corrosion of bracket-to-frame-rail attachment points.

35.3 SUSPENSION LUBRICATION ACCESS

Rear suspension grease zerks will be replaced with 90 degree zerks allowing lubrication from beneath the apparatus body.

35.4 CHASSIS CAB STEP RUNNINGBOARDS

The driver, officer and crew cab steps shall be as wide as possible and shall be at least 8.00" of depth. A large slip resistant handrail shall be provided adjacent to all door openings to assist entrance and exit of the cab. A handrail shall be provided inside each cab door for ease of entry.

35.5 MASTER BATTERY CUT-OFF SWITCH

A master battery switch, to activate the battery system, shall be provided inside the cab within easy reach of the driver

35.6 LIGHT PACKAGE ACTUATION CONTROLS

The entire warning light package shall be actuated with a single master warning switch in the cab switch panel. The wiring for the warning light package will engage all of the lights required for "Clearing Right of Way" mode when the vehicle parking brake is not engaged. An automatic control system will be provided to switch the warning lights to the "Blocking the Right of Way" mode when the vehicle parking brake is engaged.

35.7 SWITCH PANEL WITH POWER CONTROL

Specified emergency lighting fixtures, non-emergency lighting fixtures, and electrical components shall be individually activated following specified illuminated switches. Emergency lighting switches to be illuminated RED, non-emergency switches to be illuminated GREEN. An illuminated "MASTER EMERGENCY SWITCH", shall be furnished, providing power for individual emergency lighting switches. Back-lit nametags, describing function of each individual switch, to be located centerline of each switch. Switches to be mounted on a removable electrical panel, raised and sloped rearward to prevent windshield glare.

Controls and switches, which are expected to be operated by the driver while the apparatus is in motion, are to be within convenient reach of the driver. The controls to operate the siren to be within convenient reach of both driver and front passenger (officer). Final layout and location to be approved by fire department at preconstruction.

35.8 SOLDERED AND HEAT SHRINK PROTECTED EMERGENCY FIXTURE WIRING

The following specified emergency lighting fixtures shall have their wiring leads "soldered" (crimp or disconnect connectors are not acceptable), with all soldered joints covered with heat-shrink vinyl protection material.

35.9 CAB FRONT/GRILLE WARNING LIGHTS

FOUR (4), Whelen model 600 Series, 4" x 6" rectangular LED lightheads and four(4) chrome plated surrounds to be furnished, surface mounted located independent of each other on the front of the cab. Light lenses to be 6" wide x 4" high, driver's Red, passenger's side Red. Lights to be activated by a separate illuminated rocker switch identified by function. Lights to be completely sealed for weather resistance.

There shall also be TWO (2) Whelen 500 series TIR6 rectangular flush mounted emergency LED lights complete with associated 5E chrome surround flanges to be furnished and installed on radiator grille guard. Lights to be activated by the same switch as above.

Final location to be determined at preconstruction meeting.

35.10 ROTO-RAY WARNING LIGHT

One (1) ROTO-RAY three light warning device shall be furnished and installed on the front of the apparatus with final location decided at preconstruction. Lights to be two (2) red, one (1) white. Lights to be activated by a separate illuminated rocker switch, identified by function and connected to master warning switch. Warning device to be shut down with parking brake due to white light.

35.11 WIG-WAG HEADLIGHTS

The chassis headlights shall alternately flash between high and low beam left and right when emergency lights are activated. There shall be a switch in the master warning light bank to activate this function.

Note: This function must be disabled with application of chassis parking brake per NFPA 1901.

35.12 BUMPER LED WARNING LIGHTS

Two (2), Whelen model 600 series, 4" x 6" rectangular LED lightheads and two (2) chrome plated surrounds to be furnished, surface mounted located driver and passenger front bumper sides. Light lenses to be 6" wide x 4" high, driver's Red, passenger's side Red. Lights to be activated by a separate illuminated rocker switch, identified by function and connected to master warning switch.

35.13 CORNERING LIGHTS

Two Whelen Model 600 "constant on" cornering lamps with clear lenses shall be provided and mounted ahead of the intersection warning lights on the front bumper. A light shall be provided above the rear wheel also to aid in visibility while turning. The lights shall turn on with activation of the turn signal switch.

35.14 CAB SIDE WARNING LIGHTS

Two (2), Whelen model 600 series, 4" x 6" rectangular LED lighthoods and two (2) chrome plated surrounds to be furnished, surface mounted located driver and passenger side at rear edge of cab near roof. There shall also be TWO (2) Whelen 500 series TIR6 rectangular flush mounted emergency LED lights complete with associated 5E chrome surround flanges to be furnished and installed at as close to runningboard level as possible. Lights to be activated by a same illuminated rocker switch as above lights.

35.15 LIGHTBAR

One (1) Whelen FN72VLED 72" lightbar with permanent mounting brackets installed on the forward portion of the cab roof complete with back-lit rocker style switch at the 12V emergency light console. The lightbar shall be equipped with forward facing and side facing lights only due to the raised roof. . The lightbar shall be equipped with red lenses. Final approval of lightbar shall be made at preconstruction.

If any clear sections in the lightbar, the same shall be deactivated in the Blocking Right of Way mode.

One (1) Opticom Emitter shall be provided and installed in the center of the above light bar for intersection traffic light control. Emitter shall be controlled by an illuminated switch on the cab dash in conjunction with the other emergency lights. The emitter shall be wired to shut off when the vehicle parking brake is set.

35.16 ELECTRONIC SIREN

One (1), Code 3 model 3692, electronic siren amplifier to be furnished, surface mounted to the specified electrical console. A built-in microphone to be furnished with coil cord and mounting clip. Siren amplifier to be wired to the specified electronic siren speaker(s).

35.17 DUAL SPEAKERS

Two (2), Whelen model SA314P, 100-watt rectangular concealed speakers to be furnished, one (1) each located recessed behind driver side and passenger front bumper facing straight forward. Back side of speakers to have boxed aluminum protective enclosure. Vertical surface of front bumper to be "cut-out" to fit speaker.

35.18 MECHANICAL SIREN

One (1), Federal model Q2B chrome plated mechanical siren to be furnished, mounted on top of front bumper horizontal surface, driver side. Siren brake to be furnished, activated by separate momentary push-button switch, identified as: "SIREN BRAKE". Power to siren shall be available only when Master Emergency switch is turned on.

Above specified Federal Q2B siren to be operated by driver's side floor mounted foot switch as well as the by electrical console mounted momentary push-button switch on captains side with nametag to read: "SIREN". Both switches shall only activate siren when master warning light switch is activated.

35.19 UNDER CAB LIGHTING

Seven (7), 4" round LED under chassis cab 12-volt ground lights to be furnished, located two (2) driver's side and two (2) passenger's side, beneath cab doors, and three (3) under the front section of the bumper. Lights to be completely sealed for weather resistance. Lights to be activated by setting of the parking brake. Door lights to be activated by opening of door above light also.

35.20 ENGINE COMPARTMENT LIGHTING

Two (2), surface mount 12-volt engine compartment interior lights to be furnished, located driver's side and passenger's side overhead the engine. Lens to be 5" diameter, clear.

Lights to be activated by individual light lens mounted switch.

35.21 HAND HELD SPOTLIGHT

One (1) handheld spotlight with mounting bracket shall be furnished. Duluth Fire Department shall choose mounting location after pre-construction conference.

35.22 800 MHz RADIO, ANTENNA & CABLE

One (1) each, radio quarterway whip style antenna shall be furnished, along with appropriate cable, both to be compatible with the furnished radio. Antenna to be roof mounted (exact location to be determined at Pre-Build), with cable ran to the prescribed radio location. Exact location of radio location to be decided at pre-construction. Furnish and install the following Motorola:

Model#	Description
M21URM9PW1AN	XTL 2500 "MANTAREY" Main Model
G442	ADD: XTL 2500 Control Head, (4-line, 16 character alphanumeric display)
G444	ADD: XTL 2500 Control Head Software
G806	Astro Digital CAI Operation Software
G51	Smartzone/Singlezone System Software
G361	Astro 25 Software
G67	ADD: REMOTE MOUNT
W22	Standard Palm Microphone
B18	Auxiliary 5 Watt Speaker(2)Two
G335	Antenna ¼ Wave (764-870MHZ)
G114	Enhanced Digital ID Display
G24	2 Year E.S.P. (3-year total warranty)

35.23 MOBILE DATA COMPUTER MOUNT

Gamber Johnson Docking Station, Internal Power Supply (Dual RF) 7160-0318-06
Placer Gold APU including power cable 62850-00
Antenna Bundle for APU/DRU (including p/n 70288-70-TMS & 62474)
Associated mounting hardware to mount as specified

35.24 HEADSET SYSTEM

A Firecom cordless headset system for four (4) seating positions shall be furnished and installed. Equipment to include a 3010 R Intercom, MR Cable, two (2) combo packs including a wireless headset, charger, and base station for the Officer and Driver. Officer and Driver headsets shall be capable of talking through the radio to dispatch.

One (1) multichannel base station and two (2) headsets with chargers for the firefighter positions will also be included. The firefighter positions do not need to talk to dispatch they shall be intercom only. Final mounting and locations shall be decided at preconstruction. Headsets shall be the UHW (Under the Helmet) model.

Headset system shall be direct connected to the battery system so as to have minimal delay connecting when turning on headsets.

35.25 INTERIOR COMPARTMENTS

Four (4) interior compartments shall be furnished and installed. The approximate size shall be determined at the pre bid meeting. Compartments shall be located between forward facing seats, behind driver and officer seats, and behind doghouse. Compartments behind officer and driver shall be floor to ceiling in height and approximately 24" deep and 22" wide. Compartment behind doghouse shall be approximately 36" tall, 16" deep and 40" wide.

Compartment between forward facing seats shall be floor to ceiling in height and approximately 32" wide and 16" deep. Center compartment in 20" raised roof section between officer and driver approximately 40" wide also. They shall have mesh fronts with non-snapping fasteners. Other option for compartment closure can be presented. Ten (10) shelves shall be provided with final layout at preconstruction. Compartments shall also have receptacles provided in back of each that are spaced approximately 8" apart. Compartments shall have LED lighting to be discussed with fire department after final layout.

Also a heavy duty stainless steel 115 volt refrigerator measuring approximately 30" high, 20" wide, and 20" deep shall be provided and installed. It shall be plugged into a receptacle that is connected to the apparatus shorepower. Final location in cab to be determined at preconstruction meeting.

35.26 ON-BOARD BATTERY CHARGER

One (1), Kussmaul, required size by manufacturer, fully automatic battery charger shall be furnished. Battery charger shall be located inside forward chassis cab, with Remote Bar Graph Display visible from ground level.

The above battery charger, shall be powered by the following specified 120-volt "shore power receptacle".

35.27 120 VOLT SHORE PLUG /BLOCK HEATER – MANUAL

Two (2) manual recessed shoreplug with gray weatherproof spring loaded covers shall be furnished and installed so as to be conveniently accessible from ground level. Back side of shoreplug shall be equipped with protective cover, wiring to be enclosed inside coated fabric loom extending into chassis cab interior to power the specified 110-volt powered accessories (including the engine block heater). Shore power receptacle to be convenient for removal by Driver upon entering cab, adjacent to air coupler. Two engraved nameplates above plugs shall read "BATT CHARGER" and "BLOCK HEATER".

35.28 CHASSIS CAB/P1 COMPARTMENT 120-VOLT SHOREPOWER

Two (2), 120-volt duplex plug-in receptacle boxes shall be furnished, inside the chassis cab, on the rear interior wall, between forward facing seats, with: surface mounted cast aluminum receptacle box, duplex 120-volt 3-wire household plug-in receptacle, metal duplex cover plate, protected wiring to the specified shoreplug, and engraved nameplate to read: "120-VOLT SHOREPOWER." There shall also be one (1) 120-volt duplex power outlet in the passenger side #1 compartment with an engraved nameplate to read "120-VOLT SHOREPOWER".

35.29 AIR COUPLER/SHORELINE

An air coupler "shoreline" shall be furnished, consisting of: an Aeroquip FD-45 exterior male coupler with built-in check valve and matching female coupler with built-in check valve (for use with Customer's station air line). Air coupler to be convenient for removal by Driver upon entering cab, adjacent to shore power receptacle.

36.0 DUAL AIR HORNS

Two (2), Grover model 1512 stuttertone single base chrome plated air horns shall be furnished. Air horns shall be mounted one (1) driver's side and one (1) passenger's side of chassis front bumper, recessed.

Air horns shall be activated by the steering wheel horn button. An electrical switch console mounted two-position horn selector rocker switch shall be furnished top position of rocker switch shall select chassis electric horn, and bottom position shall select air horns. NOTE: Air lines must both be same length and same size to assure loud and balanced horn tones.

An additional "Air Horn Only" momentary push-button switch shall be furnished, accessible to Officer, properly identified.

37.0 APPARATUS BODY AND COMPARTMENTATION:

37.1 18 FOOT APPARATUS BODY CONFIGURATION:

A custom engineered and fabricated rescue apparatus compartmented body shall be furnished, designed to be located immediately to rear of a cab, supported by and mounted to the specified apparatus body sub-frame. The body shall be 18 feet in length and match height of raised roof cab. The design of apparatus body shall provide for maximum compartments ahead of, above, and back of rear wheelwell housing, driver's side and passenger's side of vehicle. Upper level coffin compartments shall also be provided. So as to provide maximum depth compartments,

the apparatus body overall width shall be 100" (not to exceed 101" at running boards / rub rails). The roof will be integral with the body construction. The roof panel will be welded to the roof extrusions and supports. All roof seams will be continuously welded.

37.2 DRIVER'S SIDE COMPARTMENTATION:

Driver's side compartments shall be provided full height ahead of, upper level above, and full height behind rear wheelwell housing.

(D1) The driver's front side compartment located directly behind cab shall be a full traverse segment that shall extend through to the other side of the body and measure approximately 48" wide X 69". Door shall be approximately 45" wide x 63" high. Compartment segment to be fully enclosed and weather sealed, equipped with one (1) roll-up compartment door.

(D2) The second compartment located directly behind the front compartment and ahead of the rear wheels shall be approximately 42" wide X 69" high X 48" deep. Door shall be approximately 39" wide X 63" high. Compartment segment to be fully enclosed and weather sealed, equipped with one (1) roll-up compartment door.

(D3) The driver's side over-the-wheels upper level compartment shall be a full traverse segment that shall extend through to the other side of the body and measure approximately 57" width x 40" high. Compartment to be fully enclosed and weather sealed, equipped with one (1) roll-up compartment door.

(D4) The driver's rear compartment located behind the rear wheels shall be approximately 48" wide x 69" high X 48" deep. Compartment to be fully enclosed and weather sealed, equipped with one (1) roll-up compartment door.

37.3 PASSENGER'S SIDE COMPARTMENTATION:

Passenger's side compartments shall be provided full height ahead of, upper level above, and full height behind rear wheel well housing.

(P1) The passenger's front side compartment located directly behind cab shall be a full traverse segment that shall extend through to the other side of the body and measure approximately 48" wide X 69" high. Door shall be approximately 45" wide x 63" high. Compartment segment to be fully enclosed and weather sealed, equipped with one (1) roll-up compartment door. *This compartment shall have a heater installed for EMS equipment and Oxygen bottle storage*

(P2) The second compartment located directly behind the front compartment and ahead of the rear wheels shall be approximately 42" wide X 69" high X 48" deep. Door shall be approximately 39" wide X 63" high. Compartment segment to be fully enclosed and weather sealed, equipped with one (1) roll-up compartment door.

(P3) The passenger's side over-the-wheels upper level compartment shall be a full traverse segment that shall extend through to the other side of the body and shall be approximately 57" width x 40" high. Compartment to be fully enclosed and weather sealed, equipped with one (1) roll-up compartment door.

(P4) The passenger's rear compartment located behind the rear wheels shall be approximately 48" wide x 69" high X 48" deep. Compartment to be fully enclosed and weather sealed, equipped with one (1) roll-up compartment door.

37.4 COMPARTMENT SHELVING

All shelves shall be as wide as possible for the most useable space. All slide out/ tip down shelves shall have no more the 1/2" clearance on each side from door frame when extended through open door.

Eight (8) perimeter double broke infinitely adjustable full length compartment shelves shall be furnished, where specified, mounted to and removable from front and rear bulkhead mounted vertical track assemblies. Compartment pan style shelves shall be furnished, constructed of .25" thick 5052 aluminum sheet. Shelf perimeter flanges (4 each) shall be broke up 3". Each shelf shall have a load capacity of no less than 500 lbs. and shall be infinitely adjustable. Exact location and layout shall be decided at preconstruction meeting.

On scene solutions slide out, tip down shelves and vertical tool boards shall be provided and installed. A total of 8 tip down shelves, 20 slide-out shelves and 3 traverse shelves shall be provided and installed. A total of 6 vertical

tools boards shall also be provided and installed. All above trays and shelves shall have a weight rating of at least 500 lbs. with lower shelves being 1000#. Exact location, weight rating, and layout shall be decided at preconstruction meeting.

Each compartment shelf shall have a minimum of four (4) angular clamp brackets bolted to under side shelf floor, a minimum four (4) aluminum heavy flat bar track clamps with threaded stainless steel carriage bolts and self-locking nuts or department approved equal, made easily accessible for shelf height adjustment. Compartment shelves, shelf angular clamp brackets, and track assemblies shall be unpainted "swirl-finish" or approved equal. Entire front edge of shelves shall have reflective Red and White alternating striping.

NOTE: Monetary provisions shall be included in the bid for compartment and shelf customization. Equipment to be mounted shall include:

- Genesis Portable hydraulic power unit
- Honda 2000 watt portable generator
- Ramsey 9000 portable winch
- Rescue 42 Struts (4) and components (IE Ratchet Straps)
- Husqvarna K970 Rotary Saw
- Stihl 362 Chain Saw
- Stihl 461 Chain Saw
- 2 Small Gas Cans
- 2 Cordless Reciprocating Saws in case
- 1 Corded Reciprocating Saw in case
- Cordless Circular Saw and Drill
- Arizona Vortex Tripod and Leg Components
- 1 Stokes Basket
- 1 Short Backboard
- 1 Long Backboard
- 1 Skyhook Rope Winch w/case (24x20x14)
- 1 Sling shot Rope Launch Pole
- 2 5 gallon Water Rescue Rope buckets
- 7 Large Tool Boxes
- 2 Small Torch Bottles
- 1 Multi-ladder
- 1 Man-in-Machine kit (24x20x14)
- 1 Oceanid Rapid Deployment Craft
- 1 Air Shore Control Box (24x20x14)
- 1 Airbag Control Box (24x20x14)
- 1 Cable Grip Hoist
- 1 Large Lever Hoist
- 8 Air Bags (Various sizes)
- 2 Broom heads and handles
- 4 Squeegee heads and handles
- 1 2 ½ Gallon Water Can
- 1 Dry Chem Extinguisher
- Hand tools (Denver, Irons, Pickhead axe x2)
- 1 Stokes Basket Wheel
- 1 High Lift Jack
- 1 20 ton Bottle Jack
- 2-50' Hydraulic hoses
- 2-30' Hydraulic hoses
- 2 Rescue 42 Strut Jacks (34")
- Rescue Chains
- 4 Step Chocks (32")
- 5 Collapsible Traffic Cones
- 1 Push-Pull Hydraulic Ram (Genesis)

- 1 Telescoping Ram (Genesis)

Continued:

- 1 Hydraulic Cutter (Genesis)
- 1 Hydraulic Spreader (Genesis)
- 1 Confined Space Cutter in Case (Genesis)
- Hydraulic Ram Accessories
- Paratec Air Shores (2-610, 2-435, 2-235)
Also 4-36", 6-24", 2-56"
- 2 Hydra fusion Rams 36"
- 2 Hydra fusion hand pumps
- Multiple Strut Accessories

37.5 DEEP SLIDE OUT COMPARTMENT SHELVING

Five (5) each, aluminum compartment pan style shelves shall be furnished, constructed of .188" thick 5052 Aluminum sheet. Shelf perimeter flanges (4 each) shall be broke up 3". Each shelf shall have a load capacity of no less than 1000 lbs. and shall be infinitely adjustable along vertical tracks.

On Scene Solutions slide out mechanisms shall be bolted to the bottom of the compartment floor. Slide out shall be capable of handling the 1000 lb shelf at full extension.

Entire front edge of shelves shall have reflective Red and White alternating striping.

Shelf to be located in lower level of D1, D2, D4 and P2, P4 compartment. (Driver/Passenger side).

37.6 COMPARTMENT SHELVING TURTLE TILES

Black section vinyl tiles shall be furnished, installed on top surface of all interior compartment horizontal shelves and compartment floors. Tiles shall be cut to size and shape of all shelves. Polished stainless steel channel type shelf tile retainers to be provided, full length of each horizontal shelf, bolted to and removable from outboard shelf flange. The specified black sectional floor tiles shall include leading edge sloped ramps at all compartment door openings.

37.7 POLYPRENE/ALUMINUM BOXES

Ten (10) boxes approximately 24" long X 10' wide X 10' high shall be provided. Box material and exact size shall be determined at preconstruction meeting.

37.8 FIRE EXTINGUISHER MOUNTING:

Three individual brackets shall be provided and mounted for two (2) fire extinguishers. Fire extinguishers shall be a one (1) 2 ½ gallon water, one (1) 10 lb ABC. Final design and OK will be decided at pre-construction with pictures of other apparatus shelves provided.

37.9 PAC TRAC EQUIPMENT PANELING

37.10 SCBA BOTTLE RACK

A Polyprene rack of individual sleeves to accommodate 30 Scott 4500 45 minute SCBA cylinders shall be furnished and installed. Rear wall of rack to shall be enclosed with same Polyprene material as the rack to prevent damage to tank bottoms during loading and under all road conditions. Cylinder rack (sleeves) shall have device that keeps bottles from sliding out of rack. A full bottle width slide out shelf shall be furnished below SCBA sleeves to be used as a bench to replace empty cylinders or do minor work to SCBA frames. Final location and layout to be determined at preconstruction meeting.

37.11 COMPARTMENT DOORS AND DOOR ACCESSORIES:

The following specified roll-up style compartment door tracks/extrusions to be "flush" with exterior body panels/door jambs. NOTE: Specified compartment doors shall be manufactured in the United States of America.

Specified compartment door jambs, integral with front and rear body corners, removable above wheelwell housings shall be fabricated with inboard flanges which are machined for screw type fasteners and mounting of specified roll-up compartment door aluminum side track extrusions.

All side compartment doors shall be **ROM Robinson** roll-up shutter style, Each individual roll-up extruded aluminum door shall be of maximum size for the available door opening. Front and rear extruded aluminum door tracks shall be furnished, bolted to vertical door jambs and interior compartment bulkheads so as to be easily removable for repairs or modifications. All roll-up style compartment doors shall be installed and adjusted during body construction. All doors shall be **REAR-ROLL** and rolled up door shall be as close to the rear of the compartment as possible. NOTE: Roll-up door tracks which are riveted or welded in position are not acceptable.

The following specified door opening sizes may be reduced by no more than 3" total width (1-1/2" per side) and 4" total height. Decrease in compartment opening sizes is caused by profile of side track extrusions with weatherstripping and bottom door slat which remains in door opening.

Weatherproof magnetic reed style proximity switches, as provided by the door's manufacturer (for ease of future parts availability) shall be used, on all roll-up compartment doors.

37.12 ENCAPSULATED ROLL-UP DOOR PROTECTION

The above specified roll-up door "bundles" will be encapsulated within custom fabricated swirl finish aluminum shrouds, protecting "bundled" door slats from interior compartment damage. Fabricated shrouds to be of minimum size necessary, to accommodate largest diameter door bundle, and will span the full width of compartment. Shrouds will be easily removable, from within the compartment interior.

NOTE: The above specified door bundle encapsulators are removable, from within the compartment interior, so as to allow for door slat and rewind mechanism maintenance/cleaning, without having to remove exterior treadplate overlapping body panels.

37.13 COMPARTMENT LIGHTS

Lighting for compartments shall be LED lighting. It shall be full height and run down the entire inside edge of the compartment door on both sides. Lighting shall be activated by a switch when door is opened. All compartments shall have this lighting.

38.0 ROOF CONFIGURATION

38.1 HATCH COMPARTMENTS

Hatch compartments will be provided on each side of the body roof. All hatch compartments will be approximately 26" wide x 24" deep. Exact compartment length to be determined at preconstruction. Top edge of compartment shall be formed up 90 degrees at least 1" under door for a water tight seal. All compartment doors will hinge on the outboard side, have gaskets around perimeter, and will be held open with gas cylinder struts. Recessed handles shall be provided with final number and location to be decided at preconstruction meeting. Latches shall also be provided to secure doors.

The outside walls of the compartments will be a double wall design to prevent equipment from denting the outside painted surface. A 1.00" (25 mm) diameter drain will be provided in each compartment floor and will be routed to drain below the body.

A full length hatch compartment lid LED strip light shall be mounted to the underside of each hatch door. The light will be wired to an automatic door switch and to the "open door" indicator light inside the cab.

38.2 RECESSED WALKWAY

A recessed walkway will be centered on the roof between the hatch compartments. The walkway will be 24" wide and approximately 24" deep and will run the length of the body up to the recessed area.

The walkway will be constructed of bright aluminum treadplate and reinforced with 0.125" (3 mm) thick, 2.00" (51 mm) square, aluminum tubing on 12.00" (305 mm) centers.

The walkway treadplate will be formed up 90 degrees, at least 2.00" (51 mm) on each side, to form a double 0.125" (3 mm) vertical wall for a water tight seal.

There will be two (2) 1.00" (25 mm) diameter drain holes provided in the walkway. The drains will be routed to drain below the body.

A full length hooded step LED strip light will be provided in the walkway. The walkway lights will be the same make and model as the roll up door and hatch compartment lights and will be controlled by a weather tight switch at the end of the walkway.

38.3 SLIDE-IN STORAGE FOR LADDERS, SURFBOARD

A completely sealed storage hatch compartment on roof to be furnished, drivers side full length of body. Storage compartment shall accommodate: sleeve and tray mountings for specified extension ladder/roof ladder stored flat. The 2-section and roof ladder trays shall be bottom lined with nylon, for "free-slide" surface. Compartment to be equipped with vertically hinged access door with large D-ring stainless steel 1/4-turn latch and stainless piano hinge. Ladders shall be assessable from the specified rear ladder. There shall also be a slot or hatch compartment provided for the water rescue surfboard. Dimensions for board will be given by Department.

38.4 RECESSED AREA

A recessed area will be provided in the forward portion of the roof. The recessed area will be sized appropriately in order to allow proper mounting space and clearance for roof mounted equipment. Modifications such as additional support structure and knockouts will be provided as necessary to support the weight and provide airflow for the roof mounted equipment. Roof mounted equipment shall include light tower, generator and hydraulic tool pump. The recessed area will be constructed of 0.125" (3 mm) bright aluminum treadplate and will have two (2) 1.00" (25 mm) diameter drain holes. The drains will be routed to drain below the body.

39.0 APPARATUS BODY SUBFRAME:

An apparatus body constructed of heavy wall stainless steel tubing. Rubber cushion vibration isolators to be furnished, so as to allow flexing of chassis frame rails independent of apparatus body subframe.

Bidder shall depict, in the specified proposal drawings, the subframe and body construction.

All body subframe components shall be attached to the chassis frame with hardened steel bolts, bolt holes machined through subframe and chassis frame side webs. Body subframe supports shall be positioned so as to provide approximately 22" (with truck fully loaded) from ground to top of body rubrails and rear tailboard. The apparatus body subframe materials, and construction methods, shall allow for a "lifetime" warranty, of the entire subframe structure.

40.0 APPARATUS BODY CONSTRUCTION MATERIALS:

NOTE: During fabrication and body assembly, all brushed stainless steel exterior body panels must be covered with protective vinyl masking.

The following specified accessory components shall be fabricated of .125" 5052-H32 smooth sheet aluminum: interior compartment adjustable shelves, interior compartment adjustable shelf brackets, interior compartment vertical front and rear corner bulkheads, and any specified vertically or horizontally hinged exterior compartment door panels.

All specified interior compartment adjustable shelving, trays, and shelving tracks have a machined "swirl" finish.

Exterior rear body horizontal header, exterior rear body vertical door jambs, exterior rear body inboard vertical side overlays, and top of pump house.

The following apparatus body components shall be fabricated of minimum 16-gauge "polished" type 304 stainless steel: driver's and passenger's front and rear side rubrails (where specified).

40.1 FASTENERS

All apparatus body screw type fasteners shall be stainless steel.

Driver's side and passenger's side shall be equipped with "sweep-out" floor, raised at least 1" above compartment bottom door opening. Side compartment floors shall extend out below compartment doors, with 3" flange down and 1" return in, providing rigid mounting surface for specified rubrails.

Passenger's side and driver's side front interior compartment corners to include vertical full height bulkheads (wiring harness covers) rigidly mounted, to provide mounting for specified adjustable shelf tracks, and easily removable.

All compartment door sill edges shall be overlaid with stainless steel to protect the paint.

41.0 APPARATUS BODY FEATURES:

41.1 POLISHED STAINLESS RUBRAILS

Driver's and passenger's forward and rear bottom side compartments shall be furnished with fabricated polished stainless steel rubrails, extending from front compartment corners to rear wheelwell cut-out, and from rear wheelwell cut-out to rear compartment corners. Rubrails shall be "in-line" with pump panel runningboards and rear tailboard corner steps, 3" high, protruding 1/2" from body sides. Rubrails shall be channel shape, extending into compartment interior (below compartment doors), flanged up to facilitate installation of specified removable hollow core door weatherstripping. Polished stainless steel rubrails shall be bolted in position and easily removable, fasteners concealed below body and inside compartment.

41.2 POLISHED WHEEL WELL TRIM

Polished stainless 25" radius wheelwell moldings shall be furnished, bolted in position surrounding driver's side and passenger's side rear body wheelwell cut-outs. Fasteners shall be concealed beneath the extrusion. Wheelwell moldings shall be flush with specified body rubrails.

41.3 STAINLESS STEEL WHEEL WELL LINER

A circular interior wheelwell liner shall be furnished, driver and passenger side wheelwell housings, bolted to and removable from a radius ring flange, designed to provide ease of cleaning and repairs. Wheelwell liners to be fabricated of stainless steel. There shall be sufficient room in this area for the use of rear tire chains.

41.4 POLISHED DRIP CAP

Compartment roof top liner fabricated "polished treadplate aluminum" drip caps flange shall cover the roll-up door top overhead extruded moulding.

41.5 TUBULAR BODY RAILINGS

Apparatus body tubular railings shall be furnished, consisting of: 1-1/4" o.d. etched non-slip tubes, chrome plated double bolt type 3" stand-off end type and center rail brackets, stainless screws to prevent rotation of tubular railings within bracket, and neoprene rubber surface mounting gaskets furnished between rail bracket and painted body surface. Rubber insert railings shall not be accepted.

Tubular railings shall be provided: Front cab doors and rear vertical ladder

41.6 RUNNINGBOARDS AND TAILBOARD:

A full width 101" rear step/tailboard shall be furnished, constructed of stainless steel material, and shall be as deep as the ladder that goes up the rear of the apparatus. Rear step shall be single piece fabrication, spaced 1/2" away from rear face of body and a maximum of 22" from the ground. It shall be reinforced with a 1/4" steel tube structure to protect the body and ladder from damage.

41.7 12 VOLT LED REAR STEP LIGHTS/SCENE LIGHTS

Three (3) each, 12-volt LED courtesy step lights are to be furnished, located to illuminate step surfaces at the rear of the body, where individual steps are specified. Light fixture to have polished stainless bezel and shielded clear polycarbonate lens. Lights to be activated by setting the parking brake.

One (1) 12-volt LED RED courtesy light shall be installed under driver dash to illuminate area of regen switches and diagnostic port. Light to be activated with ignition switch.

Pattern cut/puncture fabricated non-slip foot grip surfaces shall be provided, integral with tailboard material, at appropriate step locations.

41.8 REAR LADDER- NO SLIP GRIP

One (1), access ladder for accessing the top walkway and roof top coffin compartments shall be provided and mounted. The ladder shall fold out from the back of the vehicle when in use. Steps shall be at least 5" deep and slip resistant. Ladder width shall be at least 16" wide. Grab handles shall be mounted on both sides and extend full length. Exact layout and location shall be cleared by Fire Department.

41.9 REAR OBSERVATION SYSTEM

A rear observation system shall be provided, consisting of a rear apparatus mounted high resolution (270K pixels) completely waterproof camera with adjustable viewing angles, and a Slimline flat panel display with a 5-1/4" viewing screen mounted on the interior chassis cab driver side visor or approved location.

Camera eye shall be recessed or protected to prevent damage and located in the center of the rear of the apparatus with final height to be determined .

41.10 TRAFFIC DIRECTING LIGHT BAR - REAR OF BODY

A traffic bar, Whelen 500 Series TIR 6 consisting of eight (8) recessed (6 Amber & 2 Red) led lights shall be furnished with traffic bar sequencer for left, right, spread, and random flash patterns. The light bar is to be installed at center rear of body, between hand rail and compartment door. The 2 red lights shall come on with the master warning switch on dash. Control head is to be installed inside driver's compartment, location as designated by Customer.

41.11 REAR BODY TRAFFIC BAR PROTECTION

The specified rear body mounted traffic light bar is to be surface mounted to rear face of the apparatus body, as high as practical and not blocked by access ladder.

41.12 ROPE RESCUE ANCHORS/RECEIVER HITCH

Four (4) tow eyes, frame mounted, in "pocket", one(1) each side of rear tire on the passenger and drivers side shall be included and easily assessable for use as anchors for rope rescue scenarios. All edges shall be rounded and free from burrs to protect rope from cuts and abrasions. Weight rating of 12,000 lbs., exact location, and mounting options shall be discussed with Duluth Fire Department..

A receiver hitch shall be mounted in the middle between the front and rear axle and rated for at least 12,000 lbs. for winch operations. Power options to this location shall be discussed with Duluth Fleet Services and Duluth Fire Department. Power connectors with protective covers to be Anderson Power Products SBX 175 2-pole connectors with auxiliary contacts. Connectors shall be on the left side of the hitch below rub rail and be 20" from the center of the hitch to the center of the connector to accommodate the winch cord length.

A 120 volt electric receptacle with power supplied by the generator shall also be provided inside the compartment closest to the above receiver hitch.

41.13 REAR TOW EYES/ RECEIVER HITCH

Two (2) tow eyes, rear frame mounted shall be included and easily assessable for use as anchors for rope rescue scenarios. Exact location to be shown on bid drawing. Tow eyes shall have rounded edges and be free from burrs.

A receiver hitch shall be mounted below the rear bumper and rated for at least 12,000 lbs. Power options to this location shall be discussed with Duluth Fleet Services and Duluth Fire Department. Power connectors with protective covers to be Anderson Power Products SBX 175 2-pole connectors with auxiliary contacts. Connectors shall be on the left side of the hitch below rub rail and be 20" from the center of the hitch to the center of the connector to accommodate the winch cord length.

A 120 volt electric weather resistant receptacle with power supplied by the generator shall also be provided on the back of the body above receiver hitch.

41.14 REAR FIXED WINCH

A Ramsey RPH 20,000 Planetary Hydraulic Winch will be provided and permanently mounted at the rear of the truck between the frame rails. An access door to winch and control plug shall be provided and four way roller system shall be built at the rear of the apparatus for guiding the cable. Deployed cable shall be protected from rear access ladder so that either cable or ladder shall not be damaged.

41.15 ROLL-OUT AWNING STREETSIDE

One (1) Girard G-2000 Automatic Retractable Lateral Arm Awning shall be mounted on the body side. The cassette housing is made of corrosion-resistant, powder-coated extruded aluminum with components made of stainless steel. The housing box to be powder coated to match the upper body white. SVI Trucks KUTZPA-0008 07/16/14 85 The unit shall measure twenty-two (22) feet by 5-1/4" (deep), 7-3/8" (high). The awning shall project outward nine (9) feet nine (9) inches and will be mounted slightly lower in the rear to add in drainage. The G-2000 will deploy and retract using a 110V AC motor with manual override (to retract awning in the event of a power failure) the power controls shall be located in compartments L-1 for a left awning and R-1 for a right awning. The awning shall have a system to detect canopy motion. The awning shall automatically retract when the canopy reaches a certain level of movement. The G-2000 has a Limited Lifetime Warranty. – The awning fabric color shall be CHARCOAL GRAY. The specified awning above shall be surface mounted to upper body side. The awning shall add approximately 5.75" to body width. AWNING HOUSING COLOR The awnings standard Polar White vinyl housing color shall be re-painted to match upper body color.

42.0 NFPA EQUIPMENT:

The following loose equipment shall be provided and mounted.

42.1 TWO SECTION LADDER

One (1), Duo-Safety 24 ft. model 900-A 2-section aluminum ladder shall be furnished, with rope hoist.

42.2 ROOF LADDER

One (1), Duo-Safety 16 ft. model 875-DR aluminum roof ladder shall be furnished with folding roof hooks at both ends.

42.3 WHEEL CHOCKS

Two (2), each Ziamatic model AC-44 NFPA compliant cast aluminum "single-piece" wheel chocks shall be furnished. Chocks to be stored in the D1 compartment. Brackets to be constructed per Fire Department Instructions.

42.4 HAND LANTERNS - WITH CHARGERS

Three (3), Streamlight model 45107 LiteBox rechargeable hand lanterns to be furnished, complete with 12-volt "clip-in" charge rack.

Lanterns/chargers to be mounted interior of the chassis cab and wired, location to be determined, by customer.

42.5 ROOF HOOK

One (1), six (6) foot Fire Hooks Unlimited New York Style roof Hook with Pry End shall be furnished

43.0 12-VOLT ELECTRICAL EQUIPMENT

43.1 WIRING HARNESES

All wiring to be identified and "imprinted" with number and function. Auto-reset circuit breakers to be furnished, of various amperage capacity, sized for intended load.

43.2 POWER DISTRIBUTION CENTER

The power distribution center shall be located interior of driver's forward side compartment, and shall contain following specified engineered electrical components and waterproof pin/socket bulkhead connectors:

43.3 12-VOLT ELECTRICAL PANEL

A main electrical panel shall be located in a highly weather resistant compartment. A minimum of ten (10), spare circuit breaker sockets shall be supplied. All sockets and equipment shall be clearly labeled.

43.4 BATTERY CABLE UPGRADE

A minimum 2-0 multi-stranded copper insulated battery cable shall run from specified battery switch to chassis frame mounted threaded stud terminal block, providing power to high amperage items such as: primer motor, electrical discharge valves, reel rewind motors, generator starter motor, etc.

43.5 VEHICLE SPECIFIC WIRING INFORMATION

"Vehicle Specific" wiring information shall be provided for this particular apparatus "as built" upon completed delivery of the same.

43.6 LOAD MANAGEMENT

A Load Management System (LMS) shall be furnished for performing electrical load management. The LMS shall have eight (8) programmable outputs to supply warning and load switching requirements. The load management system shall provide eight (8) output load shedding, low voltage warning, scene mode operation and response mode operation.

Outputs shall be independently programmable to activate during the scene mode, the response mode or both. These outputs can also be programmed to activate with the master warning switch and battery switch, or to sequence and shed along with priority.

When the emergency master switch is toggled to the "ON" position, the warning light loads will activate immediately.

The load management system shall automatically activate upon activation of the apparatus parking brakes. Predetermined load shall shed upon activation of load management thereby reducing the electrical demand of the apparatus to the preprogrammed "ON-SCENE" mode. **LOAD MANAGEMENT DURING APPARATUS RESPONSE WILL NOT BE ACCEPTABLE.**

Load management shall be prioritized according to least critical systems.

A system override switch shall be placed on the electrical console to allow total manual operation of ALL warning light switched electrical loads.

44.0 APPARATUS NON-EMERGENCY LIGHTING:

All specified 12-volt to be in accordance with D.O.T. regulations.

All specified light fixtures to be located/fitted prior to and re-installed after finish painting. Where fixture wiring passes through metal body panel, the pass-thru hole to be equipped with a rubber grommet. All specified light fixtures shall be installed, using stainless steel screws with non-metallic "replaceable" threaded inserts (nuts), to allow removal of light fixture, from exterior of body. Where light fixtures are to be installed on a painted panel, all light fixture mounting holes, grommet holes, and fastener holes shall be machined/cut-out prior to prime and finish painting, so that all metal surfaces receive the same protective coating.

The following specified rear body tail/stop, turn and back up lights to be positioned: Red (tail/stop) TOP, Amber (turn) MIDDLE, and Clear (back up) BOTTOM, driver's and passenger's side rear of body.

Two (2), round or rectangular surface mount midship LED, marker lights & turn lights, to be furnished; located one (1) driver's side midship vehicle and one (1) passenger's side midship vehicle. Lights to have Amber lens. Turn light (flashing element) to be activated by vehicle turn signals.

Two (2) additional flexible rubber arm surface mount 12-volt Model VS-L31RW LED bulb marker lights with acrylic lenses to be furnished, location to be designated by purchaser. Lenses to be Red. Marker lights to be activated by headlamp switch. Marker lights are to be in addition to previously specified vehicle marker lights.

Lights to be mounted per FMVSS 108 and CMVSS 108 requirements.

44.1 TAILBOARD D.O.T. MARKER LIGHTS

Five (5), Truck-Lite 4" x 2" rectangular surface mount 12-volt LED marker lights with snap-on reflective lenses to be furnished, located: two (2) recessed into specified rear tailboard corner castings and three (3) recessed behind center rear tailboard flange diamond shape cut outs. Lenses to be Red. Marker lights to be activated by headlamp switch. Three (3) center light cutouts shall read DFD copying existing.

44.2 TAIL LIGHTING

Two (2), Whelen model 6OROOXRR, 5" x 8" rectangular chrome plated flange surface mount "LED" combination stop/tail lights to be furnished, mounted each side at rear of body. Lighting to exceed the SAE requirements. Lenses to be 4" x 6", Red. Lights to be wired for activation by service brake and headlamp switch.

Two (2), Whelen model 6OA00TAR 5" x 8" rectangular chrome plated flange surface mount LED turn signal lights with populated arrow shape and multiple flash patterns to be furnished, mounted one each side at rear of body. Lenses to be 4" x 6" Amber. Lights to be wired for activation by left or right turn signal (not by brake lights).

Two (2), Whelen model 6OJOOOCU, 5" x 8" rectangular chrome plated flange surface mount halogen back up lights to be furnished, mounted one each side at rear of body. Lenses to be 4" x 6", Clear. Lights to be wired for activation by reverse gear of truck transmission.

Above specified lights to include appropriate 6EFLANGE(s) and be bolted in position, evenly spaced, driver's side and passenger's side rear body corners.

Two (2) Whelen model 900 series scene lights to be furnished and mounted to rear side of the body. Lights to be mounted under emergency warning and 120-volt lighting. Lights to be activated when vehicle is put in reverse and by rocker switch in cab labeled "REAR 12-VOLT SCENE LIGHTS".

44.3 BACK-UP ALARM

One (1), 12-volt electronic 97db back-up alarm to be furnished, mounted at rear below body, activated by reverse gear of truck transmission.

44.4 LED REAR STEP LIGHTS

Three (3)each, 12-volt LED courtesy step lights are to be furnished, located to illuminate step surfaces at the rear of the body, where individual steps are specified. Light fixture to have polished stainless bezel and shielded clear polycarbonate lens. Lights to be activated by parking brake set.

44.5 UNDER BODY LIGHTING

Nine (9), 4" round LED under body 12-volt ground lights to be furnished, located: two (2) each driver's side ahead of and one (1) behind rear wheels, two (2) each passenger's side ahead of and one (1) behind rear wheels, three (3) each rear underside tailboard. Lights to be completely sealed for weather resistance. Lights to be wired for activation by setting of the parking brake.

45.0 APPARATUS BODY OPTICAL WARNING DEVICES

The entire warning light package shall be actuated with a single master warning switch in the cab switch panel. The wiring for the warning light package will engage all of the lights required for "Clearing Right of Way" mode when the vehicle parking brake is not engaged. An automatic control system will be provided to switch the warning lights to the "Blocking the Right of Way" mode when the vehicle parking brake is engaged.

45.1 BODY SIDE LOWER/UPPER LEVEL EMERGENCY WARNING LIGHTS

Two (2), Whelen model LED 500 series TIR6 rectangular flush mounted emergency LED lights complete with associated 6E flanges to be furnished, located one (1) driver's side midsection and one (1) passenger's side midsection in front of wheel well, one (1) driver's side rear side and one (1) passenger's side rear side behind wheel

well. Light lens to be RED and activated by a single illuminated rocker switch, identified as "**LOWER LEVEL EMERGENCY LIGHTS**".

Two (2), Whelen LED model 500 series TIR6 rectangular flush mounted emergency LED lights complete with associated 5E chrome surround flanges to be furnished, located one (1) lower side rear as far rearward as possible driver and passenger side and one (1) midway between front edge of body and wheel well driver and passenger side above or in rubrail. Light lens to be red and activated by a single illuminated rocker switch connected with master switch, identified as "**LOWER LEVEL EMERGENCY LIGHTS**".

Four (4) Whelen model LED 81E series rectangular flush mounted emergency LED lights complete with associated chrome surround flanges to be furnished, located upper front and rear corners of body, driver and passenger sides. Light lens to be red and activated by a single illuminated rocker switch connected with master switch, identified as "**UPPER LEVEL EMERGENCY LIGHTS**".

45.2 BODY REAR LOWER/UPPER EMERGENCY WARNING LIGHTS

Four (4) Whelen LED model 81E series rectangular flush mounted emergency LED lights complete with associated chrome surround flanges to be furnished, located upper and lower corners of body on the rear, driver and passenger sides. Light lens to be red and activated by a single illuminated rocker switch connected with master switch, identified as "**REAR EMERGENCY LIGHTS**".

Two (2) Whelen LED model 600 series rectangular flush mounted emergency LED lights complete with associated chrome surround flanges to be furnished, located middle from top to bottom and on either side of the rear access ladder. Light lens to be RED and activated by a single illuminated rocker switch, connected with master switch identified as "REAR EMERGENCY LIGHTS"

46.0 120V/240V ELECTRICAL SYSTEM AND ACCESSORIES

The following specified 120/240 volt alternating current system shall meet the requirements of NFPA 1901.

46.1 HYDRAULIC GENERATOR

One (1), Smart Power Systems HR20 hydraulic pump driven generator shall be furnished, rated at 20000-watt, 120/240-volt single phase, complete with: appropriate chassis transmission mounted "hot-shift" PTO. The system will generate power as standard 120VAC and/or 240VAC, 60 hertz, and handle loads up to 20,000 watts.

46.2 GENERATOR LOCATION

The above specified hydraulic generator shall be located in the roof top compartment area of the body with access from the roof with allowances made for proper venting.

46.3 ELECTRIC CORD REEL/LOCATION

One (1), push button rewind 4-conductor electric cord reel assembly to be furnished, consisting of: Custom machine works model 6020 electric 4-conductor cord reel, 200 ft. of 10-4 S. O. insulated multi-stranded copper electric cord, bright orange ball type cord stop, water-proof conduit and appropriate multi-stranded copper wiring from reel to specified generator circuit breaker panel, 12-volt insulated battery cable from reel rewind to battery disconnect switch, and the specified cord end mounted receptacle box. Cord reel to be equipped with a 4-way polished stainless steel cord roller assembly. Reel to be mounted, passenger side, in the coffin compartment module, with roller fairlead located interior of the compartment below it.

46.4 GENERATOR CIRCUIT BREAKER PANEL

One (1), Square-D 100-amp circuit breaker panel to be furnished, with at least four (4) individual switch type manual-reset circuit breakers, (20-amp for 120-volt receptacle/10-amp for lighting). Panel to be located inside a weatherproof apparatus body compartment passenger side front corner. All circuits shall be identified with permanently engraved nameplates describing controlled function.

46.5 INTERIOR COMPARTMENT 20-AMP TWIST-LOCK RECEPTACLES, TWO (2)

Two (2) single 120-volt 3-wire Non-NEMA #7310B twist-lock weatherproof plug-in receptacles to be furnished, mounted inside circuit breaker panel compartment, accessible through open compartment door. Receptacles to

include: metal duplex cover plate, cast aluminum electrical receptacle box, #7310B twist-lock receptacle, screw type conduit connector, and flexible non-metallic electrical conduit with appropriate size multi-stranded THHN insulated copper wiring extending from receptacle to specified generator circuit breaker panel. Receptacles to be provided with individual manual reset circuit breakers. Receptacle outlets to be labeled with permanently engraved nameplate, to read: "120-VOLT/20-AMP GENERATOR POWER"

46.6 BODY COMPARTMENT INTERIOR - 120-VOLT/20-AMP RECEPTACLES

One (1), 120-volt, 20-amp household plug-in receptacles shall be furnished, interior of compartment P1, with: surface mounted cast aluminum receptacle box, duplex 120-volt 3-wire household plug-in receptacle, metal duplex cover plate, wired from battery and shore power to be labeled; "SHORE POWER RECEPTICLE"

46.7 RECEPTACLE BOXES

One (1), Duluth Fire compatible cast aluminum electrical receptacle boxes to be furnished, mounted on end of specified reel cords, equipped with: two (2) individual single Non-NEMA #7310B 3-wire 20-amp, twist-lock female receptacles, cord clamp, metal receptacle box plates with spring loaded receptacle covers. One (1) receptacle to be wired to each 120-volt circuit (2 circuits) for use with specified 4-conductor cord.

A receptacle box bracket shall be furnished, on passenger side exterior pump panel.

46.8 FLOODLIGHTS

Five (5) each, Fire Research "Optimum" model OPA530-S75, Focus 750-watt 120-volt quartz floodlights to be furnished. Insulated 120-volt cord to be permanently wired to recessed body mounted electrical junction box. Light to be wired and powered by generator circuit breaker panel mounted 12-volt/120-volt relay with remote illuminated 12-volt rocker switch located on chassis console. Switches to operate left side together, right side together, and rear. Lights to be mounted: recessed in upper front body corners and rear body corners, driver and passenger sides and one(1) in the rear of the body on the passenger side.

46.9 BROW LIGHT - 120V

Two (2), Fire Research Optimum Series 750W/120V Contour Mount Brow Light shall be furnished, designed for mounting on radius surface. Light to be mounted: one each side, above windshield, with remote illuminated 12-volt rocker switch located on chassis console. Lights shall be mounted as to not block the chassis lightbar.

46.10 LIGHT TOWER- 120V

One (1) Command Light Model CL607A-FO shall be supplied and installed. It shall be mounted in the front recessed section of the body roof so as not to stick above the roof line. Command Light Standard control box with 15' cord shall be located in the front driver side compartment. Power to raise and lower tower shall be activated when the generator switch is turned to the on position.

46.11 PAINT PROCESS

The paint applied to the apparatus shall be PPG Industries Delfleet® Evolution brand, applied throughout a multi-step process including at least two coats of each color and clear coat finish.

The coating system, as supplied and recommended for application, shall meet all applicable federal, state and local laws and regulations now in force or at any time during the courses of the bid.

The specified painted surfaces (excluding roll-up doors) shall receive the primer coats and the finish coats. The apparatus body painted surfaces shall have a finish with no runs, sags, craters, pinholes or other defects.

46.12 PAINT COLOR

Finish color to match major chassis cab exterior color.

46.13 DISSIMILAR METALS

During assembly all 4-way aluminum treadplate components, shall be seal coated where mated to non-aluminum components. 4-way aluminum fabrications to be installed using stainless steel button socket head cap screw

fasteners. Edges of 4-way aluminum, where meeting exterior body painted fabrications, shall be properly caulked with G.E. or equal silver metallic body sealant to prevent moisture accumulation between metal layers.

46.14 TOUCH-UP PAINT

One (1), full quart of original finish color top coat paint material shall be provided for use as future touch-up paint.

46.15 ADDITIONAL APPARATUS BODY AREAS TO BE PAINTED

In addition to the above specified painted surfaces, the apparatus body forward full height, and upper level vertical door jambs shall be painted to match the roll-up doors and chassis cab.

The exterior surface of apparatus body wheelwell housings shall be painted to match the chassis cab.

46.16 REFLECTIVE STRIPING/LETTERING

At minimum a 4" wide horizontal White ScotchLite reflective stripe with a 1" stripe above and below shall be affixed to the perimeter of the vehicle, placed approximately 3" above running board/rubrail level, to conform with NFPA 1901 reflectivity requirement. Striping shall continue around to front of apparatus and shall be full width under grille with 1" striping being cut out where needed

The lettering and stripping package shall be coordinated with the Duluth Fire Department and existing apparatus.

47.0 DELIVERY:

Final delivery of the completed apparatus shall be made via drive-away F.O.B. City of Duluth Fleet Services, at which time Fleet and Fire Department personnel shall be instructed as to the proper use of the fire pump systems, as well as component systems by a Factory Representative. Factory training shall include intensive fire pump training session by a delivery engineer with extensive experience giving such sessions.

The Purchaser shall make all housing arrangements for the Delivery Engineer and provide him with transportation to and from lodging and nearest available airport or rental car agency (if it applies). The cost of all housing and other living expenses are to be paid for by the Delivery Engineer.

48.0 CHANGE ORDERS

All Change Orders will be documented in writing and will be accompanied by either a City of Duluth Purchase Order number of a properly signed requisition. Change Orders are to have the approval of the Fleet manager and the Duluth Fire Department Project Manager (Deputy Fire Chief).

49.0 PURCHASING OPTIONS

Bidders shall provide pricing and complete terms of the following (if able): The Duluth Fire Department fully intends to lease this vehicle.

1. Municipal Lease Purchase Program
2. Municipal Turn Back Lease Program

END OF SPECIFICATION