



LUCAS COUNTY OHIO

INVITATION TO BID

PURCHASE HEAVY HAZMAT TRUCK

EMERGENCY MANAGEMENT AGENCY  
COUNTY AGENCY

11-002P  
BID NUMBER

FEBRUARY 8, 2011 AT 2:00 PM (local time)

DATE AND TIME OF BID OPENING

**BIDDER MUST COMPLETE THE FOLLOWING:**

NAME OF COMPANY OFFICIAL \_\_\_\_\_

OFFICIAL'S SIGNATURE \_\_\_\_\_

NAME OF COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY, STATE & ZIP \_\_\_\_\_

TELEPHONE NUMBER \_\_\_\_\_

FAX NUMBER \_\_\_\_\_

E-MAIL ADDRESS \_\_\_\_\_

The Lucas County Board of Commissioners is seeking bids for the **Purchase of a Heavy HazMat Truck.**

Any bidder submitting a bid must submit a completed bid following the procedure outlined in this Invitation to Bid (ITB) no later than **February 8, 2011 at 2:00 PM (local time)**. All of the sections applicable in the Invitation to Bid shall be read so as to give meaning to all such provisions. However, when there is a conflict in the interpretation between a specification in the Invitation to Bid and sections, the specification in the Invitation to Bid shall take precedence.

**1.0 Legal Framework**

This Invitation to Bid (ITB) is issued under the provisions of the Ohio Revised Code (ORC) Sections 307.86 to 307.92. All bids submitted in response to this ITB shall comply with Ohio law. The laws of the State of Ohio will govern any disputes arising under this ITB and subsequent contract.

**2.0 Bid Opening**

The bid opening is scheduled for **February 8, 2011 at 2:00 PM (local time)**. All sealed bids received after this time and date, for any reason, will be rejected. The opening of the sealed bids will take place at the Lucas County Support Services, Purchasing Division, One Government Center, Suite 480, Fourth Floor, Toledo, Ohio 43604-2247

**3.0 Bid's Bid Bond Requirement**

A bid bond in the amount of **One Thousand Dollars and No Cents (\$1,000.00)** must be included with each bid or be disqualified. The bond is to be in the form of a surety bond, certified check, cashier's check, or money order from a solvent bank, or savings and loan association with the Lucas County Board of Commissioners identified as the obligee. Bonds will be returned to unsuccessful bidders within thirty days of contract award. Bonds will be returned to the successful bidder within 30 days of receipt of goods.

**4.0 Pre-Bid Conference**

<input type="checkbox"/>	Applicable if box is checked
--------------------------	------------------------------

**No Pre-Bid Conference is scheduled for this ITB.**

**5.0 Prevailing Wage**

<input type="checkbox"/>	Applicable if box is checked
--------------------------	------------------------------

**Prevailing Wage does not pertain to this ITB.**

**6.0 Administrative Requirements**

By submitting a bid, the bidder will be held accountable to know the specifications and conditions under which this contract will be accomplished. This includes the contents of all proposal documents, regulations, and applicable laws.

Each bid will be submitted in a clearly marked sealed container or envelope, with the project title, Bid #, date and time of bid opening marked clearly on the outside of the package. If a selected bidder chooses not to submit a bid, the bid should be returned and marked "**No Bid**" for the project title, Bid #, date and time of bid opening on the envelope or package. All bids must be sent to:

**Lucas County Support Services, Purchasing Division  
One Government Center, Suite 480  
Toledo OH 43604-2247**

The entire set of completed ITB documents must be returned intact and in the following order:

- a. Original completed Request for Bid (ITB) and **one (1) copy**; this includes any amendments applicable to this ITB.
- b. Completed Affidavits: (1) Delinquent Property Tax, (2) Non-Discrimination, (3) Non-collusion, (4) No Findings for Recovery, (5) Compliance Affidavit for Businesses, (6) Transparency Purchasing Policy Disclosure, (7) Sweatfree Affidavit and (8) Living Wage Affidavit; all signed by your legally authorized representative and notarized and (9) Government Business and Funding Contracts.
- c. Bid Bond - Separated from (ITB) and Marked "Bid Bond", your Company's Name, Project Title and Bid Number. **The bid bond is mandatory.** A bidder will be disqualified if the bid bond is not submitted.
- d. The ITB Pricing Response Form completed in its entirety **(Section B).**

Faxed transmissions of bid are unacceptable. Sealed bids received through the mail after the specified date and time will also be returned.

Lucas County reserves the right to postpone the bid opening for its convenience. Bidders are required to submit firm and fixed prices in the format specified on the pricing sheet **(Section B)**. When there are errors in multiplication or addition in a bid, the unit price quoted will be used for calculating the correct total bid. If the error is in the unit price, the bid will be automatically disqualified.

All bid pricing will be valid for 60 (sixty) calendar days from the bid opening date to permit adequate evaluation of bid responses.

Lucas County may make this award as a whole or on a partial basis, based on the individual bid specifications.



Any deviations from the specifications must be clearly detailed on the exception form. **(Section C)**

If any items being bid have an expiration date, items delivered cannot be expired and must carry a good date for at least 6 (six) months after receipt.

There will be no incidental charges for services. If Lucas County has left any information out of these specifications where the Vendor would foresee additional charges/fees, bidder must include that information on the attached exception form.

All materials in the bid will become the property of Lucas County and may be returned only at the County's discretion. Materials received constitute public information as a matter of statutory law and will be made available for public inspection and copying upon request by members of the public pursuant to ORC Section 149.43. Any portion of the bid to be held confidential should be marked to that effect and will not be considered public record if it clearly falls within an exemption enumerated in ORC Section 149.43.

Additional information, such as brochures, glossies and or promotional materials, is to be provided in a separate section at the back of the response.

**6.1 Additional Administrative Requirements - Compliance with Support Order(s)**

Financial responsibility, integrity, and accountability are essential for operating a business that services the public. Unpaid obligations are a social problem, which threatens the welfare of children and increases the burden on taxpayers to provide social services. Due to the public's growing concern with non-paying parents, government initiatives to create additional, effective enforcement mechanisms are necessary. It is in the County's interest that all contractors doing business with Lucas County demonstrate financial responsibility and integrity and accountability.

All bidders must submit the completed "Compliance Affidavit For Businesses" with their bid. Once a lowest and best bidder has been determined and prior to award, this form will be submitted by Lucas County to the Child Support Enforcement Agency for certification of substantial compliance of court ordered and/or agency ordered child support of any individuals of the company who have twenty-five (25%) percent or greater vested interest in the company. If the individual is found to be not in compliance, said bidder will be notified that the individual is not in compliance and therefore the bidder/company/contractor is not in compliance and will have five (5) days to be in compliance from date of notification. Failure to comply will cause disqualification of the bidder's/company's /contractor's bid.

Bidders should contact Lucas County Child Support Enforcement Agency, (419) 213-3106, regarding this requirement should they have questions.

**6.2 Additional Administrative Requirements - Declaration Regarding Material Assistance/Non-assistance to a Terrorist Organization (DMA) Section 9.08**

Ohio Revised Code Section 2909.21 Terrorism requires that any contract that will result in an Offeror receiving funding in an aggregate amount greater than \$100,000 annually shall certify that it does not provide material assistance to any organization on the United States Department of State Terrorist exclusion list. Prior to award of the contract, the successful Offeror shall complete the DMA Form (Section A).

Affixing a signature on the Declaration Regarding Material Assistance/Nonassistance to a Terrorist Organization form of the Proposal, the Offeror certifies that it does not provide material assistance to any organization on the list, and that failure to complete the form or answer "yes" to any question shall serve for the purposes of this affidavit as a disclosure of the provision of assistance to an organization that is listed on the terrorist exclusion list (Section A).

**7.0 Contract Administration**

The Lucas County Purchasing Department will administer the contract.

**8.0 Bid Evaluation Criteria and Award**

An award will be made to the provider who is considered lowest and best bid for the County's needs.

Lucas County Board of Commissioners reserves the right to reject any and all bids, to waive minor technicalities and to request a re-bid through the bid process. Lucas County reserves the right to conduct site visits of proposed facilities (at County expense) to determine capability of the bidder to perform.

**9.0 Bid Alterations, Amendments, and Alternate Bids**

No alterations, additions (alternate bids), or exceptions to the specifications contained herein are permitted except by amendments issued by the Lucas County Purchasing Department to all bidders that have received an ITB.

During the bid process, bidders may be furnished certain amendments covering additions or deletions to the ITB documents. Amendments will be included in the scope of work and will become a part of contract documents. Amendments may be issued up to seventy-two (72) hours preceding the bid opening date, excluding weekends and holidays.

Any prospective bidder desiring an explanation or interpretation of the ITB or specifications must request it in writing soon enough to allow a reply to reach all prospective bidders before

the submission of their bids but no later than 5 (five) business days prior to the bid opening. Oral explanations or instructions given before the award of a contract will not be binding. Any information given a prospective bidder concerning the ITB will be furnished promptly to all other prospective bidders as an amendment, if that information is necessary in submitting bids or if the lack of it would be prejudicial to other prospective bidders.

**10.0 Equal Opportunity Provisions Required**

All bidders must be willing to enter a contract containing the express language contained in Section 125.111 of the ORC, which requires the following:

Every contract for or on behalf of the state or any of its political subdivisions for the purchase of materials, equipment, supplies, contract of insurance, or services shall contain provisions similar to those required by Section 153.59 of the Revised Code in the case of construction contracts by which the bidder agrees to both of the following:

That in the hiring of employees for the performance of work under the contract or any subcontract no bidder or subcontractor shall, by reasons of race, color, religion, sex, age, handicap, national origin or ancestry, discriminate against any citizen of this state in the employment of a person qualified and available to perform the work to which the contract relates.

That no bidder, subcontractor, or any person acting on behalf of any bidder or subcontractor shall, in any manner, discriminate against, intimidate, or retaliate against any employee hired for the performance of work under the contract on account of race, color, religion, sex, age, handicap, national origin or ancestry.

All bidders who contract with the state or any of its political subdivisions for materials, equipment, supplies, contracts of insurance, or services shall have a written affirmative action program for the employment and effective utilization of economically disadvantaged persons, as defined in Section 122.71 of the Revised Code. Annually, each such bidder shall file a description of the affirmative action program and a progress report on its implementation with the Ohio Civil Rights Commission and the Minority Business Development Office established under Section 122.92 of the Ohio Revised Code.

**11.0 Insurance Requirements**

If bid specifications require performance of labor for Lucas County, seller must agree to indemnify and protect Lucas County

against all liabilities, claims, or demands for injuries or damages to any person or property growing out of the performance of this contract, by seller, its servants, employees agents or representatives. Prior to issuance of purchase order, the successful bidder must furnish an Insurance Carrier's Certificate showing that the seller has adequate worker's compensation, public liability, and property damage insurance coverage in accordance with the "County of Lucas Contractor Insurance" page of the bid document.

**12.0 Contract Term and Extension**

The successful bidder's Support Services and Implementation Work Plan submission may define the term of the resulting contract. The exact contract commencement date, completion date, and option periods will be set forth in the contract and resolution approving the contract as adopted by the Lucas County Board of Commissioners.

**13.0 Invoices**

The bidder will be required to submit invoices in triplicate (one original and two copies) to the "invoice to" address identified in the purchase order used to issue orders against this contract. The bidder's Federal Tax Identification Number should appear on all statements and invoices.

Invoices must include the following:

- Name and address of bidder
- Invoice remittance address as designated in the contract & description including:
  - Billing period
  - Location
  - Unit Code (must match bid)
  - Calculated extended cost
  - Description of item purchased
  - P. O. or Contract #

**14.0 Assignment/Subcontractor**

Neither the contract nor any rights, duties or obligations described herein will be assigned by either party hereto without prior express, written consent of the other party. The contract will be made pursuant to the bid submitted by the bidder. The contract will be based on the bidder's qualifications and responsibilities. The bidder will not sublet or assign the contract nor shall any subcontractor commence performance of any part of the work included in the resulting contract, without the previous written consent of Lucas County.

**15.0 Taxes**

Lucas County does not pay local, state or Federal taxes. If requested, the bidder will be furnished with an exemption certificate.

**16.0 Permits/Codes**

The selected bidder is responsible for obtaining all permits and licenses required for performance of the work specified. All labor and materials provided under this agreement shall meet or exceed minimum standards covered by the current applicable code(s) or bidder shall have obtained a legal waiver.

**17.0 Compliance with the Law**

The bidder must agree to comply with all applicable Federal, state, and local laws in the conduct of the work specified in this ITB including applicable state and Federal laws regarding drug-free work places. The bidder will be required to accept full responsibility for payment of all taxes and insurance premiums including, but not limited to; Unemployment Compensation insurance premiums, Workers' Compensation, all income tax deductions, Social Security Deductions, and any other taxes or payroll deductions required for all employees engaged by the bidder in the performance of the work specified in this ITB.

**18.0 Pricing**

Bidders are expected to quote firm and fixed prices on a per unit basis, in the format specified in **(Section B)**. The successful bidder will not change the unit price or the scope of work during the contract period or any extension periods, however, should the bidder receive a decrease in overall costs associated with the commodity, this provision shall allow for modification of the existing contract to decrease the price.

Bidders must utilize pricing forms supplied in this document contained with **(Section B)**.

It is the County's intent to establish a contractual arrangement for specified commodity or service. Any services not specifically named on the pricing pages are to be named and priced on Additional Response Area **(Section C)**. Additional pricing may be submitted on subsequent pages so long as presented in a manner consistent with supplied format.

There will be no incidental charges for services. If Lucas County has left any information out of these specifications where the Bidder would foresee additional charges/fees, the bidder must include that information on the exception sheet found in **(Section C)**.

**19.0 Termination for Convenience**

Lucas County reserves the right to terminate the resulting contracts for its convenience by giving the bidder 30 (thirty) days written notice. Lucas County reserves the right to

terminate during the contract period or any subsequent renewal period.

**20.0 Termination for Default**

Lucas County may terminate the contract at any time the bidder fails to carry out its provision under the terms and conditions of the specified contract after issuance of a cure notice. The bidder will have thirty days after notice of required improvement to make necessary corrections. If, after such notice, the bidder fails to remedy the conditions, Lucas County will issue an order to stop work immediately and terminate the contract without obligation.

**21.0 Non-Acceptance Criteria for Work, Materials and Service**

No certificate of payment, no provision in the bidding documents, or any partial shipment of materials or entire occupancy of government shall constitute an acceptance of work, materials or service not done or provided in accordance with the contract documents, or relieve the bidder of liability for any express or implied warranties or responsibility for faulty materials or workmanship. The bidder shall remedy any defects in the work, material or service and pay for any other resulting damage to other work, material or equipment which appears within one year of final acceptance of the work, materials, or service unless a longer period is elsewhere specified. Nothing stated herein should relieve the bidder of common law liability for latent defects, which may appear after the expiration of the warranty period.

**22.0 Performance Requirements**

The delivery of any material, equipment, or the performance of any service that does not conform in all respects to the specifications will be rejected and the Board of Commissioner's representative and reasons for the rejection shall notify the Bidder. If the Bidder fails to make immediate replacement of such rejected material, equipment or service meeting the specifications, the Board of Commissioners will procure in the open market materials, and equipment, or hire labor of the quality required to meet the specifications up to the value rejected and the Bidder and his surety shall be liable to the Board of Commissioners for the total costs of the correction. The Board of Commissioner's performance of the work, when the Bidder is not doing the work in accordance with the specifications of the contract, shall result in a claim against the bidder for all costs and damages which will be allowed by reason of such non-performance.

If the Bidder defaults or neglects to carry out the work in any respect in accordance with the contract documents and fails to correct the default, except where an extension of time is granted in writing by the County, the County upon written notice to the Bidder may, without prejudice to any other remedies the County may have, make the correction required. If the default or

neglect results in a threat to the safety of persons or property, the Bidder must immediately commence to correct such default or neglect upon written or oral notice.

**23.0 Indemnification**

The Bidder awarded this contract shall assume the defense of, indemnify, and save harmless the County or any authorized political subdivision receiving services under this contract from any claims or liabilities of any type or nature to any person, bidder, or corporation arising in any manner from the bidders performance of the work required under this contract and shall pay any judgment obtained or growing out of said claims, liabilities, or any of them.

**24.0 Non-Appropriation of Funds**

Bidders are advised that although the term of this contract may span several fiscal years, this contract is contingent upon the County budgeting and appropriating the funds necessary for the continuation of this contract in the current year. In the event that the funds necessary for the continuation of this contract are not approved for expenditure in any year, this contract shall terminate on the last day of the fiscal year in which funding was approved, with no penalty to the County.

**25.0 Co-Op Opportunities**

ORC 9.48 allows any county to participate in contracts of other counties or townships in the acquisition of equipment, materials, supplies or services using the same terms, conditions and specifications and same or lower price.

Lucas County may permit authorized counties, townships or municipalities here after referred to as political subdivisions, to participate in contracts that Lucas County has entered into for the purchase of certain supplies, services, materials and equipment. Upon contract award, authorized political subdivisions are approved to order directly with the supplier. All invoices for such purchases must be sent directly to the ordering political subdivisions' billing address. Under no circumstances is Lucas County obligated to that political subdivision's financial commitments.

COUNTY OF LUCAS CONTRACTOR INSURANCE

21 INSURANCE

21.1 The CONTRACTOR shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of or result from the CONTRACTOR'S execution of the WORK, whether such execution be by himself or by any SUBCONTRACTOR or by anyone directly employed by any of them, or by any one for whose acts any of them may be liable:

21.1.1 Claims under workmen's compensation, disability, benefit and other similar employee benefit acts;

21.1.2 Claims for damages because of bodily injury, sickness or disease or death of his employees;

21.1.3 Claims for damages because of bodily injury, sickness or disease or death of any person other than his employees;

21.1.4 Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the CONTRACTOR, or (2) by any other person; and

21.1.5 Claims for damages because of injury to or destruction of tangible property, including loss of use resulting there from.

21.2 Certificate of Insurance acceptable to the OWNER shall be filed with the OWNER prior to commencement of the WORK naming OWNER as additional insured. These Certificates shall contain a provision that coverages afforded under the policies will not be canceled unless at least thirty (30) days prior WRITTEN NOTICE has been given to the OWNER.

21.3 The CONTRACTOR shall procure and maintain, at his own expense, during the CONTRACT TIME, liability insurance as hereinafter specified;

21.3.1 Comprehensive General Liability and Property Damage, Contractor's Protective Liability, Contractual Liability, Completed Operations-Products, Automobile Bodily Injury and Property Damage, owned and non-owned and hired vehicles and Owner's Protective Liability. The latter policy shall name as the insured the OWNER. If excluded from CONTRACTOR'S standard coverages, the following shall be deleted for policies provided under the CONTRACT DOCUMENT EXCLUSIONS: (1) "Underground Operations" (2) "Third Party Beneficiary" and (3) "Collapse" - where exposure is determined. Bodily Injury Liability and Property Damage Insurance shall cover the use of "Explosives" if used in performance of the CONTRACT. Insurance should be placed with a carrier with an AM Best Rating of at least an A-.

The types and **minimum** limits of insurance shall be as follows:

Commercial General Liability Insurance -  
General Aggregate Limit - \$2,000,000  
Products-Completed Operations-

Aggregate Limit - \$2,000,000  
Personal and Advertising  
Injury Limit - \$1,000,000  
Each Occurrence Limit - \$1,000,000  
Comprehensive Automobile Liability  
Bodily Injury & Property Damage Liability Limit  
Each Occurrence - \$1,000,000

The above minimum coverages may be obtained through the primary insurance or any combination of primary and umbrella insurance. In addition, the General Aggregate Limit shall be required on a per project basis.

21.3.2 The CONTRACTOR shall acquire and maintain, if applicable, Fire and Extended Coverage Insurance upon the PROJECT to the full insurable value thereof for the benefit of the OWNER, the CONTRACTOR, and SUBCONTRACTORS as their interest may appear. This provision shall in no way release the CONTRACTOR or CONTRACTOR'S surety from obligations under the CONTRACT DOCUMENTS to fully complete the PROJECT.

21.4 The CONTRACTOR shall procure and maintain at his own expense, during the CONTRACT TIME, in accordance with the provisions of the laws of the state in which the work is performed, Workmen's Compensation Insurance, including occupational disease provisions, for all of his employees at the site of the PROJECT and in case any work is sublet, the CONTRACTOR shall require such SUBCONTRACTOR similarly to provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the CONTRACTOR. In case any class of employees engaged in hazardous work under this contract at the site of the PROJECT is not protected under Workmen's Compensation statute, the CONTRACTOR shall provide, and shall cause such SUBCONTRACTOR to provide, adequate and suitable insurance for the protection of his employees not otherwise protected.

21.5 The CONTRACTOR shall secure, if applicable, "All Risk" type Builder's Risk Insurance for Work to be performed. Unless specifically authorized by the OWNER, the amount of such insurance shall not be less than the CONTRACT PRICE totaled in the BID. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft and smoke during the CONTRACT TIME, and until the WORK is accepted by the OWNER. The policy shall name as the insured the CONTRACTOR, and the OWNER.

22. INDEMNITY

22.1 PROFESSIONAL LIABILITY

Relative to any and all claims, losses, damages, liability and costs, the CONTRACTOR agrees to indemnify and save the County of Lucas, its officials and employees (herein after "County") harmless from and against any and all suits, actions or claims for property losses, damages or personal injury claimed to arise from a negligent act, error or omission by the CONTRACTOR or its employees.

22.2 NON-PROFESSIONAL LIABILITY

To the fullest extent permitted by law, the CONTRACTOR shall indemnify and hold harmless the County of Lucas, its officers, officials and employees (hereinafter "County"), or any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees arising out of the acts or omissions of the CONTRACTOR, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of property (other than the Work itself) including loss of use resulting there from, but only to the extent caused in whole or in part by the acts or omissions of the CONTRACTOR, any subCONTRACTOR(s) of the CONTRACTOR, its agents, or anyone directly employed by them or anyone whose acts they may deem liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this paragraph 22.2. It is understood and agreed that this indemnification obligation is enforceable to the full extent permitted by Ohio Revised Code Section 2305.31.

22.3 It is expressly understood and 'agreed that these indemnification obligations are enforceable to the full extent permitted by Ohio Revised Code Section 2305.31. In any and all claims against the County by any employee of the CONTRACTOR, and any subCONTRACTOR(s) of the CONTRACTOR, agent or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable. CONTRACTOR hereby expressly waives the immunity provided to CONTRACTOR by Article II, Section 35, of the Ohio Constitution and Ohio Revised Code Section 4123.74 and 4123.741, all regarding worker's compensation immunity, so that this indemnification obligation may be enforced by the County of Lucas against CONTRACTOR in those instances.

22.4 If the CONTRACTOR subcontracts with the County, the CONTRACTOR shall require its subCONTRACTORS to indemnify the County of Lucas in accord with Article 22.

22.5 CONTRACTOR Responsible - The CONTRACTOR expressly understands that the insurance requirements as outlined above are minimum requirements to be met under the contract and does not in any manner represent that the limits, coverage or policy forms are sufficient or adequate to protect the interest or liability of the CONTRACTOR and/or its subCONTRACTORS.

**THE FOLLOWING MUST BE INCLUDED (IN THE SPECIFIED AREAS) ON ALL INSURANCE CERTIFICATES:**

DESCRIPTION OF THE PROJECT AND LOCATION: you may use a generalized listing of the duties to be performed under this certificate of insurance. Example: "Projects Executed for the Board of Lucas County Commissioners."

CERTIFICATE HOLDER: Board of Lucas County Commissioners, One Government Center, Suite 800, Toledo, Ohio 43604-2247.

**SECTION A - AFFIDAVITS**

DELINQUENT PERSONAL PROPERTY TAX STATEMENT  
(O.R.C. Section 5719.042)

THIS FORM MUST BE COMPLETED IN ITS ENTIRETY AND NOTARIZED

I \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
(NAME) (TITLE) (NAME OF COMPANY)

affirm that at the time that I submitted the bid for \_\_\_\_\_  
(BID TITLE)

to the Board of Lucas County Commissioners on \_\_\_\_\_ that  
(DATE)

\_\_\_\_\_ was / was not charged with delinquent  
(NAME OF COMPANY) (CIRCLE ONE)

Personal Property Taxes by the Lucas County Auditor.

**(If Personal Property Taxes are delinquent, complete the following section)**

The amount of delinquent Personal Property Taxes due Lucas County is \_\_\_\_\_ and unpaid penalties and interest are \_\_\_\_\_.  
(AMOUNT) (AMOUNT)

\_\_\_\_\_  
(SIGNATURE)

\_\_\_\_\_  
(COMPANY)

\_\_\_\_\_  
(DATE)

Sworn to and subscribed before me this \_\_\_\_\_ day of, \_\_\_\_\_ 20\_\_.

(SEAL)

\_\_\_\_\_  
(NOTARY)

My Commission Expires:

(Date) \_\_\_\_\_

NON-DISCRIMINATION AND EQUAL EMPLOYMENT OPPORTUNITY AFFIDAVIT

STATE OF \_\_\_\_\_

SS

COUNTY OF \_\_\_\_\_

\_\_\_\_\_ being first duly sworn, deposes and says that  
(Name)

he/she is \_\_\_\_\_ of \_\_\_\_\_ the party  
(Title) (Company)

that made the foregoing proposal; that such party as bidder does not and shall not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin. If awarded the bid and contract under this proposal, said party shall take affirmative action to insure that applicants are employed and that employees are treated, during employment, without regard to their race, religion, color, sex or national origin. If successful as the lowest and best bidder under the foregoing proposal this party shall post non-discrimination notices in conspicuous places available to employees and applicants for employment setting forth the provision of this affidavit.

Furthermore, said party agrees to abide by the assurances found in Section 153.59 of the Ohio Revised Code in the Contract Provisions with the Owner if selected as the successful bidder by the owner.

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Affiant)

\_\_\_\_\_  
(Company/Corporations)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(City/State/Zip Code)

Sworn to and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

(Seal)

\_\_\_\_\_  
(Notary)

My Commission Expires:

\_\_\_\_\_  
(Date)

NON-COLLUSION AFFIDAVIT

STATE OF OHIO,

COUNTY OF LUCAS, SS:

\_\_\_\_\_ being first duly SWORN, deposes and says that he is the \_\_\_\_\_ or authorized representative of \_\_\_\_\_ or is the party submitting this bid; that such bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any other bidder or person, to submit a sham bid, or refrain from bidding; has not in any manner, directly or indirectly sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or any other bidder, to fix any overhead, profit or cost element of said bid price, or of that of any other bidder; to secure any advantage against the County of Lucas or any person or persons interested in the proposed contract; that all statements contained in said proposal of bid are true and that, such bidder has not, directly or indirectly submitted this bid, or the contents thereof, or divulged information or data relative thereto to any other potential bidder. Further, Affiant affirms that no county employee has any financial interest in this company or the bid being submitted.

\_\_\_\_\_  
(Affiant Signature)

\_\_\_\_\_  
(Affiant Title)

SWORN to before me and subscribed in my presence  
this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.  
(Date) (Month) (Year)

\_\_\_\_\_  
(Notary Public)

(SEAL)

My Commission Expires

\_\_\_\_\_  
(Date)

NO FINDINGS FOR RECOVERY AFFIDAVIT

THIS FORM MUST BE COMPLETED IN ITS ENTIRETY AND NOTARIZED

I \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
(NAME) (TITLE) (NAME OF COMPANY)

affirm that at the time that I submitted the bid for \_\_\_\_\_  
(BID TITLE)

to the Board of Lucas County Commissioners on \_\_\_\_\_ that  
(DATE)

\_\_\_\_\_ has / has no unresolved  
(NAME OF COMPANY) (CIRCLE ONE)  
finding for recovery from the State Auditor per Ohio Revised Code  
Section 9.24.

(If there is unresolved finding for recovery from the State Auditor ,  
complete the following section)

The amount of unresolved finding for recovery due the State Auditor is  
\_\_\_\_\_ and unpaid penalties and interest are \_\_\_\_\_.  
(AMOUNT) (AMOUNT)

\_\_\_\_\_  
(SIGNATURE)

\_\_\_\_\_  
(COMPANY)

\_\_\_\_\_  
(DATE)

Sworn to and subscribed before me this \_\_\_\_\_ day of, \_\_\_\_\_ 20\_\_.

(SEAL)

\_\_\_\_\_  
(NOTARY)

My Commission Expires:  
\_\_\_\_\_

**Additional Administrative Requirements  
Compliance with Support Order(s)**

Financial responsibility, integrity and accountability are essential for operating a business that services the public. Unpaid obligations are a social problem which threatens the welfare of children and increases the burden on taxpayers to provide social services. Due to the public's growing concern with non-paying parents, government initiatives to create additional, effective enforcement mechanisms are necessary. It is in the County's interest that all contractors doing business with Lucas County demonstrate financial responsibility and integrity and accountability.

All bidders **must submit** the **completed** "Compliance Affidavit For Businesses" with their bid. Once a lowest and best bidder has been determined and prior to award, this form will be submitted by Lucas County to the Child Support Enforcement Agency for certification of substantial compliance of court ordered and/or agency ordered child support of any individuals of the company who have twenty-five percent (25%) or greater vested interest in the company. If the individual is found to be not in compliance, said bidder will be notified that the individual is not in compliance and therefore the bidder/company/contractor is not in compliance and will have five (5) days to be in compliance from date of notification. Failure to comply will cause disqualification of the bidder's/company's/contractor's bid.

Bidders should contact Lucas County Child Support Enforcement Agency, 419-213-3106, regarding this requirement should they have questions.





LUCAS COUNTY SWEATFREE AFFIDAVIT

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_, ss:

Personally appeared before me the undersigned, as an individual or as a representative of

\_\_\_\_\_ for a contract for \_\_\_\_\_  
(Name of Entity (Type of Product or Service)

to be let by the Board of Commissioners, Lucas County, Ohio, who, being duly cautioned and sworn, makes the following statement with respect to the Lucas County Sweatfree Procurement Policy and further states that the undersigned has the authority to make the following representation on behalf of himself or herself or of the business entity:

1. Name, physical address, phone number and contact persons for each production facility that will be involved in the production of goods or the provision of services.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. I have personal knowledge of the information contained in section 1 or I have obtained such information from any resale entity.

3. I understand my obligation to ensure that all applicable production facilities adhere to the sweatfree code of conduct as defined in Section IV of the Lucas County Sweatfree Procurement Policy.

4. I understand that if Lucas County, the State and Local Sweatfree Consortium, and/or an independent monitor find any of the production facilities listed above to be out of compliance with any of the provisions of Section IV of the Lucas County's Sweatfree Procurement Policy, and I fail to take all reasonable steps as specified by and/or its designee(s), I will be deemed out of compliance with the sweatfree code of conduct as defined in the Lucas County Sweatfree Procurement Policy.

5. I have furnished a copy of the sweatfree code of conduct as defined in Section IV of the Lucas County Sweatfree Procurement Policy to each production facility named in paragraph 1 and to each relevant subcontractor and I have instructed each subcontractor to furnish the code of conduct to each relevant production facility.

**BIDDER:**

SIGNATURE: \_\_\_\_\_

NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_

Sworn to before me and subscribed in my presence by the above named person this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

NOTARY PUBLIC: \_\_\_\_\_

My Commission Expires:

\_\_\_\_\_

LUCAS COUNTY LIVING WAGE AFFIDAVIT

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_, ss:

Personally appeared before me the undersigned, as an individual or as a representative of

\_\_\_\_\_ for a contract/public incentive for  
(Name of Entity)

for \_\_\_\_\_  
(Type of Product, Service or public incentive)

to be awarded by the Board of Commissioners, Lucas County, Ohio, who, being duly cautioned and sworn, makes the following statement with respect to the Lucas County Living Wage Procurement Policy and further states that the undersigned has the authority to make the following representation on behalf of himself or herself or of the business entity:

1. I have personal knowledge of the information contained herein.
2. Number of employees. \_\_\_\_\_
3. Is the company/entity a non-profit? YES \_\_\_\_\_ NO \_\_\_\_\_
4. Are employees paid a wage equivalent to at least 110% of the most recent federal poverty guidelines for a family of four, as defined by the Department of Health and Human Services and adequate healthcare coverage as defined in the Commissioners Living Wage resolution? YES \_\_\_\_\_ NO \_\_\_\_\_
5. If no healthcare coverage is provided, are employees paid a wage equivalent to at least 130% of the most recent federal poverty guidelines for a family of four, as defined by the Department of Health and Human Services? YES \_\_\_\_\_ NO \_\_\_\_\_

**BIDDER:**

SIGNATURE: \_\_\_\_\_

NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_

Sworn to before me and subscribed in my presence by the above named person this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

NOTARY PUBLIC: \_\_\_\_\_

My Commission Expires:  
\_\_\_\_\_



Ohio Department of Public Safety  
 Division of Homeland Security  
<http://www.homelandsecurity.ohio.gov>

**GOVERNMENT BUSINESS AND FUNDING CONTRACTS**  
 In accordance with section 2909.33 of the Ohio Revised Code

**DECLARATION REGARDING MATERIAL ASSISTANCE/NONASSISTANCE TO A TERRORIST ORGANIZATION**

This form serves as a declaration of the provision of material assistance to a terrorist organization or organization that supports terrorism as identified by the U.S. Department of State Terrorist Exclusion List (see the Ohio Homeland Security Division website for a reference copy of the Terrorist Exclusion List).

Any answer of "yes" to any question, or the failure to answer "no" to any question on this declaration shall serve as a disclosure that material assistance to an organization identified on the U.S. Department of State Terrorist Exclusion List has been provided. Failure to disclose the provision of material assistance to such an organization or knowingly making false statements regarding material assistance to such an organization is a felony of the fifth degree.

For the purposes of this declaration, "material support or resources" means currency, payment instruments, other financial securities, funds, transfer of funds, and financial services that are in excess of one hundred dollars, as well as communications, lodging, training, safe houses, false documentation or identification, communications equipment, facilities, weapons, lethal substances, explosives, personnel, transportation, and other physical assets, except medicine or religious materials.

LAST NAME		FIRST NAME		MIDDLE INITIAL
HOME ADDRESS				
CITY	STATE	ZIP	COUNTY	
HOME PHONE		WORK PHONE		

**COMPLETE THIS SECTION ONLY IF YOU ARE A COMPANY, BUSINESS OR ORGANIZATION**

BUSINESS/ORGANIZATION NAME				
BUSINESS ADDRESS				
CITY	STATE	ZIP	COUNTY	
PHONE NUMBER				

<b>DECLARATION</b>	
In accordance with division (A)(2)(b) of section 2909.32 of the Ohio Revised Code	
For each question, indicate either "yes," or "no" in the space provided. Responses must be truthful to the best of your knowledge.	
1. Are you a member of an organization on the U.S. Department of State Terrorist Exclusion List?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2. Have you used any position of prominence you have with any country to persuade others to support an organization on the U.S. Department of State Terrorist Exclusion List?	<input type="checkbox"/> Yes <input type="checkbox"/> No

HLS 0038 2/08

GOVERNMENT BUSINESS AND FUNDING CONTRACTS - CONTINUED

3. Have you knowingly solicited funds or other things of value for an organization on the U.S. Department of State Terrorist Exclusion List?  
 Yes  No
4. Have you solicited any individual for membership in an organization on the U.S. Department of State Terrorist Exclusion List?  
 Yes  No
5. Have you committed an act that you know, or reasonably should have known, affords "material support or resources" to an organization on the U.S. Department of State Terrorist Exclusion List?  
 Yes  No
6. Have you hired or compensated a person you knew to be a member of an organization on the U.S. Department of State Terrorist Exclusion List, or a person you knew to be engaged in planning, assisting, or carrying out an act of terrorism?  
 Yes  No

In the event of a denial of a government contract or government funding due to a positive indication that material assistance has been provided to a terrorist organization, or an organization that supports terrorism as identified by the U.S. Department of State Terrorist Exclusion List, a review of the denial may be requested. The request must be sent to the Ohio Department of Public Safety's Division of Homeland Security. The request forms and instructions for filing can be found on the Ohio Homeland Security Division website.

CERTIFICATION

I hereby certify that the answers I have made to all of the questions on this declaration are true to the best of my knowledge. I understand that if this declaration is not completed in its entirety, it will not be processed and I will be automatically disqualified. I understand that I am responsible for the correctness of this declaration. I understand that failure to disclose the provision of material assistance to an organization identified on the U.S. Department of State Terrorist Exclusion List, or knowingly making false statements regarding material assistance to such an organization is a felony of the fifth degree. I understand that any answer of "yes" to any question, or the failure to answer "no" to any question on this declaration shall serve as a disclosure that material assistance to an organization identified on the U.S. Department of State Terrorist Exclusion List has been provided by myself or my organization. If I am signing this on behalf of a company, business or organization, I hereby acknowledge that I have the authority to make this certification on behalf of the company, business or organization referenced on page 1 of this declaration.

X

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

OHIO DEPARTMENT OF PUBLIC SAFETY  
Division of Homeland Security

## Terrorist Exclusion List

As of March 16, 2009

### U.S. Department of State List of Designated Foreign Terrorist Organizations

1. Abu Nidal Organization (ANO) (International, Palestinian)
2. Abu Sayyaf Group (ASG) (Philippines)
3. Al-Aqsa Martyrs Brigade (Palestinian)
4. Al-Shabaab (Somali)
5. Ansar al-Islam (Iraqi Kurdistan)
6. Armed Islamic Group (GIA) (Algeria)
7. Asbat al-Ansar (Lebanon)
8. Aum Shinrikyo (Japan)
9. Basque Fatherland and Liberty (ETA) (Spain, France)
10. Communist Party of the Philippines/New People's Army (CPP/NPA) (Philippines)
11. Continuity Irish Republican Army (Northern Ireland)
12. Gama'a al-Islamiyya (Egypt)
13. HAMAS (Islamic Resistance Movement) (Palestinian)
14. Harakat ul-Jihad-i-Islami/Bangladesh (HUJI-B) (Bangladesh)
15. Harakat ul-Mujahidin (HUM) (Kashmir, India)
16. Hizballah (Party of God) (Lebanon)
17. Islamic Jihad Group (Syria)
18. Islamic Movement of Uzbekistan (IMU) (Uzbekistan)
19. Jaish-e-Mohammed (Army of Mohammed) (JEM) (Kashmir, India)
20. Jemaah Islamiya organization (JI) (Southeast Asia)
21. al-Jihad (Egyptian Islamic Jihad) (Egypt)
22. Kahane Chai (Kach) (Israel)
23. Kongra-Gel (KGK, formerly Kurdistan Workers' Party, PKK, KADEK, Kongra-Gel) (Turkey, Iran, Iraq, Syria)
24. Lashkar-e Tayyiba (Army of the Righteous) (LT) (Kashmir)
25. Lashkar i Jhangvi
26. Liberation Tigers of Tamil Eelam (LTTE) (Sri Lanka)
27. Libyan Islamic Fighting Group (LIFG) (Libya)
28. Moroccan Islamic Combatant Group (GICM) (Morocco)
29. Mujahedin-e Khalq Organization (MEK) (Iran)
30. National Liberation Army (ELN) (Colombia)
31. Palestine Liberation Front (PLF) (Palestinian)
32. Palestinian Islamic Jihad (PIJ) (Palestinian)
33. Popular Front for the Liberation of Palestine (PFLP) (Palestinian)
34. PFLP-General Command (PFLP-GC) (Palestinian)
35. Tanzim Qa'idat al-Jihad fi Bilad al-Rafidayn (QJBR) (al-Qaida in Iraq) (formerly Jama'at al-Tawhid wa'al-Jihad, JTJ, al-Zarqawi Network) (Iraq)
36. al-Qa'ida (Global)
37. al-Qa'ida in the Islamic Maghreb (formerly GSPC) (The Maghreb)
38. Real IRA (Northern Ireland)
39. Revolutionary Armed Forces of Colombia (FARC) (Colombia)
40. Revolutionary Nuclei (formerly ELA) (Greece)
41. Revolutionary Organization 17 November (Greece)
42. Revolutionary People's Liberation Party/Front (DHKP/C) (Turkey)
43. Shining Path (Sendero Luminoso, SL) (Peru)
44. United Self-Defense Forces of Colombia (AUC) (Colombia)

OHIO DEPARTMENT OF PUBLIC SAFETY  
Division of Homeland Security

U.S. Department of State Terrorist Exclusion List

1. Afghan Support Committee (a.k.a. Ahya ul Turas; a.k.a. Jamiat Ayat-ur-Rhas al Islamia; a.k.a. Jamiat Ihya ul Turath al Islamia; a.k.a. Lajnat el Masa Eidatul Afghania)
2. Al Taqwa Trade, Property and Industry Company Ltd. (f.k.a. Al Taqwa Trade, Property and Industry; f.k.a. Al Taqwa Trade, Property and Industry Establishment; f.k.a. Himmat Establishment; a.k.a. Waldenberg, AG)
3. Al-Hamati Sweets Bakeries
4. Al-Ittihad al-Islami (AIAI)
5. Al-Manar
6. Al-Ma'unah
7. Al-Nur Honey Center
8. Al-Rashid Trust
9. Al-Shifa Honey Press for Industry and Commerce
10. Al-Wafa al-Igatha al-Islamia (a.k.a. Wafa Humanitarian Organization; a.k.a. Al Wafa; a.k.a. Al Wafa Organization)
11. Alex Boncayao Brigade (ABB)
12. Anarchist Faction for Overthrow
13. Army for the Liberation of Rwanda (ALIR) (a.k.a. Interahamwe, Former Armed Forces (EX-FAR))
14. Asbat al-Ansar
15. Babbar Khalsa International
16. Bank Al Taqwa Ltd. (a.k.a. Al Taqwa Bank; a.k.a. Bank Al Taqwa)
17. Black Star
18. Communist Party of Nepal (Maoist) (a.k.a. CPN(M); a.k.a. the United Revolutionary People's Council, a.k.a. the People's Liberation Army of Nepal)
19. Continuity Irish Republican Army (CIRA) (a.k.a. Continuity Army Council)
20. Darkazanli Company
21. Dhamat Houmat Daawa Salafia (a.k.a. Group Protectors of Salafist Preaching; a.k.a. Houmat Ed Daawa Es Salafiya; a.k.a. Katibat El Ahoual; a.k.a. Protectors of the Salafist Predication; a.k.a. El-Ahoual Battalion; a.k.a. Katibat El Ahouel; a.k.a. Houmate Ed-Daawa Es-Salafia; a.k.a. the Horror Squadron; a.k.a. Djamaat Houmat Eddawa Essalafia; a.k.a. Djamaatt Houmat Ed Daawa Es Salafiya; a.k.a. Salafist Call Protectors; a.k.a. Djamaat Houmat Ed Daawa Es Salafiya; a.k.a. Houmate el Da'awaa es-Salafiyya; a.k.a. Protectors of the Salafist Call; a.k.a. Houmat ed-Daawaa es-Salafia; a.k.a. Group of Supporters of the Salafiste Trend; a.k.a. Group of Supporters of the Salafist Trend)
22. Eastern Turkistan Islamic Movement (a.k.a. Eastern Turkistan Islamic Party; a.k.a. ETIM; a.k.a. ETIP)
23. First of October Antifascist Resistance Group (GRAPO) (a.k.a. Grupo de Resistencia Anti-Fascista Premero De Octubre)
24. Harakat ul Jihad i Islami (HUJI)
25. International Sikh Youth Federation
26. Islamic Army of Aden
27. Islamic Renewal and Reform Organization
28. Jamiat al-Ta'awun al-Islamiyya
29. Jamiat ul-Mujahideen (JUM)
30. Japanese Red Army (JRA)
31. Jaysh-e-Mohammed
32. Jayshullah
33. Jerusalem Warriors
34. Lashkar-e-Tayyiba (LET) (a.k.a. Army of the Righteous)
35. Libyan Islamic Fighting Group
36. Loyalist Volunteer Force (LVF)
37. Makhtab al-Khidmat
38. Moroccan Islamic Combatant Group (a.k.a. GICM; a.k.a. Groupe Islamique Combattant Marocain)

**OHIO DEPARTMENT OF PUBLIC SAFETY**  
**Division of Homeland Security**

39. Nada Management Organization (f.k.a. Al Taqwa Management Organization SA)
40. New People's Army (NPA)
41. Orange Volunteers (OV)
42. People Against Gangsterism and Drugs (PAGAD)
43. Red Brigades-Combatant Communist Party (BR-PCC)
44. Red Hand Defenders (RHD)
45. Revival of Islamic Heritage Society (Pakistan and Afghanistan offices -- Kuwait office not designated) (a.k.a. Jamia Ihya ul Turath; a.k.a. Jamiat Ihia Al- Turath Al-Islamiya; a.k.a. Revival of Islamic Society Heritage on the African Continent)
46. Revolutionary Proletarian Nucleus
47. Revolutionary United Front (RUF)
48. Salafist Group for Call and Combat (GSPC)
49. The Allied Democratic Forces (ADF)
50. The Islamic International Brigade (a.k.a. International Battalion, a.k.a. Islamic Peacekeeping International Brigade, a.k.a. Peacekeeping Battalion, a.k.a. The International Brigade, a.k.a. The Islamic Peacekeeping Army, a.k.a. The Islamic Peacekeeping Brigade)
51. The Lord's Resistance Army (LRA)
52. The Pentagon Gang
53. The Riyadus-Salikhin Reconnaissance and Sabotage Battalion of Chechen Martyrs (a.k.a. Riyadus-Salikhin Reconnaissance and Sabotage Battalion, a.k.a. Riyadh-as-Saliheen, a.k.a. the Sabotage and Military Surveillance Group of the Riyadh al-Salihin Martyrs, a.k.a. Riyadus Salikhin Reconnaissance and Sabotage Battalion of Shahids (Martyrs))
54. The Special Purpose Islamic Regiment (a.k.a. the Islamic Special Purpose Regiment, a.k.a. the al-Jihad-Fisi-Sabililah Special Islamic Regiment, a.k.a. Islamic Regiment of Special Meaning)
55. Tunisian Combat Group (a.k.a. GCT, a.k.a. Groupe Combattant Tunisien, a.k.a. Jama'a Combattante Tunisien, a.k.a. JCT; a.k.a. Tunisian Combatant Group)
56. Turkish Hizballah
57. Ulster Defense Association (a.k.a. Ulster Freedom Fighters)
58. Ummah Tameer E-Nau (UTN) (a.k.a. Foundation for Construction; a.k.a. Nation Building; a.k.a. Reconstruction Foundation; a.k.a. Reconstruction of the Islamic Community; a.k.a. Reconstruction of the Muslim Ummah; a.k.a. Ummah Tameer I-Nau; a.k.a. Ummah Tameer E-Nau; a.k.a. Ummah Tameer-I-Pau)
59. Youssef M. Nada & Co. Gesellschaft M.B.H.

**U.S. Treasury Department's Designated Charities and Potential Fundraising Front Organizations for FTOs**

1. Makhtab al-Khidamat / Al Kifah (formerly U.S.-based, Pakistan)
2. Al Rashid Trust (Pakistan)
3. Wafa Humanitarian Organization (Pakistan, Saudi Arabia, Kuwait, United Arab Emirates)
4. Rabita Trust (Pakistan)
5. Ummah Tameer E-Nau (Pakistan)
6. Revival of Islamic Heritage Society - Pakistan and Afghanistan Branches (Kuwait, Afghanistan, Pakistan)
7. Afghan Support Committee (Afghanistan, Pakistan)
8. Al Haramain Foundation (Indonesia, Kenya, Pakistan, Tanzania, Bosnia, Somalia, Bangladesh, Afghanistan, Albania, Ethiopia, Netherlands, Comoros Islands, and United States branches)
9. Aid Organization of the Ulema (Pakistan)
10. Global Relief Foundation (United States)

**OHIO DEPARTMENT OF PUBLIC SAFETY**  
**Division of Homeland Security**

11. Benevolence International Foundation (United States):
12. Benevolence International Fund (Canada)
13. Bosanska Idealna Futura (Bosnia)
14. Stichting Benevolence International Nederland (Netherlands)
15. Lajnat al Daawa al Islamiyya (Kuwait, Pakistan, Afghanistan)
16. Al Akhtar Trust (Pakistan)
17. Taibah International (Bosnia)
18. Al Haramain & Al Masjed Al Aqsa Charity Foundation (Bosnia)
19. Al Furqan (Bosnia)
20. Islamic African Relief Agency (IARA) / Islamic Relief Agency (ISRA) (Sudan, United States and 40 other branches throughout the world)
21. The Holy Land Foundation for Relief and Development (United States)
22. Al Aqsa Foundation (United States, Europe, Pakistan, Yemen, South Africa)
23. Comité de Bienfaisance et de Secours aux Palestiniens (France)
24. Association de Secours Palestinien (Switzerland)
25. Interpal (Palestinian Relief & Development Fund) (United Kingdom)
26. Palestinian Association in Austria (Austria)
27. Sanibil Association for Relief and Development (Lebanon)
28. Elehssan Society (Palestinian territories)
29. Aleph (Aum Shinrikyo/Aum Supreme Truth)
30. Rabbi Meir David Kahane Memorial Fund (Kahane Chai and Kach)  
American Friends of the United Yeshiva (Kahane Chai and Kach)  
American Friends of Yeshivat Rav Meir (Kahane Chai and Kach)  
Friends of the Jewish Idea Yeshiva (Kahane Chai and Kach)
31. Irish Republican Prisoners Welfare Association (Real IRA)
32. Socorro Popular Del Peru/People's Aid of Peru (Sendero Luminoso/Shining Path)

**SECTION B - SPECIFICATIONS & PRICING**

---

**TECHNICAL SPECIFICATIONS  
For  
HEAVY HAZMAT TRUCK**

---

**GENERAL REQUIREMENTS**

All specifications contained herein are considered minimum requirements for the manufacture and delivery of the "new" emergency support vehicle chassis and body. The terms "minimum" and "maximum" shall define the respective constraints that apply to the overall design, dimensions or quality level established by the Toledo Fire Department and Lucas County hereafter called purchaser. The term or equal shall define the degree of determined quality level and shall be the sole responsibility of the purchaser to judge whether the proposed equal submitted by the bidder meets the minimum established quality level. Where brand names are referenced, it shall be understood by the bidder that the specified brand and part number are open market commodities and, thus, must be furnished as specified herein. Where none of the aforementioned terms are referenced herein, the purchaser has established that no exceptions are permitted by the bidder.

The specified apparatus shall comply with all Federal, State, and local requirements pertaining to vehicles used as an emergency vehicle, as defined by NFPA 1901. All standards in effect at the time a contract is released to the successful bidder are to be met, whether or not they are specified herein.

The apparatus shall conform to the latest revision to National Fire Protection Association (NFPA) Standard for Automotive Fire Apparatus, number 1901, unless otherwise specified in this document. Only the specified emergency support vehicle and equipment listed in these specifications shall be provided. The apparatus shall further conform to all Federal Motor Vehicle Safety Standards (FMVSS) applicable at the time of manufacture.

*Bidder Complies:     Yes     No*

**BID RESPONSE**

The bidder's response shall include all requisite forms, a copy of these technical specifications with indication of compliance or lack of compliance in each place requested, a separate sheet providing detailed information on any exceptions, a set of detailed contractor specifications and a completed price page. Bidders shall place a check mark or "X" to the left of "Yes" to indicate compliance or to the left of "No" to indicate a lack of compliance with the specification described. Any exceptions to minimum specifications shall be described in detail on a separate page attached to the bid response titled "EXCEPTIONS & CLARIFICATIONS". Exceptions shall be listed by Specification page reference number, corresponding bidders proposal page number, and detailed description of exception or clarification, in column form.

Failure to disclose an exception will indicate total compliance. Final inspection and subsequent acceptance of the completed apparatus will be determined based on the exceptions noted.

Exceptions will not necessarily disqualify the bidder from consideration. Final determination of acceptability of any exception or alternative will be at the sole judgment of the purchaser.

Each bid must be accompanied by a set of detailed contractor's specifications consisting of a detailed description of the apparatus and equipment proposed. All bid proposal specifications must be in the same sequence as the advertised specification to facilitate an accurate comparison. These specifications shall include size, location, type and model of all component parts being furnished. Detailed information shall be provided on the materials used to construct all facets of the apparatus body. Any bidder who fails to submit detailed construction specifications, or who photo copies and

submits these specifications as their own construction details may be considered non-responsive and shall render their proposal ineligible for further contractual consideration.

Terms such as "intent of" are considered vague and unacceptable responses and will disqualify the bid.

The bidder shall respond using only those forms contained herein.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**ENGINEERING DRAWINGS**

A major factor in the evaluation of bids shall be the submission of engineering proposal drawings. No bid proposals will be considered without complete engineering proposal type drawings submitted with the bid response. Submitted drawings must be specifically for the proposed apparatus, depicting all major specified components and chassis and have the purchasers name affixed.

The submission of these drawings shall be in addition to production working drawings which must be submitted to the purchaser for approval prior to construction of the proposed apparatus.

At a minimum, the drawings shall show the following minimum views, with doors open:

1. Street side view
  - a. With applicable cab and chassis
  - b. Overall length of apparatus; length of body; overall height from level ground; angle-of-departure
  - c. Compartment pass-thru dimensions for each compartment
  - d. All installed options, including but not limited to: shelves, trays, partitions, reels, major specified stored equipment (as outlined in Compartment Layout Schedule), etc.
  - e. All specified lighting and other permanently attached features
2. Curb side view
  - f. With applicable cab and chassis
  - g. All installed options, including but not limited to: shelves, trays, partitions, reels, major specified stored equipment (as outlined in Compartment Layout Schedule), etc.
  - h. All specified lighting and other permanently attached features.
3. Rear view
  - i. All installed options, including but not limited to: shelves, trays, partitions, reels, major specified stored equipment (as outlined in Compartment Layout Schedule), etc.
  - j. All specified lighting and other permanently attached features.
  - k. Overall width and height
4. Front view
  - l. Depicting specified cab
  - m. All specified lighting and other permanently attached features
  - n. Bumper layout
5. Top view
  - o. Including cab interior
  - p. Roof top features, including any specified coffin compartments, lighting, etc.

Submission of "similar to" or "standard" drawings or statements referencing submission of drawings after award of contract will render the bid as non-compliant and subject to no further review.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**SUBLETTING**

Due to liability issues, bidders proposing bodies that are not specifically manufactured by the apparatus manufacturer shall provide the following information with the bid response:

1. Name of body manufacturer  
*Manufacturer of body:* \_\_\_\_\_
2. Research information about company (web site address, phone number, etc)  
*Body manufacturer research information:* \_\_\_\_\_
3. Separate Product Liability Insurance certificate made out to the purchaser, not the bidder, in the amount equal to the provisions stipulated above.  
*Product Liability Certificate included:*  Yes  No

**Bidder Complies:  Yes  No**

**QUALITY AND WORKMANSHIP**

The design of the apparatus must embody the latest approved automotive and emergency apparatus engineering practices. The workmanship must be of the highest quality in its respective field.

Special consideration will be given to the following points: Accessibility of the various components which require periodic maintenance operations; construction that is rugged and ample; safety parameters that are designed to carry loads as specified and to meet both on and off road requirements and speed conditions, as set forth under "Performance Test and Requirements"; welding employed in the assembly of the apparatus in a manner that will prevent the ready removal of any component part for service or repair; All steel welding shall be performed to American Welding Society D1.1-83 for structural steel welding; All aluminum welding shall be performed to American Welding Society and ANSI D1.2-83 for structural welding of aluminum; Flex cord arc welding to use alloy rods type 7000 American Welding Society Standards A5.20-E70T1.

**Bidder Complies:  Yes  No**

**PERFORMANCE TEST AND REQUIREMENTS**

A road test will be conducted with the apparatus fully loaded and a continuous run of ten (10) miles or more will be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus.

The apparatus, when loaded, shall have not less than 25% nor more than 40% of the weight on the front axle, and not less than 60% nor more than 75% on the rear axle.

The apparatus must be capable of accelerating to 45 mph from a standing start within 30 seconds on a level concrete highway without exceeding the maximum governed rpm of the engine. If the specified drive-train components herein are determined by the bidder to be deficient in meeting this criteria, it shall be the bidders responsibility to note any deficiency in the bid specifications and offer the proper alternative, outlining separately the added cost of meeting the performance criteria above.

The service brakes shall be capable of stopping a fully loaded vehicle in 30 feet at 20 mph on level concrete highway.

**Bidder Complies:  Yes  No**

**FAILURE TO MEET TEST**

In the event the apparatus fails to meet the test requirements of these specifications on the first trials, second trials may

be made at the option of the bidder 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 comply with changes as the purchaser may deem necessary to conform to any clause of the specification within thirty (30) days after notice is given to the bidder of such changes shall also be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the purchaser during the above specified period with the permission of the bidder shall not constitute acceptance.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**MATERIALS**

Materials shall conform to the specifications listed herein. When not specifically listed, materials shall be of the best quality for the purpose of commercial practice. Materials shall be free of all defects and imperfections that might affect the serviceability of the completed apparatus.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**COMPLIANCE**

The bidder is hereby given every opportunity to take exceptions to the proposed apparatus bid response. Acceptance of any listed exception shall be at the sole discretion of the purchaser based on intended use, expected quality level, serviceability, design criteria and life expectancy. Decisions shall be final.

Silence to exceptions shall indicate that the line item will comply with the minimum established specifications. Should the item be found non-compliant at the time of delivery and that item has not been accepted at time of contract award, the bidder shall be liable for all cost associated with correction. Final acceptance of the apparatus will not be made, nor any payments executed, until such time as all discrepancies are corrected to the satisfaction of the purchaser. If the discrepancies are not corrected within 10 days of initial delivery attempt, the bidder may be deemed in default of contract.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**CURRENT OR PENDING LITIGATION**

The bidder shall disclose any current or pending litigation regarding failure to deliver or comply with specification requirements on previous or current contracts. Failure to make full disclosure may render the bid or subsequent contract null and void.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**PROOF OF MANUFACTURE**

The bidder shall include, with the bid response, photos of a like vehicle to what is being proposed herein. Additionally, a users list of not less than five customers who have purchased a like vehicle in the past 12 months shall be included that includes department name, department address, contact name and contact phone number.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**RESPONSIBILITY OF CONTRACTOR NFPA 1901 4.4.1**

The submitted proposal shall meet the following requirements, as published in NFPA 1901; paragraph 4.4.1: *The contractor shall provide a detailed description of the apparatus, a list of equipment to be furnished, and other construction and performance details to which the apparatus shall conform. The purpose of these contractor specifications shall be to define what the contractor intends to furnish and deliver to the purchase.* Failure to provide

detailed proposal specifications, as outlined above, will render the proposal as unacceptable.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**FAILURE TO COMPLY**

Bidder acknowledges that should the Toledo Fire Department discover, during the course of the pre-construction conference, that the bidder does not intend to supply the vehicle as specified, based on listed compliance statements and associated exceptions, the contract shall be considered null and void with no further negotiations.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**MODEL**

The chassis shall be a Gladiator model. The cab and chassis shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. The chassis shall be manufactured for heavy duty service with the strength and capacity to support a fully laden apparatus, one hundred (100) percent of the time.

**MODEL YEAR**

The chassis shall have a vehicle identification number that reflects a 2011 model year.

**COUNTRY OF SERVICE**

The chassis shall be put in service in the country of United States of America (USA).

**APPARATUS TYPE**

The apparatus shall be a rescue vehicle designed for emergency service use which shall include the functions of a multipurpose vehicle which primarily provides support services at emergency scenes.

**VEHICLE TYPE**

The chassis shall be manufactured for use as a straight truck type vehicle and designed for the installation of a permanently mounted apparatus behind the cab. The apparatus of the vehicle shall be supplied and installed by the apparatus manufacturer.

**AXLE CONFIGURATION**

The chassis shall feature a 4 X 2 axle configuration consisting of a single rear drive axle with a single front steer axle.

**GROSS AXLE WEIGHT RATINGS FRONT**

The front gross axle weight rating (GAWR) of the chassis shall be 21,500 pounds.

This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

**GROSS AXLE WEIGHT RATINGS REAR**

The rear gross axle weight rating (GAWR) of the chassis shall be 27,000 pounds.

This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

**CAB STYLE**

The cab shall be a custom, enclosed model, built specifically for as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications.

The cab shall be manufactured for heavy-duty service utilizing adequate strength and capacity for the application of protecting the occupants of the vehicle. The cab shall be of a modular design offering improved strength, durability and reduced weight. The modular design shall allow for faster, less costly replacement of components. Per pound, 6061-T6 aluminum extrusions offer a higher tensile strength, 45,000 PSI, and yield strength, 40,000 PSI, than that of lower grade sheet such as 3003-H13. For this reason, the cab shall be of aluminum extrusion construction, which shall offer superior strength and the truest, flattest surface ensuring less expensive paint repairs if needed.

The method of cab construction shall use a process incorporating techniques outlined in accordance with the American Welding Society D1.1-96 requirements for structural steel welding. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.

To provide a superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side panels shall be assembled using proven industrial adhesives, designed specifically for aluminum fabrication, which exceed the strength of a weld, for construction.

All interior and exterior seams shall be sealed for optimum noise reduction in addition to the most favorable efficiency for heating and cooling retention.

The cab shall be constructed of 5052-H32 corrosion resistant aluminum plate. A single formed, one (1) piece extrusion, manufactured from 6061-T6 0.125 inch thick aluminum shall be used for the "A" pillar, adding strength and rigidity to the cab as well as additional roll-over protection. The cab side walls, rear walls, and roof skin shall be 0.09 inch thick; the front structure shall be 0.125 inch thick.

The cab shall incorporate tongue and groove fitted 6061-T6 0.13 & 0.19 inch thick aluminum extrusions for extreme duty situations. The cab shall include multi-layer composite insulation for improved cab heating and cooling in addition to noise reduction.

Proposals offering products built with anything less than the alloy-temper mentioned or from any other material, other than aluminum, shall not be considered.

The cab shall incorporate a fully enclosed design, allowing for a spacious cab area with no partition between the front and rear sections of the cab. The walls of the vehicle shall include roof supports allowing for an open design. The outside dimension of the cab shall be 99.40 inches wide with a minimum interior width of 91.00 inches.

The overall cab length shall be 151.10 inches with 74.00 inches from the centerline of the front of the axle to the back of the cab. The cab shall offer an interior height of 57.50 inches from the front floor to the headliner and a rear floor to headliner height of 79.00 inches in the crew area, at a minimum. The cab shall offer an interior measurement from the rear of the engine tunnel to the rear wall of the cab of 69.88 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

In order to offer the optimum amount of cab space to occupants, there shall be no consideration given for any cab unable to comply with the minimum measurements for interior cab space as listed.

The cab shall include a driver and officer area with two (2) cab door openings. The front doors shall offer a clear opening of 40.00 inches wide X 53.50 inches high. The cab shall also include a crew area with up to two (2) door

openings. The rear doors shall offer a clear opening of 31.00 inches wide X 71.00 inches high. This style of cab shall offer up to ten (10) seating positions.

The cab shall incorporate a two (2) step configuration from the ground to the cab floor at each door opening. The first step for the driver and officer area shall measure 11.25 inches deep X 31.13 inches wide. The intermediate step shall measure 8.38 inches deep X 32.13 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.

The first step for the crew area shall measure 10.38 inches deep X 20.44 inches wide. The intermediate step shall measure 10.20 inches deep X 21.00 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.80 inches.

#### **CAB FRONT FASCIA**

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.090 of an inch thick, one hundred percent primary aluminum plate which shall be an integral part of the cab.

The cab fascia will encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab and shall be the "Classic" design.

The front cab fascia shall include two (2) molded plastic modules on each side accommodating a total of up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights. A chrome plated molded plastic bezel shall be provided on each side around each set of four lamps.

#### **FRONT GRILLE**

The front cab fascia shall include a classic box style, 304 stainless steel front grille with a Spartan logo. The grille shall measure 55.45 inches wide at the top tapering to 50.00 inches wide at the bottom X 33.06 inches high X 1.50 inches deep. The grille shall include a minimum free air intake of 750.00 square inches.

#### **CAB UNDERCOAT**

There shall be a rubber undercoating applied to the underside of the cab that provides abrasion protection, sound deadening and corrosion protection.

#### **CAB SIDE DRIP RAIL**

There shall be a drip rail along the top radius of each cab side. The drip rails shall help prevent water from the cab roof running down the cab side.

#### **CAB PAINT EXTERIOR**

The cab shall be painted prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces.

All metal surfaces on the entire cab shall be ground by disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once the surface is machine ground a high quality acid etching of base primer shall be applied. Upon the application of body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The maximum thickness of the primer coat shall be 2.00 mils.

The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be a sanding of the cab with 360 grit paper, the seams shall be sealed

with SEM brand seam sealer and painted with two (2) to four (4) coats of an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene.

The cab shall then be painted with the specific color designated by the customer with a minimum thickness of 2.00 mils of paint, followed by a clear top coat not to exceed 2.00 mils.

**CAB PAINT MANUFACTURER**

The cab shall be painted with PPG Industries paint.

**CAB PAINT PRIMARY/LOWER COLOR**

The lower paint color shall be PPG FBCH 71663 Red.

**CAB PAINT WARRANTY**

The cab and chassis shall be covered by a limited manufacturer paint warranty which shall be in effect for ten (10) years from the first owner's date of purchase or in service or the first 100,000 actual miles, whichever occurs first.

**CAB PAINT INTERIOR**

The visible cab structure surfaces shall be painted with a Zolatone #20-72 silver gray texture finish.

**CAB ENGINE TUNNEL**

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade 0.19 of an inch thick aluminum alloy plate. The tunnel shall be a maximum of 46.50 inches wide X 29.00 inches high.

**CAB ENTRY DOORS**

The cab shall include four (4) entry doors, two (2) front doors and two (2) crew doors as high as possible for ease of entering and egress when outfitted with an SCBA. The doors shall be full height and constructed of extruded aluminum with a nominal thickness of .125 inch. The exterior skins shall be constructed of .125 inch aluminum plate.

All cab and crew doors shall be of substantial weight for the optimum strength and rigidity for the best performance in all cab crash testing. Any cab with front and crew doors manufactured of less than the material thickness of .125 inch in both the extrusion and exterior skin shall not be considered.

The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit.

All door hinges shall be hidden within flush mounted cab doors for a pleasing smooth appearance and perfect fit along each side of the cab. Each door hinge shall be piano style with a 0.38 inch pin and shall be constructed of stainless steel.

The piano style hinge and hidden flush mounted door is the most favorable construction keeping dirt and debris out of the hinge allowing for optimum operation throughout the lifetime of the door.

Proposals offering door hinge thickness any less than stated shall not be considered.

Proposals including doors that do not comply with the flush mounting as described or those including exposed hinges shall not be considered.

**CAB ENTRY DOOR TYPE**

All cab entry doors shall be full length in design to fully enclose the lower cab steps.

**LH EXTERIOR REAR COMPARTMENT**

The cab shall offer an exterior compartment on the left side of the cab behind the rear door. The compartment opening shall be 17.00 inches wide X 21.19 inches high. The compartment size shall be 17.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 16.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

**LH EXTERIOR REAR COMPARTMENT LIGHTING**

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the left side of the cab. The strip light shall be 10.00 inches long and shall include three (3) bright white Gen3 LEDs.

**LH EXTERIOR COMPARTMENT INTERIOR FINISH**

The interior of the left hand exterior compartment shall have a DA sanded finish.

**RH EXTERIOR REAR COMPARTMENT**

The cab shall offer an exterior compartment on the right side of the cab behind the rear door. The compartment opening shall be 17.00 inches wide X 21.19 inches high. The compartment size shall be 17.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 16.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

**RH EXTERIOR REAR COMPARTMENT LIGHTING**

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the right side of the cab. The strip light shall be 10.00 inches long and shall include three (3) bright white Gen3 LEDs for long life and low amp draw.

**RH EXTERIOR COMPARTMENT INTERIOR FINISH**

The interior of the right hand exterior compartment shall have a DA sanded finish.

**CAB STRUCTURAL WARRANTY**

The cab structure shall be warranted for a period of ten (10) years or one hundred thousand (100,000) miles which ever may occur first. Warranty conditions may apply and shall be listed in the detailed warranty document that shall be provided upon request.

**CAB TEST INFORMATION**

The cab shall have successfully achieved survival of the International crash test ECE-R29, Addendum 28, Revision 1 standards as indicated below. It shall also meet SAE J2420 COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks and SAE J2422 Cab Roof Strength Quasi-Static Roof Load test requirements.

As part of testing, the frontal area of the cab is struck by a 3,700 pound pendulum weight. The weight is brought back to a sixty degree angle and then the weight is released and allowed to swing forward, imparting some 32,600 lbs/ft of force to the cab front face.

The cab shall be so constructed that after the test, there will be minimal intrusion of the cab structure into the passenger area. The doors shall remain usable for both entry and exit. Also, as part of the test the cab roof must withstand a static load bearing test. The cab shall withstand a weight of over 60,000 pounds without permanent damage or collapse.

The above tests shall be witnessed by and attested to by an independent third party. The test results shall be recorded on/by cameras, high speed imagers, accelerometers and strain gauges. Documentation of the testing shall be provided upon request.

#### **ELECTRICAL SYSTEM**

The chassis shall include a single starting electrical system which shall include a 12 volt direct current Weldon brand of multiplexing system, suppressed per SAE J551. The wiring shall be appropriate gauge cross link with 311 degree Fahrenheit insulation. All SAE wires in the chassis shall be color coded and shall include the circuit number and function where possible. The wiring shall be protected by 275 degree Fahrenheit minimum high temperature flame retardant loom. All nodes and sealed Deutsch connectors shall be waterproof.

#### **MULTIPLEX DISPLAY**

The multiplex electrical system shall include a Weldon Vista III display which shall be located on the left side of the dash in the switch panel. The Vista III shall feature a full color LCD display screen which includes a message bar displaying the time of day and important messages requiring acknowledgement by the user which shall all be displayed on the top of the screen in the order they are received. There shall be virtual controls for the on-board diagnostics. The display screen shall be video ready for back- up cameras, thermal cameras, and DVD.

The Vista III display shall measure approximately 10.38 inches wide X 7.50 inches overall. The display shall offer varying fonts and background colors. The display shall be fully programmable to the needs of the customer and shall offer virtually infinite flexibility for screen configuration options.

#### **DATA RECORDING SYSTEM**

The chassis shall have a Weldon Vehicle Data Recorder system installed. The system shall be designed to meet NFPA 1901 and shall be integrated with the Weldon Multiplex electrical system. The following information shall be recorded:

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed
- Engine Throttle Position
- ABS Event
- Seat Occupied Status
- Seat Belt Status
- Master Optical Warning Device Switch Position
- Time
- Date

Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines and shall be retrievable by connecting a laptop computer to the VDR system.

#### **POWER & GROUND STUD**

The electrical distribution panel shall include two (2) power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40 amp battery direct load. One (1) power stud shall be capable of carrying up to a 15 amp ignition switched load. The two (2) power studs shall share one (1) #10 ground stud that shall be 0.38 inch diameter.

#### **EXTERIOR ELECTRICAL TERMINAL COATING**

All terminals exposed to the elements will be sprayed with a yellow protective rubberized coating to prevent corrosion.

### **ENGINE**

The engine shall be a Cummins ISL 400 diesel fueled, turbo charged engine. The engine shall offer a rating of 400 horse power at 2100 RPM which shall be governed at 2200 RPM. The engine shall produce 1250 foot pounds of torque at 1400 RPM with 543 cubic inches of displacement.

The Cummins ISL 400 shall be an air charge cooled, in-line six (6) cylinder, four cycle engine. The engine shall feature an electronic governor, a high pressure common rail fuel system, and fully integrated electronic controls. This system shall be coupled with a Holset VGT™ (Variable Geometry Turbocharger) which delivers outstanding performance at ratings up to 400 HP. The Cummins ISL engine shall include replaceable wet liners plus heavy duty roller followers, and targeted piston cooling. The engine shall include an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for the lubrication system. The engine shall include Citgo brand Citgard 500 (or equivalent) SAE 15W40 CJ4 low ash engine oil for proper engine lubrication.

The engine shall be EPA certified to meet the 2010 emissions standards without compromising performance, reliability or durability using cooled exhaust gas recirculation and selective catalytic reduction technology.

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.

### **DIESEL PARTICULATE FILTER CONTROLS**

There shall be two (2) controls for the diesel particulate filter. One (1) control shall be for regeneration and one (1) control shall be for regeneration inhibit.

### **ENGINE PROGRAMMING HIGH IDLE SPEED**

The engine high idle control shall maintain the engine idle at approximately 1400 RPM when engaged.

### **ENGINE HIGH IDLE CONTROL**

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. The device 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. There shall be an indication on the Vista screen for the high idle speed control.

### **ENGINE PROGRAMMING ROAD SPEED GOVERNOR**

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

### **AUXILIARY ENGINE BRAKE**

The engine shall utilize a variable geometry turbo (VGT). The VGT auxiliary engine brake shall be an integral part of the turbo and shall offer a variable rate of exhaust flow, which when activated shall slow the engine and in turn slow the vehicle.

The VGT shall actuate the vehicle's brake lights when engaged as an auxiliary brake. A cutout relay shall be installed to disable the VGT when in pump mode or when an ABS event occurs. The VGT engine brake shall activate at a 0% accelerator throttle position when in operation mode.

#### **AUXILIARY ENGINE BRAKE CONTROL**

An engine variable geometry turbo brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the following conditions are simultaneously detected:

- A valid gear ratio is detected.
- The driver has requested or enabled engine compression brake operation.
- The throttle is at a minimum engine speed position.
- The electronic controller is not presently attempting to execute an electronically controlled final drive gear shift.

The variable geometry turbo brake shall be controlled via a virtual button on the Vista control screen. The multiplex system shall remember and default to the last engine brake control setting when the vehicle is shut off and re-started.

#### **FLUID FILLS**

The engine oil, coolant, transmission, and power steering fluid fills shall be located under the cab. The windshield washer fill shall be accessible through the front left side mid step.

#### **ELECTRONIC ENGINE OIL LEVEL INDICATOR**

The engine oil shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal. The warning shall activate in a low oil situation upon turning on the master battery and ignition switches without the engine running.

#### **ENGINE WARRANTY**

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.

#### **ENGINE PROGRAMMING REMOTE THROTTLE**

The engine ECM (Electronic Control Module) discreet wire remote throttle circuit shall be turned off for use with a J1939 based pump controller or when the discreet wire remote throttle controls are not required.

#### **ENGINE PROGRAMMING IDLE SPEED**

The engine low idle speed will be programmed at 700 rpm.

#### **ENGINE FAN DRIVE**

The engine cooling system fan shall be direct drive belt driven on the engine.

#### **ENGINE COOLING SYSTEM**

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the emergency response industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements. The complete cooling system shall be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.

The cooling system shall be comprised of a charge air cooler to radiator serial flow package that provides the maximum cooling capacity for the specified engine as well as serviceability. The main components shall include a surge tank, a charge air cooler bolted to the front of the radiator, recirculation shields, a shroud, a fan, and required tubing.

The radiator shall be a down-flow design constructed with aluminum cores, plastic end tanks, and a steel frame. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.

The cooling system shall include a one piece injected molded polymer eleven (11) blade fan with a fiberglass fan shroud.

The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant. The surge tank shall have a dual seal cap that meets the engine manufacturer's pressure requirements, and allows for expansion and recovery of coolant to a separate tank.

All radiator tubes shall be formed from aluminized steel tubing. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance.

The charge air cooler shall be a cross-flow design constructed completely of aluminum with cast tanks. All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel "constant torque" style clamps meeting the engine manufacturer's requirements.

#### **ENGINE SKIDPLATE**

The engine cooling system shall include a recirculation shield that shall act as a skid plate below the radiator to provide additional protection for the cooling system.

#### **ENGINE COOLANT**

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees F.

Proposals offering supplemental coolant additives (SCA) shall not be considered, as this is part of the extended life coolant makeup.

#### **ELECTRONIC COOLANT LEVEL INDICATOR**

The instrument panel shall feature a low engine coolant indicator light which shall be located in the center of the instrument panel. An audible tone alarm shall also be provided to warn of a low coolant incident.

#### **COOLANT HOSES**

The cooling systems hose shall be formed silicone hose and formed aluminized steel tubing and include stainless steel constant torque band clamps.

#### **ENGINE AIR INTAKE**

The engine air intake system shall include an ember separator air intake filter which shall be located in the front of the cab behind the officer side fascia. This filter shall protect the downstream air filter from embers using a combination of unique flat and crimped metal screens constructed into a galvanized steel frame. This multilayered screen shall be designed to trap embers or allow them to burn out before passing through the pack, while creating only minimal air flow restriction through the system. Periodic cleaning or replacement of the screen shall be all that is required after installation.

The engine shall also include an air intake filter which shall be bolted to the frame and located under the front of the cab on the officer side. The dry type filter shall ensure dust and debris safely contained inside the disposable housing, eliminating the chance of contaminating the air intake system during air filter service via a leak-tight seal.

The air flow distribution and dust loading shall be uniform throughout the high-performance filter cone pack, which shall result in pressure differential for improved horsepower and fuel economy. The air intake shall be mounted within easy access via a hinged panel behind the headlight module. The air intake system shall include a restriction indicator light in the warning light cluster on the instrument panel, which shall activate when the air cleaner element requires replacement.

#### **ENGINE EXHAUST SYSTEM**

The exhaust system shall include a diesel particulate filter, a diesel oxidation catalyst, and a selective catalytic reduction catalyst to meet current EPA standards. The selective catalytic reduction catalyst utilizes a diesel exhaust fluid solution consisting of urea and purified water to convert NOx into nitrogen, water, and trace amounts of carbon dioxide.

The system shall utilize 0.065 inch thick stainless steel exhaust tubing between the engine turbo and the diesel particulate filter. Zero leak clamps seal all system joints between the turbo and diesel particulate filter.

From the diesel particulate filter to the end of the tailpipe the system shall be plumbed with 0.065 inch thick aluminized steel tubing connected with overlapping band style clamps. The discharge shall terminate horizontally on the officer side of the vehicle ahead of the rear tires.

The exhaust system shall be mounted below the frame with the selective catalytic reduction catalyst stacked outboard of the diesel particulate filter.

#### **DIESEL EXHAUST FLUID TANK**

The exhaust system shall include a molded cross linked polyethylene tank for Diesel Exhaust Fluid (DEF). The tank shall have a capacity of six (6) usable gallons and shall be mounted on the left hand side of the chassis frame behind the batteries below the frame.

The DEF tank shall be designed with capacity for expansion in case of fluid freezing. Engine coolant, which shall be thermostatically controlled, shall be run through lines in the tank to help prevent the DEF from freezing and to provide a means of thawing the fluid if it should become frozen.

The tank fill tube shall be routed under the rear of the cab with the fill neck and splash guard accessible in the top rear step.

#### **ENGINE EXHAUST ACCESSORIES**

An exhaust temperature mitigation device shall be shipped loose for installation by the body manufacturer on the vehicle. The temperature mitigation device shall lower the temperature of the exhaust by combining ambient air with the exhaust gasses at the exhaust outlet.

#### **ENGINE EXHAUST WRAP**

The exhaust tubing between the engine turbo and the diesel particulate filter (DPF) shall be wrapped with a thermal cover in order to retain the necessary heat for DPF regeneration. The exhaust wrap shall also help protect surrounding components from radiant heat which can be transferred from the exhaust.

#### **TRANSMISSION**

The drive train shall include an Allison Gen IV-E model EVS 3000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

The transmission shall include two (2) internal oil filters and Castrol TranSynd™ synthetic TES 295 transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

The Gen IV-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

The transmission gear ratios shall be:

1st	3.49:1
2nd	1.86:1
3rd	1.41:1
4th	1.00:1
5th	0.75:1
6th	0.65:1 (if applicable)
Rev	5.03:1

**TRANSMISSION MODE PROGRAMMING**

The transmission, upon start-up, will select a six (6) speed operation without the need to press the mode button.

**TRANSMISSION FEATURE PROGRAMMING**

The EVS group package number 127 shall contain the 199 vocational package in consideration of the duty of this apparatus for rescue. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. This requires re-selecting drive range to shift out of neutral for the override.

An eight (8) pin Delphi connector will be provided next to the steering column connector. This will contain the following input/output circuits to the transmission control module.

Function ID	Description	Wire assignment
C	PTO Request	143
F	Aux. Function Range Inhibit (Special)	101/142
G	PTO Enable Output (See Input Function C)	130
S	Neutral Indicator for PTO	145
	Signal Return	103

**ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR**

The transmission fluid shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal.

**TRANSMISSION SHIFT SELECTOR**

An Allison pressure sensitive range selector touch pad shall be provided and located to the right of the driver within clear view and easy reach. The shift selector shall provide a prognostic indicator (wrench symbol) on the digital display between the selected and attained indicators. The prognostics monitor various operating parameters to determine and shall alert you when a specific maintenance function is required.

**TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE**

When the auxiliary brake is engaged, the transmission shall automatically shift to second gear to decrease the rate of speed assisting the secondary braking system and slowing the vehicle.

#### **TRANSMISSION COOLING SYSTEM**

The transmission shall include a water to oil cooler system located in the cooling loop between the radiator and the engine. The transmission cooling system shall meet all transmission manufacturer requirements. The transmission cooling system shall feature continuous flow of engine bypass water to maintain uninterrupted transmission cooling.

#### **TRANSMISSION WARRANTY**

The Allison EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.

#### **DRIVELINE**

All drivelines shall be heavy duty metal tube and equipped with Spicer 1710 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat<sup>®</sup>.

#### **FUEL FILTER/WATER SEPARATOR**

The fuel system shall have a Fleetguard FS1003 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve.

A water in fuel sensor shall be provided and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator.

A secondary fuel filter shall be included as approved by the engine manufacturer.

#### **FUEL LINES**

The fuel system supply and return lines installed from the fuel tank to the engine shall be reinforced nylon tubing rated for diesel fuel. The fuel lines shall be brown in color and connected with brass fittings.

#### **FUEL SHUTOFF VALVE**

A fuel shutoff valve shall be installed in the fuel draw line at the primary fuel filter to allow the fuel filter to be changed without loss of fuel to the fuel pump.

A second fuel shutoff valve shall be installed in the fuel draw line, near the fuel tank to allow maintenance to be performed with minimal loss of fuel.

#### **FUEL TANK**

The fuel tank shall have a capacity of sixty-eight (68) gallons and shall measure 35.00 inches in width X 20.00 inches in height X 24.00 inches in length. The increased height and reduced length allows for the use of a shorter rear frame overhang on the chassis. The baffled tank shall be made of 14 gauge aluminized steel. The exterior of the tank shall be painted with a PRP Corsol™ black anti-corrosive exterior metal treatment finish. This results in a tank which offers the internal and external corrosion resistance.

The tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion and draw.

The tank is designed with dual draw tubes and sender flanges. The tank shall have 2.00 inch NPT fill ports for right or left hand fill. A 0.50 inch NPT drain plug shall be centered in the bottom of the tank.

The fuel tank shall be mounted below the frame, behind the rear axle. Two (2) three-piece strap hanger assemblies with "U" straps bolted midway on the fuel tank front and rear shall be utilized to allow the tank to be easily lowered and removed for service purposes. Rubber isolating pads shall be provided between the tank and the hanger strap assemblies. Strap mounting studs through the rail, hidden behind the body shall not be acceptable.

#### **FUEL TANK FILL PORT**

The fuel tank fill ports shall be offset with the right fill port located in the middle position and the left fill port located in the rearward position on the fuel tank.

#### **FRONT AXLE**

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-20. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle. The weight capacity for the axle shall be rated to 21,500 pounds FAWR.

#### **FRONT AXLE WARRANTY**

The front axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

#### **FRONT WHEEL BEARING LUBRICATION**

The front axle wheel bearings shall be lubricated with oil. The oil level can be visually checked via clear inspection windows in the front axle hubs.

#### **FRONT SHOCK ABSORBERS**

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life.

The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would.

The Bilstein front shocks shall include a digressive working piston assembly allowing independent tuning of the compression and rebound damping forces to provide optimum ride and comfort without compromise. The working piston design shall feature fewer parts than most conventional twin tube and "road sensing" shock designs and shall contribute to the durability and long life of the Bilstein shock absorbers.

Proposals offering the use of conventional twin tube or "road sensing" designed shocks shall not be considered.

#### **FRONT SUSPENSION**

The front suspension shall include a nine (9) leaf spring pack in which the longest leaf measures 54.00 inch long and 4.00 inches wide and shall include a military double wrapped front eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall be rated at 21,500 pounds.

#### **STEERING COLUMN/ WHEEL**

The cab shall include a Douglas Autotech steering column which shall include a seven (7) position tilt, a 2.25 inch telescopic adjustment, and an 18.00 inch, two (2) spoke steering wheel located at the driver's position. The steering wheel shall be covered with black polyurethane foam padding.

The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

#### **POWER STEERING PUMP**

The hydraulic power steering pump shall be a TRW PS and shall be gear driven from the engine. The pump shall be a balanced, positive displacement, sliding vane type.

#### **ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR**

The power steering fluid shall be monitored electronically and shall send a signal to activate an audible alarm and visual warning in the instrument panel when fluid level falls below normal.

#### **FRONT AXLE CRAMP ANGLE**

The chassis shall have a front axle cramp angle of 48 degrees to the left and 44 degrees to the right.

#### **POWER STEERING GEAR**

The power steering gear shall be a TRW model TAS 85 with an assist cylinder.

#### **CHASSIS ALIGNMENT**

The chassis frame rails shall be measured to insure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the chassis manufacturer.

The completed apparatus shall be rechecked for proper alignment by the body manufacturer after the vehicle has been fully loaded and before being placed into service.

#### **REAR AXLE**

The rear axle shall be a Meritor model RS-25-160 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 27,000 pounds.

The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.63 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.

The axle shall have heavy-duty Hypoid gearing for longer life, greater strength and quieter operation. Industry-standard wheel ends for compatibility with both disc and drum brakes, and unitized oil seal technology to keep lubricant in and help prevent contaminant damage will be used.

#### **REAR AXLE WARRANTY**

The rear axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

#### **REAR AXLE DIFFERENTIAL LUBRICATION**

The rear axle differential shall be lubricated with oil.

#### **REAR WHEEL BEARING LUBRICATION**

The rear axle wheel bearings shall be lubricated with oil.

#### **VEHICLE TOP SPEED**

The top speed of the vehicle shall be approximately 68 MPH +/-2 MPH at governed engine RPM.

**REAR SUSPENSION**

The single rear axle shall feature a Reyco 79KB vari-rate, self-leveling captive slipper type conventional multi-leaf spring suspension, with 57.50 inch X 3.00 inch springs. One (1) adjustable and one (1) fixed torque rod shall be provided.

The rear suspension capacity shall be rated from 21,000 to 31,500 pounds.

**FRONT TIRE**

The front tires shall be Michelin 425/65R22.5 "L" tubeless radial XFE regional tread.

The front tire stamped load capacity shall be 22,800 pounds per axle with a speed capacity of 65 miles per hour when properly inflated to 120 pounds per square inch.

The front tire US Fire Service Intermittent Usage load capacity shall be 23,000 pounds per axle with a speed capacity of up to 75 miles per hour when properly inflated to 120 pounds per square inch.

**REAR TIRE**

The rear tires shall be Michelin 12R-22.5 16PR "H" tubeless radial XDN2 all weather tread.

The rear tire stamped load capacity shall be 27,120 pounds per axle with a speed capacity of 75 miles per hour when properly inflated to 120 pounds per square inch.

The rear tire US Fire Service Intermittent Usage load capacity shall be 28,880 pounds per axle with a speed capacity of 75 miles per hour when properly inflated to 120 pounds per square inch.

**TIRE PRESSURE INDICATOR**

There shall be a voucher provided with the chassis for a pop up style tire pressure indicator at each tire valve stem. The indicator shall provide visual indication of pressure in the specific tire.

The tire pressure indicators shall be redeemed upon the vehicle manufacturer's receipt of the voucher for installation by the customer.

**FRONT WHEEL**

The front wheels shall be Accuride hub piloted, 22.50 inch X 12.25 inch polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall be forged from a single piece of aluminum, designed to be corrosion resistant and are engineered for a long life.

**REAR WHEEL**

The rear wheels shall be Accuride hub piloted, heavy duty, 22.50 inch x 8.25 inch aluminum wheels. Each outer wheel shall have a polished aluminum finish on the exterior surface and each inner wheel shall have a machine finish. The wheels shall be forged from a single piece of aluminum which shall be corrosion resistant, engineered to be lightweight and provide exceptional performance. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

**WHEEL TRIM**

The front wheels shall include stainless steel lug nut covers and stainless steel baby moons shipped loose with the chassis for installation by the apparatus builder. The baby moons shall have cutouts for oil seal viewing when applicable.

The rear wheels shall include stainless steel lug nut covers and band mounted spring clip stainless steel high hats shipped loose with the chassis for installation by the apparatus builder.

The lug nut covers, baby moons, and high hats shall be RealWheels<sup>®</sup> brand constructed of 304L grade, non-corrosive stainless steel with a mirror finish. Each wheel trim component shall meet D.O.T. certification.

#### **TIRE CHAINS**

Insta-Chains, six (6) strand automatic ice chains shall be installed on the rear axle of the chassis to provide instant traction on ice and snow at speeds below 35 mph.

#### **TIRE CHAINS ACTIVATION**

The tire chain system shall be controlled through a virtual switch on the multiplex display. The virtual switch shall display "Active" when the tire chains are engaged. The tire chains shall be interlocked with the transmission and shall engage when 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.

#### **BRAKE SYSTEM**

A rapid build-up air brake system shall be provided. The air brakes shall include a two (2) air tank, three (3) reservoir system with a total of 4152 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. An inversion valve shall be installed to provide a controlled service brake application during the unlikely event of primary air supply loss.

The rear axle spring brakes shall automatically apply in any situation when the air pressure falls below 25 PSI and shall include a mechanical means for releasing the spring brakes when necessary. An audible alarm shall designate when the system air pressure is below 60 PSI.

A four (4) sensor, four (4) modulator anti-lock braking system (ABS) shall be installed on the front and rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

Additional safety shall be accommodated through automatic traction control which shall be installed on the single rear axle. The automatic traction control system shall apply the anti-lock braking system when the drive wheels lose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces. The ATC light shall illuminate during excessive wheel slip and ATC is operational.

A virtual style switch shall be provided and properly labeled "mud/snow". When the switch is pressed once, the system shall allow a momentary wheel slip to obtain traction under extreme mud and snow conditions. During this condition the ATC light shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.

#### **FRONT BRAKES**

The front brakes shall be Meritor 16.5" x 6" S-cam drum type.

#### **REAR BRAKES**

The rear brakes shall be Meritor 16.50 inch X 7.00 inch S-cam drum type.

#### **PARK BRAKE**

Upon application of the push-pull valve in the cab, the rear brakes will engage via mechanical spring force. This is accomplished by dual chamber rear brakes, satisfying the FMVSS parking brake requirements.

#### **PARK BRAKE CONTROL**

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake system. The control shall be yellow in color.

The parking brake actuation valve shall be mounted on the left hand dash to the right of the steering column within easy reach of the driver.

#### **FRONT BRAKE SLACK ADJUSTERS**

The front brakes shall include Meritor automatic slack adjusters shall be installed on the chassis which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

#### **REAR BRAKE SLACK ADJUSTERS**

The rear brakes shall include Meritor automatic slack adjusters installed on the axle which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

#### **AIR DRYER**

The brake system shall include a Wabco System Saver 1200 air dryer with an integral 100 watt heater with a Metri-Pack sealed connector. The air dryer incorporates an internal turbo cutoff valve that closes the path between the air compressor and air dryer purge valve during the compressor "unload" cycle. The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure. The air dryer shall be located on the right hand frame rail forward of the front wheel behind the right hand cab step.

#### **FRONT BRAKE CHAMBERS**

The front brakes shall be provided with MGM type 30 brake chambers.

#### **REAR BRAKE CHAMBERS**

The rear axle shall include TSE 30/36 brake chambers which shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The TSE Type 36 brake chamber has a 36.00 square inch effective area.

#### **AIR COMPRESSOR**

The air compressor provided for the engine shall be a Wabco<sup>®</sup> SS318 single cylinder pass-through drive type compressor which shall be capable of producing 18.7 CFM at 1200 engine RPMs. The air compressor shall feature a higher delivery efficiency translating to more air delivery per horsepower absorbed. The compressor shall include an aluminum cylinder head which shall improve cooling, reduce weight and decrease carbon formation. Superior piston and bore finishing technology shall reduce oil consumption and significantly increasing the system component life.

#### **AIR GOVERNOR**

An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be located on the air cleaner bracket on the right frame rail behind the officer step.

**MOISTURE EJECTORS**

Manual pet-cock type drain valves shall be installed on all reservoirs of the air supply system.

**AIR SUPPLY LINES**

A dual air system plumbed with color coded reinforced nylon tubing air lines shall be installed on the chassis. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) will be blue.

Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.

**AIR HORN SHUTOFF VALVE**

A shut-off valve located in the driver's dash shall be installed in the air horn supply line.

**AIR OUTLET CONNECTION**

A quick release air outlet female connector shall be installed in the left lower cab step towards the front of the cab for the use of auxiliary air tools. The air outlet connector shall be compatible with a Milton 787, Parker Hannifin B13 or Meyers 54-410 connector.

**PLUMBING AIR OUTLET CONNECTION**

The cab mounted air outlet connection shall be plumbed to the chassis auxiliary air system reservoir.

**AIR OUTLET SHUTOFF VALVE**

The air outlet shall include a 0.25 turn valve which shall terminate the air supply between the connection and the tank.

**AIR INLET/ OUTLET FITTING TYPE**

The air connector supplied shall be a 0.25 inch size Tru-Flate Interchange style manual connection which is compatible with Milton 'T' style, Myers 0.25 inch Automotive style and Parker 0.25 inch 10 Series connectors.

**REAR AIR TANK MOUNTING**

If a combination of wheel base, air tank quantity, or other requirements necessitate the location of one or more air tanks to be mounted rear of the fuel tank, these tank(s) will be mounted parallel to frame.

**WHEELBASE**

The chassis wheelbase shall be 210.00 inches.

**REAR OVERHANG**

The chassis rear overhang shall be 100.00 inches.

**FRAME**

The frame shall consist of single rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, 10.25 inch web X 3.50 inches deep upper and lower flanges X 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each single rail shall be rated by a Resistance Bending Moment (RBM) minimum of 1,830,400 inch pounds and have a minimum section modulus of 16.64 cubic inches calculated by the radius method. The outside dimension frame shall measure 34.25 inches in width.

Proposals calculating the frame strength using the "box method" shall not be considered.

Proposals including heat treated rails shall not be considered. Heat treating frame rails produces rails that are not uniform in their mechanical properties throughout the length of the rail. Rails made of high strength, low alloy steel are already at the required yield strength prior to forming the rail.

A minimum of seven (7) fully gusseted 0.25 inch thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The head bolts shall be flanged type with distorted threads, held in place by flanged lock nuts. Each cross member shall be mounted to the frame rails utilizing a minimum of 0.25 inch thick gusset reinforcement plates at all corners balancing the area of force throughout the entire frame.

Any proposals not including additional reinforcement for each cross member shall not be considered.

All relief areas shall be cut in with a minimum 2.00 inch radius at intersection points with the edges ground to a smooth finish to prevent a stress concentration point.

Proposals offering warranties for frames not including cross members shall not be considered.

#### **FRAME MODIFICATION PROVISIONS**

The chassis air lines, fuel lines, brake lines, and ABS electrical wiring harness shall include an additional 8.00 feet of length provided as a provision for apparatus manufacturer frame modifications. The additional length shall be located between the rear of the cab and the rear wheels and shall be coiled and secured for shipping.

#### **FRAME WARRANTY**

The frame and cross members shall carry a limited lifetime warranty to the original purchaser. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

#### **REAR TOW DEVICE**

Two (2) heavy duty painted tow eyes shall be installed extending rearward from the frame at the rear of the chassis. The tow eyes shall be fabricated from 0.75 inch thick #1020 ASTM-36 hot rolled steel. The inside diameter of the tow eye shall be 2.00 inches and shall have a chamfered edge. The tow eyes shall be bolted one (1) on each side to the outside of the chassis frame with grade 8 bolts. The tow eyes shall be painted to match the chassis frame.

#### **FRAME PAINT**

The frame shall be powder coated black prior to any attachment of components.

All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 shall not have a fail of more than ten (10) squares. The pencil hardness test per ASTM D3363 shall have a final post-cured pencil hardness of H-2H. The direct impact resistance test per ASTM D2794 shall have an impact resistance of 120.00 inches per pound at 2 mils. The salt spray resistance per ASTM B-117-97 shall pass 500 hours of salt spray test. The applied process shall allow the application of other products over it and still maintain or exceed the 500 hours salt spray test.

Any proposals offering painted frame with variations from the above process shall not be accepted. The film thickness of vendor supplied parts shall also be sufficient to meet the performance standards as stated above.

#### **FRONT BUMPER**

A one piece, two (2) rib wrap-around style, polished stainless steel front bumper shall be provided. The material shall be 10 gauge 304 stainless steel, 12" high and 104.50 inches wide.

**FRONT BUMPER EXTENSION LENGTH**

The front bumper shall be extended approximately 6.00 inches ahead of the cab.

**FRONT BUMPER EXTENSION WIDTH**

The front bumper extension shall have an overall width of 47.50 inches.

**FRONT BUMPER APRON**

The 6.00 inch extended front bumper shall include an apron constructed of 0.19 inch thick embossed aluminum tread plate.

The apron shall be installed between the bumper and the front face of the cab affixed using stainless steel bolts attaching the apron to the top bumper flange.

**MECHANICAL SIREN**

The front bumper shall include an electro mechanical Federal Q2B™ siren, which shall be streamlined, chrome-plated and shall produce 123.00 decibels of sound at 10.00 feet. The Q2B™ siren produces a distinctive warning sound that is recognizable at long distances. A unique clutch design provides a longer coast down sound while reducing the amp draw requirements to 100 amps. The siren shall measure 10.50 inches wide X 10.00 inches high X 14.00 inches deep.

**MECHANICAL SIREN LOCATION**

The siren shall be recess mounted on the left side of the front fascia of the bumper centered between the radius and frame rail.

**MECHANICAL SIREN ACCESSORIES**

The front of the siren shall include (2) stainless steel flat bars approximately 1.00 inch wide by 19.00 inches long. Each bar shall be placed vertically on the right and left side of the siren face wrapping around towards the back of the siren into the bumper extension offering protection to the Q2B siren.

**AIR HORN**

The front bumper shall include two (2) Hadley brand E-Tone air horns which shall measure 21.00 inches long with a 6.00 inch round flare. The air horn shall be a trumpet style and shall include a chrome finish on the inside and a black painted finish on the outside of the trumpet.

**AIR HORN LOCATION**

The air horns shall be recess mounted in the front bumper face, one (1) on the driver side of the bumper in the inboard position relative to the left hand frame rail and one (1) on the officer side of the bumper in the inboard position relative to the right hand frame rail.

**AIR HORN RESERVOIR**

One (1) air tank, with a 1200 cubic inch reservoir, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

**ELECTRONIC SIREN SPEAKER**

The bumper shall include two (2) Cast Products Inc. model SA4301, 100 watt speaker which shall be recess mounted within the bumper fascia. The speaker shall include a flat mounting flange and be chrome in color.

**ELECTRONIC SIREN SPEAKER LOCATION**

The two (2) electronic siren speakers shall be located on the front bumper face between the frame rails in the right and left side outboard positions.

#### **FRONT BUMPER TOW HOOKS**

Two (2) heavy duty tow hooks, painted to match the chassis frame, shall be installed in a rearward position out of the approach angle area, bolted directly to the side of the chassis frame with grade 8 bolts.

#### **CAB TILT SYSTEM**

The entire cab shall be capable of tilting approximately 45-degrees to allow for easy maintenance of the engine and transmission.

The electric-over-hydraulic lift system shall include an ignition interlock and red cab lock down indicator lamp on the tilt control which shall illuminate when holding the "Down" button to indicate safe road operation.

It shall be necessary to activate the master battery switch and set the parking brake in order to tilt the cab. As a third precaution the ignition switch must be turned off to complete the cab tilt interlock safety circuit.

Two (2) spring-loaded hydraulic hold down hooks located outboard of the frame shall be installed to hold the cab securely to the frame. Once the hold-down hooks are set in place, it shall take the application of pressure from the hydraulic cab tilt lift pump to release the hooks.

Two (2) cab tilt cylinders shall be provided with velocity fuses in each cylinder port. The cab tilt pivots shall be 1.90 inch ball and be anchored to frame brackets with 1.25 inch diameter studs.

A steel safety channel assembly shall be installed on the right side cab lift cylinder to prevent accidental cab lowering. The safety channel assembly shall fall over the lift cylinder when the cab is in the fully tilted position. A cable release system shall also be provided to retract the safety channel assembly from the lift cylinder to allow the lowering of the cab.

#### **CAB TILT AUXILIARY PUMP**

A manual cab tilt pump module shall be attached to the rear surface of the driver side battery box.

#### **CAB TILT CONTROL RECEPTACLE**

A six (6) pin Deutsch receptacle that includes a cap shall be installed in the front bumper tail on the right hand side to provide a place to plug in the cab tilt remote control pendant.

The remote control pendant shall include 20.00 feet of cable with a mating Deutsch connector. The remote control pendant shall be shipped loose with the chassis.

#### **CAB WINDSHIELD**

The cab windshield shall have a surface area of 2969.88 square inches and be of a two (2) piece wraparound design for maximum visibility.

The distance from the driver and officer to the windshield shall be a minimum of 42.00 inches at the furthest seated position. This distance shall ensure the safety of the driver and officer from intruding objects in the unlikely event of a head on collision.

The glass utilized for the windshield a standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and maintenance costs. All proposals offering windshields not in

compliance with the minimum measurement of surface area stated above and are not fully interchangeable shall not be considered.

**GLASS FRONT DOOR**

The front cab doors shall include a window which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

There shall be an irregular shaped fixed window which shall measure 2.50 inches wide at the top, 8.00 inches wide at the bottom X 26.00 inches in height, more commonly known as "cozy glass" ahead of the front door roll down windows.

The windows shall be mounted within the frame of the front doors trimmed with a black anodized ring on the exterior.

**GLASS TINT FRONT DOOR**

The windows located in the left and right front doors shall have a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS REAR DOOR RH**

The rear right hand side door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

**GLASS TINT REAR DOOR RH**

The window located in the right hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS REAR DOOR LH**

The rear left hand side door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

**GLASS TINT REAR DOOR LH**

The window located in the left hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS SIDE MID RH**

The cab shall include a window on the officer's side behind the front and ahead of the crew doors which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

**GLASS TINT SIDE MID RH**

The window located on the right hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS SIDE MID LH**

The cab shall include a window on the driver's side behind the front door and ahead of the crew door and above the wheel well which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and

shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

**GLASS TINT SIDE MID LH**

The window located on the left hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS UPPER SIDE FRONT**

The raised roof on the left and right sides of the cab shall include a triangular shaped window which shall be 14.00 inches wide X 14.00 inches high. These windows shall be fixed within this space. These windows shall be mounted to the cab using black self-locking window rubber.

**GLASS TINT UPPER SIDE FRONT**

The windows located in the upper section on the left and right side towards the front of the cab shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS UPPER SIDE MID**

The middle section of the raised roof on the left and right sides of the cab shall include a window which shall measure 16.00 inches wide X 14.00 inches high. These windows shall be fixed within this space. These windows shall be mounted using black self-locking window rubber.

**GLASS TINT UPPER SIDE MID**

The windows located in the upper section on each side in the middle of the cab shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**GLASS UPPER SIDE REAR DOOR**

Windows shall be provided in the upper portion of each rear door of the raised roof cab. Each window shall measure 27.00 inches wide X 14.00 inches high and be installed above the lower door window. The windows shall be rectangular in shape and fixed within this space. The windows shall be mounted using black self-locking window rubber.

**GLASS TINT UPPER SIDE REAR DOOR**

The window located in the upper section of the rear crew doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

**CLIMATE CONTROL**

The cab shall be equipped with a ceiling mounted combination defrost / heating and air-conditioning system mounted above the engine tunnel in a central location.

The system shall offer sixteen (16) adjustable louvers. Six (6) of the louvers shall face forward towards the windshield, offering 45,000 BTU of heat at 320 CFM for defrosting. The system shall include six (6) rearward facing louvers to direct air for the crew area and four (4) for driver and officer comfort. The HVAC system shall be designed to produce 60,000 BTU of heat and 32,000 BTU of cooling. The HVAC cover shall be made of aluminum which shall be coated with a customer specified interior paint, or protective coating.

All defrost/heating systems shall be plumbed with one (1) seasonal shut-off valve at the front corner on the right side of the cab.

The air conditioner lines shall be a mixture of custom bent zinc coated steel fittings and Aero-quip GH 134 flexible hose with Aero-Quip EZ-Clip fittings.

**CLIMATE CONTROL DRAIN**

The climate control system shall include a gravity drain for water management. The gravity drain shall remove condensation from the air conditioning system without additional mechanical assistance.

**CLIMATE CONTROL ACTIVATION**

The heating, defrosting and air conditioning controls shall be located on the center dash panel in the lower left hand side, in a position which is easily accessible to the driver. The climate control shall be activated by a rotary switch.

**A/C OVERHEAD COVER PAINT**

The HVAC cover shall be painted with a Zolatone #20-72 silver gray texture finish.

**A/C CONDENSER LOCATION**

A roof mounted A/C condenser shall be installed centered on cab forward of raised roof against the slope rise.

**A/C COMPRESSOR**

The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 32000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil.

**CAB INSULATION**

The cab ceiling and walls shall include 1.00 inch thick foam insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

**UNDER CAB INSULATION**

The underside of the cab tunnel surrounding the engine shall be lined with multi-layer insulation, engineered for application inside diesel engine compartments.

The insulation shall act as a noise barrier, absorbing noise thus keeping the decibel level in the cab well within NFPA recommendations. As an additional benefit, the insulation shall assist in sustaining the desired temperature within the cab interior.

The engine tunnel insulation shall measure approximately .75 inch thick including a vertically lapped polyester fiber layer, a 1.0 lb/ft<sup>2</sup> PVC barrier layer, an open cell foam layer, and a moisture and heat reflective foil facing reinforced with a woven fiberglass layer. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

The insulation shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation shall be held in place by 3 mils of acrylic pressure sensitive adhesive and aluminum pins with hard hat, hold in place fastening heads.

**INTERIOR TRIM FLOOR**

The floor of the cab shall be covered with a multi-layer mat consisting of 0.25 inch thick sound absorbing closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The covering shall be held in place by a pressure sensitive adhesive and aluminum trim molding. All exposed seams shall be sealed with silicone caulk matching the color of the floor mat to reduce the chance of moisture and debris retention.

**INTERIOR FLOOR MAT COLOR**

The cab interior floor mat shall be gray in color.

**INTERIOR TRIM VINYL**

The cab interior shall include trim on the front ceiling, rear crew ceiling, and the cab walls. It shall be easily removable to assist in maintenance. The trim shall be constructed of insulated vinyl over a hard board backing.

**INTERIOR TRIM VINYL COLOR**

The cab interior vinyl trim surfaces shall be gray in color.

**REAR WALL INTERIOR**

The rear wall of the cab shall be trimmed with vinyl.

**HEADER TRIM**

The cab interior shall include a header over the driver and officer dash which shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum.

**HEADER TRIM INTERIOR PAINT**

The header area aluminum shall be coated with a Zolatone #20-72 silver gray texture finish.

**INTERIOR TRIM SUNVISOR**

The header shall include two (2) sun visors, one each side forward of the driver and officer seating positions above the windshield. Each sun visor shall be constructed of Masonite and covered with padded vinyl trim.

**TRIM CENTER DASH**

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate. There shall be four (4) holes located on the top of the dash near each outer edge outboard of the electrical access opening for ventilation. The dash shall include cup holders and storage bins.

**TRIM CENTER DASH INTERIOR PAINT**

The entire center dash shall be coated with a Zolatone #20-72 silver gray texture finish. Any pods attached to the dash shall also be painted this color.

**TRIM LH DASH**

The left hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate for a perfect fit around the instrument panel and the lower control panels to the left and right of the steering column.

**TRIM LH DASH INTERIOR PAINT**

The left hand dash shall be painted with a Zolatone #20-72 silver gray texture finish.

**TRIM RH DASH**

The right hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate and shall include a glove compartment with a hinged door and a Mobile Data Terminal (MDT) provision. The glove compartment size will measure 14.00 inches wide X 6.38 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment.

**TRIM RH DASH INTERIOR PAINT**

The right hand dash shall be painted with a Zolatone #20-72 silver gray texture finish.

**ENGINE TUNNEL TRIM**

The cab engine tunnel shall be covered with a multi-layer mat consisting of 0.25 inch closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The mat shall be held in place by pressure sensitive adhesive. The engine tunnel mat shall be trimmed with anodized aluminum stair nosing trim for an aesthetically pleasing appearance.

**POWER POINT DASH MOUNT**

The cab shall include two (2) 12 volt cigarette lighter type receptacles in the dash to provide a power source for 12 volt electrical equipment. The receptacles shall be wired to be live with the battery master switch.

**AUXILIARY POWER POINT ENGINE TUNNEL**

The cab interior shall include two (2) 12 volt cigarette lighter type receptacles to provide power sources for 12 volt electrical equipment. The receptacles shall be connected directly to the batteries. The receptacles shall be located on the top of the engine tunnel near the rear, one (1) at the left corner and one (1) at the right corner.

**STEP TRIM**

Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of polished 5032 H32 aluminum Grip Strut® grating with angled outer corners. The step shall feature a splash guard to reduce water and debris from splashing in to the step. The splash guard shall have an opening on the outer edge to allow debris and water to flow through rather than becoming trapped within the stepping surface. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed with a Flex-Tred® adhesive grit surface material.

**UNDER CAB ACCESS DOOR**

The cab shall include an aluminum access door in the left crew step riser painted to match the cab interior paint with a push and turn latch. The under cab access door shall provide access to the diesel exhaust fluid fill.

**INTERIOR DOOR TRIM**

The doors of the cab shall include an aluminum plate the same weight and grade as the cab on the interior of the door. The aluminum shall be then painted.

**CAB PAINT INTERIOR DOOR TRIM**

The inner door panel surfaces shall be painted with a Zolatone #20-72 silver gray texture finish.

**DOOR TRIM CUSTOMER NAMEPLATE**

The interior door trim on the front doors shall include a customer nameplate which states the vehicle was custom built for their Department.

**CAB DOOR TRIM REFLECTIVE**

The interior of each door shall include high visibility reflective tape. A white reflective tape that measures 1.00 inch in width shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes and a Spartan logo. The chevron tape shall measure 6.00 inches in height.

**INTERIOR GRAB HANDLE "A" PILLAR**

There shall be two (2) rubber covered 11.00 inch grab handles installed inside the cab, one on each "A" post at the left and right door openings. The left handle shall be located 7.88 inches above the bottom of the door window opening and the right handle shall be located 2.88 inches above the bottom of the door window opening. The handles shall assist personnel in entering and exiting the cab.

**INTERIOR GRAB HANDLE FRONT DOOR**

Each front door shall include one (1) ergonomically contoured 9.00 inch cast aluminum handle mounted horizontally on the interior door panels. The handles shall feature a textured black powder coat finish to assist personnel entering and exiting the cab.

#### **INTERIOR GRAB HANDLE REAR DOOR**

A black powder coated cast aluminum assist handle shall be provided on the inside of each rear crew door. A 30.00 inch long handle shall extend horizontally the width of the window just above the window sill. The handle shall assist personnel in exiting and entering the cab.

#### **DASH PANEL GROUP**

The main center dash area shall include three (3) removable panels located one (1) to the right of the driver position, one (1) in the center of the dash and one (1) to the left of the officer position. The center panel shall be within comfortable reach of both the driver and officer.

#### **SWITCHES CENTER PANEL**

The center dash panel shall include no rocker switches or legends.

#### **SWITCHES LEFT PANEL**

The left dash panel shall include one (1) windshield wiper/washer control switch located in the left hand side of the panel. The switch shall have backlighting provided.

#### **SWITCHES RIGHT PANEL**

The right dash panel shall include no rocker switches or legends.

#### **SEAT BELT WARNING**

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall provide a visual warning indicator in the Vista display and control screen(s), an indicator light in the instrument panel, and an audible alarm.

The warning system shall activate when any seat is occupied with a minimum of 60 pounds, the corresponding seat belt remains unfastened, and the park brake is released. The warning system shall also activate when any seat is occupied, the corresponding seat belt was fastened in an incorrect sequence, and the park brake is released. Once activated, the visual indicators and audible alarm shall remain active until all occupied seats have the seat belts fastened.

#### **SEAT MATERIAL**

The seats shall include a covering of high strength, wear resistant fabric made of durable ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Common trade names for this material are Imperial 1200 and Durawear.

#### **SEAT COLOR**

All seats supplied with the chassis shall be gray in color. All seats shall include red seat belts.

#### **SEAT BACK LOGO**

The seat back shall include a black and gray diamond logo which features a capital S in red located in the middle of the diamond. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.

#### **SEAT DRIVER**

The driver's seat shall be an H.O. Bostrom Firefighter Sierra model seat. The seat shall feature eight-way electric positioning. The eight positions shall include up and down, fore and aft with 8.00 inches of travel, back angle adjustment and seat rake adjustment. The seat shall feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches measured with the seat height adjusted to the lowest position of travel.

This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 209, and 210 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity.

The materials used in construction of the seat shall also have successfully completed testing with regard to the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which dictates the allowable burning rate of materials in the occupant compartments of motor vehicles.

#### **SEAT BACK DRIVER**

The driver's seat shall include a standard seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a contoured head rest.

#### **SEAT OFFICER**

The officer's seat shall be an H.O. Bostrom Sierra model seat with air suspension. The four-way seat shall feature 3.00 inch vertical travel air suspension and manual fore and aft adjustment with 5.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The seat shall also feature integral springs to isolate shock.

The seat position shall include a three-point shoulder harness with lap belt and an automatic retractor attached to the cab. The buckle portion of the seat belt shall be mounted on a semi-rigid stalk extending from the seat base within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 37.00 inches measured with the seat suspension height adjusted to the upper limit of its travel.

This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 209, and 210 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity.

The materials used in construction of the seat shall also have successfully completed testing with regard to the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which dictates the allowable burning rate of materials in the occupant compartments of motor vehicles.

#### **SEAT BACK OFFICER**

The officer's seat shall feature a two (2) way adjustable lumbar support and offer an infinite fully reclining adjustable titling seat back. The seat back shall also feature a contoured head rest.

#### **POWER SEAT WIRING**

The power seat or seats installed in the cab shall be wired directly to battery power.

**SEAT REAR FACING OUTER LOCATION**

The crew area shall include two (2) rear facing crew seats, which include one (1) located directly behind the driver seat and one (1) located directly behind the officer seat.

**SEAT CREW REAR FACING OUTER**

The crew area shall include a seat in the rear facing outboard position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat, and cushion. The seat and cushion shall be spring load hinged and compact in design for additional room and shall remain in the stored position until occupied.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

**SEAT BACK REAR FACING OUTER**

The rear facing outer seat(s) shall include a standard seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a contoured head rest.

**SEAT MOUNTING REAR FACING OUTER**

The rear facing outer seat shall be mounted facing the rear of the cab.

**SEAT BELT ORIENTATION CREW**

The crew position seat belts shall follow the standard orientation which extends from the outboard shoulder extending to the inboard hip.

**CAB FRONT UNDERSEAT STORAGE ACCESS**

The left and right under seat storage areas shall have a solid aluminum hinged door with non-locking latch.

**SEAT COMPARTMENT DOOR FINISH**

All underseat storage compartment access doors shall have a Zolatone #20-72 silver gray texture.

**HELMET STORAGE FRONT LOCATION**

The front cab area shall include two (2) helmet storage brackets located overhead on the right and left hand sides of the 20 or 24 inch raised roof slope of the cab.

**HELMET STORAGE FRONT**

The front cab area shall include Ziamatic model UHH-1 helmet storage designed to meet current NFPA regulations. The UHH-1 shall securely fasten fire helmets to flat cab surfaces. The UHH-1 utilizes a helmet hook and an adjustable strap to accommodate nearly any helmet size or configuration.

**HELMET STORAGE FRONT CREW OUTER LOCATION**

The front outboard crew area of the cab shall include two (2) helmet storage brackets. The brackets shall be located overhead on both the right and left side.

**HELMET STORAGE FRONT CREW OUTER**

The front outer crew area shall include Ziamatic model UHH-1 helmet storage designed to meet current NFPA regulations. The UHH-1 shall securely fasten fire helmets to flat cab surfaces. The UHH-1 utilizes a helmet hook and an adjustable strap to accommodate nearly any helmet size or configuration.

**WINDSHIELD WIPER SYSTEM**

The cab shall include a dual arm wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers which shall be affixed to a radial wet arm. The system shall include a single motor which shall initiate the arm in which both the left hand and right hand windshield wipers are attached, initiating a back and forth motion for each wiper. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position.

**ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR**

The windshield washer fluid level shall be monitored electronically. When the washer fluid level becomes low the yellow "Check Message Center" indicator light on the instrument panel shall illuminate and the message center in the dual air pressure gauge shall display a "Check Washer Fluid Level" message.

**CAB DOOR HARDWARE**

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of a fiber reinforced plastic composite with a black matt finish.

The interior exit door handles shall be flush paddle type with a black finish, which are incorporated into the upper door panel.

All cab entry doors shall include locks which are keyed alike. The door locks shall be designed to prevent accidental lockout.

**DOOR LOCKS**

Each cab entry door shall include a manually operated door lock. The each door lock may be actuated from the inside of the cab by means of a red knob located on the paddle handle of the respective door or by using a TriMark key from the exterior. The door locks are designed to prevent accidental lock out.

**DOOR LOCK LH REAR CAB COMPARTMENT**

The driver side rear compartment shall feature a manual door lock.

**DOOR LOCK RH REAR CAB COMPARTMENT**

The officer side rear compartment shall feature a manual door lock.

**GRAB HANDLES**

The cab shall include one (1) 18.00 inch knurled, anti-slip, one-piece exterior assist handle behind each cab door. The grab handle shall be made of 14 gauge 304- stainless steel and be 1.25 inch diameter to enable non-slip assistance with a gloved hand.

#### **REARVIEW MIRRORS**

Retrac Aerodynamic West Coast style single vision mirror heads model 613285 shall be provided and installed on each of the front cab doors.

The mirrors shall be mounted via 1.00 inch diameter tubular stainless steel arms to provide a rigid mounting to reduce mirror vibration.

The mirrors shall measure 8.00 inches wide X 19.00 inches high and shall include an 8.00 inch convex mirrors with a stainless steel back, model 980-4, installed below the flat glass to provide a wider field of vision. The flat mirrors shall be motorized with remote horizontal and vertical adjustment. The control switches shall be mounted within easy reach of the driver. The convex mirrors shall be manually adjustable. The flat mirror glass shall be heated for defrosting in severe cold weather conditions.

The mirror backs shall be constructed of vacuum formed chrome plated ABS plastic housings that are corrosion resistant and shall include an amber marker light. The mirrors shall be manufactured with the finest quality non-glare glass.

#### **REARVIEW MIRROR HEAT SWITCH**

The heat for the rearview mirrors shall be controlled through a virtual button on the multiplex display.

#### **CAB FENDER**

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 3.50 inches wide made of 14 gauge 304 polished stainless steel.

#### **CAB EXTERIOR FRONT & SIDE EMBLEMS**

The cab shall include three (3) Spartan emblems. There shall be one (1) installed on the front air intake grille and one (1) installed on each side of the cab exterior above the wheel well.

#### **CAB EXTERIOR MODEL NAMEPLATE**

The cab shall include custom "Gladiator" nameplates on the front driver and officer side doors.

#### **IGNITION**

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a ¼ turn Cole Hersee switch, both of which shall be mounted to the left of the steering wheel on the dash. A chrome push type starter button shall be provided adjacent to the master battery and ignition switches.

Each switch shall illuminate a green LED indicator light on the dash when the respective switch is placed in the "ON" position.

The starter button shall only operate when both the master battery and ignition switches are in the "ON" position.

#### **BATTERY**

The single start electrical system shall include (6) Harris BCI 31 950 CCA batteries with a 210 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541. The cables shall have encapsulated ends with heat shrink and sealant.

**BATTERY TRAY**

The batteries shall be installed within two (2) steel battery trays located on the left side and right side of the chassis, securely bolted to the frame rails. The battery trays shall be coated with the same material as the frame.

The battery trays shall include drain holes in the bottom for sufficient drainage of water. A durable, non-conducting, interlocking mat made by Dri-Dek shall be installed in the bottom of the trays to allow for air flow and help prevent moisture build up. The batteries shall be held in place by non-conducting phenolic resin hold down boards.

**BATTERY BOX COVER**

Each battery box shall include a steel cover which protects the top of the batteries. Each cover shall include flush latches which shall keep the cover secure as well as a black powder coated handle for convenience when opening.

**BATTERY CABLE**

The starting system shall include cables which shall be protected by 275 degree F. minimum high temperature flame retardant loom, sealed and encapsulated at the ends with heat shrink and sealant.

**BATTERY JUMPER STUD**

The starting system shall include battery jumper studs. These studs shall be located in the forward most portion of the driver's side lower step. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

**ALTERNATOR**

The charging system shall include a 320 amp Leece-Neville 12 volt alternator. The alternator shall include a self-exciting integral regulator.

**BATTERY CONDITIONER**

A Kussmaul 35/10 battery conditioner shall be supplied. The battery conditioner shall provide a 35 amp output for the chassis batteries and a 10 amp battery saver output. The battery conditioner shall be mounted in the cab behind the driver's seat.

**BATTERY CONDITIONER DISPLAY**

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in front of the left side door just below the windshield.

**ELECTRICAL INLET**

A Kussmaul 30 amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed.

A single item or an addition of multiple items must not exceed the rating of the electric inlet that it's connected to.

**Amp Draw Reference List:**

*Kussmaul 1000 Charger - 3.5 Amps*

*Kussmaul 1200 Charger - 10 Amps*

*Kussmaul 35/10 Charger - 10 Amps*

*1000W Engine Heater - 8.33 Amps*

*1500W Engine Heater - 12.5 Amps*

*120V Air Compressor - 4.2 Amps*

**ELECTRICAL INLET LOCATION**

An electrical inlet shall be installed on the left hand side of cab over the wheel well.

#### **ELECTRICAL INLET CONNECTION**

The electrical inlet shall be connected to the battery conditioner.

#### **ELECTRICAL INLET COLOR**

The Kussmaul electrical inlet connection shall include a blue cover.

#### **HEADLIGHTS**

The cab front shall include four (4) rectangular halogen headlamps with separate high and low beams mounted in bright chrome bezels. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights to 80% brilliance when the ignition switch is in the "On" position and the parking brake is released.

#### **FRONT TURN SIGNALS**

The front fascia shall include two (2) Whelen model 600 4.00 inch X 6.00 inch programmable LED amber turn signals which shall be installed in polished aluminum housing above and outboard of the front warning and head lamps.

#### **HEADLIGHT LOCATION**

The headlights shall be located on the front fascia of the cab directly below the front warning lights.

#### **SIDE TURN/MARKER LIGHTS**

The sides of the cab shall include (2) LED round side marker lights which shall be provided just behind the front cab radius corners.

#### **MARKER AND ICC LIGHTS**

In accordance with FMVSS, there shall be five (5) cab LED marker lamps designating identification, center and clearance provided. These lights shall be installed on the face of the cab within full view of other vehicles from ground level.

#### **HEADLIGHT AND MARKER LIGHT ACTIVATION**

The headlights and marker lights shall be controlled via a virtual button on the Vista display. There shall be a virtual dimmer control on the Vista display to adjust the brightness of the dash lights.

#### **GROUND LIGHTS**

Each door shall include an incandescent NFPA compliant ground light mounted to the under side of the cab step below each door. Each light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The ground lighting shall be activated by the opening of the door on the respective cab side as well as through the Vista screen.

#### **STEP LIGHTS**

The middle step located at each door shall include a 4.00 inch round incandescent light which shall activate with the opening of the respective door.

#### **ENGINE COMPARTMENT LIGHT**

There shall be an incandescent NFPA compliant light mounted under the engine tunnel for area work lighting on the engine. The light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The light shall activate automatically when the cab is tilted.

#### **FRONT SCENE LIGHTS**

The front of the cab shall include one (1) Havis Shields Magnafire 3000 model KR-39 contour roof mount light installed on the brow of the cab.

The lamp head shall have one (1) quartz halogen 900 watt 240 volt bulb. The bulb shall draw 4.2 amps and generate 32,000 lumens. The lamp head shall be no more than 5.31 inches in height X 13.50 inches in width. The lamp head and bracket shall be powder coated white.

#### **FRONT SCENE LIGHT LOCATION**

There shall be one (1) scene light mounted center on the front brow of the cab.

#### **FRONT SCENE LIGHTS ACTIVATION**

The front scene lights shall be pre-wired to be activated by the OEM.

#### **SIDE SCENE LIGHTS**

The side of the cab shall include two (2) Whelen model 810 scene lights, one (1) each side which shall be surface mounted. The Whelen lights shall offer halogen lighting with 8 to 32-degree internal optics.

#### **SIDE SCENE LIGHT LOCATION**

The scene lighting located on the driver and officer sides of the cab shall be mounted in the upper forward portion of the 20.00 inch raised roof of the cab between the front and rear crew doors.

#### **SIDE SCENE ACTIVATION**

The scene lighting shall be activated via two (2) virtual buttons on the MUX display located inside the cab.

#### **INTERIOR OVERHEAD LIGHTING**

The cab shall include a two-section incandescent dome lamp with a red and clear lens located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 9.50 inches in length X 5.00 inches in width with a black colored bezel. The clear portion of each lamp shall be activated by opening the respective door and via the multiplex display and both the red and clear portion can be activated by individual switches on each lamp.

An additional two-section incandescent red and clear lamp shall be provided over the engine tunnel which can be activated by individual switches on the lamp.

#### **AUXILIARY DOME LIGHT MID CREW**

The area within the middle of the crew cab shall include a total of four (4) 7.00 inch dome lamps in the headliner, with two (2) clear and two (2) red centered over both of the outboard and center rear facing seating positions. The color of the lamps from left to right shall be clear, red, red, clear. The clear lamps shall be activated by the rear doors as well as an individual switch located on the side of each lamp. The red lamps shall be activated individually by a switch located on the side of each lamp.

#### **MAP LIGHTS**

A Roxter gooseneck style map light shall be provided. The light shall have a clear bulb and a control switch on the base. The light shall be located on the right hand side of the dash.

#### **DO NOT MOVE APPARATUS LIGHT**

The front headliner of the cab shall include a red flashing light, located in the center for greatest visibility. The light shall be 6.00 inches long X 2.50 inches wide X 1.75 inches high and shall be clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, an audible alarm shall be included which shall sound when a door is open and the parking brake is released.

The light and alarm shall be interlocked for activation when a cab door is not firmly closed, an apparatus cabinet door is not closed and the parking brake is released.

#### **MASTER WARNING SWITCH**

A master switch shall be included, as a button on the MUX display screen and be labeled "E Master" for identification. The switch shall feature control over all devices wired through it. Any warning device switches left in the "ON" position when the master switch is activated shall automatically power up.

#### **HEADLIGHT FLASHER**

An alternating high beam headlamp flashing system shall be installed into the high beam headlamp circuit which shall allow the high beams to flash alternately from left to right.

Deliberate operator selection of high beams will override the flashing function until low beams are again selected. Per NFPA, these clear flashing lights will also be disabled "On Scene" when the park brake is applied.

#### **HEADLIGHT FLASHER SWITCH**

The flashing headlights shall be activated through a virtual button on the MUX display.

#### **INBOARD FRONT WARNING LIGHTS**

The cab front fascia shall include dual Whelen series 600 Super LED warning lights which shall offer multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be surface mounted to the front fascia of the cab within a chrome bezel in the inboard position.

#### **INBOARD FRONT WARNING LIGHTS COLOR**

The front warning lights mounted on the fascia in the inboard positions shall be red.

#### **OUTBOARD FRONT WARNING LIGHTS**

The cab front fascia shall include dual Whelen series 600 Super LED warning lights which shall offer 14 flash patterns plus a steady burn for solid colors and 20 flash patterns plus a steady burn for split colors. The lights shall be surface mounted to the front fascia of the cab within a chrome bezel in the outboard position.

#### **OUTBOARD FRONT WARNING LIGHTS COLOR**

The front warning lights mounted on the fascia for the outboard position shall be red.

#### **FRONT WARNING SWITCH**

The front warning lights shall be controlled through a virtual control on the MUX display. This switch shall be clearly labeled for identification.

#### **INTERSECTION WARNING LIGHTS**

The chassis shall include two (2) Whelen series 600 Super LED 4.00 inch X 6.00 inch intersection warning lights, one (1) each side, which shall offer multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors.

#### **INTERSECTION WARNING LIGHTS COLOR**

The intersection lights shall be red.

#### **INTERSECTION WARNING LIGHTS LOCATION**

The intersection lights shall be mounted on the side of the cab on the front radius.

**SIDE AND INTERSECTION WARNING SWITCH**

The side warning lights shall be controlled through a virtual control on the MUX display. This switch shall be clearly labeled for identification.

**LIGHTBAR PROVISION**

There shall be one (1) light bar installed at the front of the cab roof. The light bar installation shall include mounting and wiring to a control switch on the cab dash. The light bar shall be provided and installed by the Spartan Chassis.

**CAB FRONT LIGHTBAR**

The lightbar provisions shall be for one (1) Whelen brand Freedom FN72QLED lightbar mounted centered on the front of the cab roof. The lightbar shall be 72.00 inches in length and shall be NFPA compliant. The lightbar shall feature six (6) red LED lights and two (2) clear LED lights. The clear lights shall be disabled with park brake engaged. The cable shall exit the lightbar on the right side of the cab.

**LIGHTBAR SWITCH**

The light bar shall be controlled through a virtual button located on the MUX display.

**SIREN CONTROL HEAD**

A Powercall 6 Adam 200 watt electronic siren shall be provided and mounted to the tunnel so that it protrudes through the lower right section of the center switch panel. The size of the Powercall Plus shall be 5.00 inches wide X 2.25 inches high X 5.50 inch deep.

**HORN RING SELECTOR SWITCH**

A virtual button on the MUX display shall allow control to either the air horn or the electric horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position which is in accordance with FMVSS requirements.

**AIR HORN ACTIVATION**

The air horn actuation shall be accomplished by the steering wheel horn button and a right side officer's mounted Linemaster model SP491-S81 foot switch. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

**MECHANICAL SIREN ACTIVATION**

The mechanical siren shall be actuated by two (2) Linemaster model SP491-S81 foot switches mounted in the front section of the cab for use by the driver and officer. A siren brake shall be provided on the Vista display.

The siren shall only be active when master warning switch is on to prevent accidental engagement.

**BACK-UP ALARM**

An ECCO model 575 backup alarm shall be installed at the rear of the chassis with an output level of not less than 107 dB. The alarm shall automatically activate when the transmission is placed in reverse.

**INSTRUMENTATION**

An ergonomically designed instrument panel shall be provided. Each gauge shall be backlit with LED lamps. Stepper motor movements shall drive all gauges. The instrumentation system shall be multiplexed and shall receive ABS, engine, and transmission information over the J1939 data bus to reduce redundant sensors and wiring.

The instrument panel shall contain the following gauges:

One (1) electronic speedometer shall be included. The primary scale on the speedometer shall read from 0 to 100 MPH, and the secondary scale on the speedometer shall read from 0 to 160 KM/H.

One (1) electronic tachometer shall be included. The scale on the tachometer shall read from 0 to 3000 RPM.

One (1) two-movement gauge displaying primary system, and secondary system air volumes and integral LCD odometer/trip odometer shall be included on the lower portion of the LCD. The scale on the air pressure gauges shall read from 0 to 150 pounds per square inch (PSI). The air pressure scales shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate a low air pressure, as well as a message on the LCD screen. The odometer shall display up to 9,999,999.9 miles. The trip odometer shall display 9,999.9 miles. The LCD shall display Transmission Temperature in degrees Fahrenheit on the upper portion of the LCD. The LCD screen shall also be capable of displaying certain diagnostic functions.

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, fuel level, voltmeter, and an indicator bar displaying Diesel Exhaust Fluid (DEF) LED bar shall be included. The scale on the engine oil pressure gauge shall read from 0 to 120 pounds per square inch (PSI). The engine oil pressure scale shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical level of engine oil pressure. A red indicator light in the gauge shall indicate a low engine oil pressure, as well as a message on the LCD screen. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (F). The coolant temperature scale shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of coolant temperature. A red indicator light in the gauge shall indicate high coolant temperature, as well as a message on the LCD screen. The scale on the fuel level gauge shall read from empty to full as a percentage of fuel remaining. An amber indicator light shall indicate low fuel at 25% tank level. The scale on the voltmeter shall read from 10 to 16 volts with a red indication zone on the gauge showing critical levels of battery voltage. A red indicator light shall indicate high or low system voltage, as well as a message on the LCD screen. The scale on the DEF LED bar will consist of four (4) LEDs displaying levels in increments of 25% of useable DEF in green. Upon decreasing levels, the indicator bar will change colors to notify the driver of decreasing levels of DEF and action will be required. An amber indicator light shall indicate low levels of DEF, as well as a message on the LCD screen.

The instrument panel shall include a light bar that will contain the following LED indicator lights:

#### **RED LAMPS**

Low Primary Air Pressure (located in gauge)

Low Secondary Air Pressure (located in gauge)

Stop Engine-indicates critical engine fault

Air Filter Restricted-indicates excessive engine air intake restriction

Park Brake-indicates parking brake is set

Seat Belt Indicator-indicates when a seat is occupied and corresponding seat belt remains unfastened

Volts-indicates high or low system voltage (located in gauge)

Low Oil Pressure-indicates low engine oil pressure (located in gauge)

High Coolant Temperature-indicates excessive engine coolant temperature (located in gauge)

DEF Level Bar-DEF level is at critically low level (located in gauge)

#### **AMBER LAMPS**

MIL-indicates an engine emission control system fault

Check Engine-indicates engine fault

Check Trans-indicates transmission fault

High Transmission Temperature-indicates excessive transmission oil temperature  
ABS-indicates anti-lock brake system fault  
Wait to Start-indicates active engine air preheat cycle  
HEST-indicates a high exhaust system temperature  
Water in Fuel-indicates presence of water in fuel filter  
DPF-indicates a restriction of the diesel particulate filter  
Regen Inhibit-indicates regeneration has been postponed due to user interaction  
Range Inhibit-indicates a transmission operation is prevented and requested shift request may not occur.  
SRS-indicates a problem in the RollTek supplemental restraint system  
Low Fuel-indicates low fuel, (located in gauge)  
DEF-indicates a low level of DEF fluid (located in gauge)  
DEF Level Bar-DEF level is at a low level (located in gauge)

**GREEN LAMPS**

Left and Right turn signal indicators  
ATC-indicates low wheel traction for automatic traction control equipped vehicles, also indicates mud/snow mode is active for ATC system  
High Idle-indicates engine high idle is active.  
Cruise Control-indicates cruise control is active  
OK to Pump-indicates the pump engage conditions have been met  
Pump Engaged-indicates the pump is currently in use  
Auxiliary Brake-indicates secondary braking device is active  
DEF Level Bar-indicates useable levels of DEF: 25%, 50%, 75%, 100% (located in gauge)

**BLUE LAMPS**

High Beam Indicator

**CONSTANT AUDIBLE ALARMS FROM GAUGE PACKAGE**

High Trans Temp  
High or Low Voltage  
Seatbelt  
Check Engine  
Check Transmission  
Stop Engine  
Low Air Pressure  
Fuel Low  
Water in Fuel  
ESC  
High Coolant Temperature  
Low Engine Oil Pressure  
Low Coolant Level

**OSCILLATING AUDIBLE ALARMS FROM GAUGE PACKAGE**

Air Filter  
Extended Left and Right Turn remaining on  
Cab Ajar  
Door Ajar  
Low Oil Level

**BACKLIGHTING COLOR**

The instrumentation gauges and the switch panel legends shall be backlit using red LED backlighting.

### **RADIO**

A Panasonic compact disc player with AM/FM stereo receiver, weather band and four (4) speakers shall be installed in the cab. The receiver shall be installed above the officer position. The speakers shall also be installed inside the cab with two (2) speakers recessed within the headliner of the front of the cab just behind the windshield and two (2) speakers in the upper rear corners of the cab.

### **RADIO ANTENNA**

A small antenna shall be located on the officer side of the cab roof for AM/FM and weather band reception.

### **COMMUNICATION ANTENNA**

An antenna base, for use with an NMO type antenna, shall be mounted on the roof of the cab on the right hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment. The antenna base shall be an Antenex model MABVT8 made for either a 0.375 inch or 0.75 inch receiving hole in the antenna and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base design provides the most corrosion resistance and best power transfer available from a high temper all brass construction and gold plated contact design.

### **COMMUNICATION ANTENNA CABLE ROUTING**

The antenna cable shall be routed from the antenna base mounted on the roof to the area inside the center rocker switch console.

### **AUXILIARY COMMUNICATION ANTENNA**

An auxiliary antenna base, for use with an NMO type antenna, shall be mounted on the roof of the cab on the left hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment. The antenna base shall be an Antenex model MABVT8 made for either a 0.375 inch or 0.75 inch receiving hole in the antenna and shall include 17 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base design provides the most corrosion resistance and best power transfer available from a high temper all brass construction and gold plated contact design.

### **AUXILIARY COMMUNICATION ANTENNA CABLE ROUTING**

The auxiliary antenna cable shall be routed from the antenna base mounted on the roof to the area underneath the RH front seat.

### **CAB EXTERIOR PROTECTION**

The cab face shall have a removable plastic film installed over the painted surfaces to protect the paint finish during transport to the body manufacturer.

### **FIRE EXTINGUISHER**

A 2.50 pound D.O.T approved fire extinguisher with BC rating shall be shipped loose with the cab.

### **DOOR KEYS**

The cab and chassis shall include a total of four (4) door keys for the manual door locks.

### **WARRANTY**

The chassis manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom built cab and chassis for a period of twelve (12) months, or the first 24,000 miles, whichever occurs first. The warranty period

shall commence on the date the vehicle is delivered to the end user. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

**OPERATION MANUALS**

There shall be two (2) printed hard copies of the chassis operation manual provided with the chassis. Each manual shall include a parts list specific to the chassis model. In addition two sets shall be included in CD form.

**ENGINE AND TRANSMISSION OPERATION MANUALS**

There shall be two (2) printed hard copy sets of the engine operation manual and two (2) printed hard copy sets of the transmission operation manual specific to the model ordered included with the chassis in the ship loose items.

**ENGINE SERVICE MANUALS**

There shall be one (1) printed hard copy set of Cummins ISC/ISL engine service reference manuals which shall be provided with the chassis.

**TRANSMISSION SERVICE MANUALS**

There shall be one (1) printed hard copy set of Allison 3000 transmission service manuals included with the chassis.

**AS BUILT WIRING DIAGRAMS**

The cab and chassis shall include one (1) complete hard copy set of wiring schematics and option wiring diagrams.

**FLUID LEVEL DATA ELECTRONIC DISPLAY**

As required by NFPA 1901, section 12-2.3.3, chassis component fluid level data shall be displayed on the dash mounted LCD display screen in the cab. There shall be a separate screen with the appropriate information displayed. Information shall include, at a minimum:

- a. Engine: make, model, serial number, recommended grade of oil, recommended filters with part numbers, recommended maintenance schedule.
- b. Transmission: make, model, serial number, vocation codes, recommended grade of oil, recommended filters with part numbers, recommended maintenance schedule.
- c. Rear Axle: make, model, serial number, recommended weight and type of oil, recommended maintenance schedule.

***Bidder Complies: \_\_ Yes \_\_ No***

**VEHICLE SPECIFICATION DATA LABEL**

A safety warning label shall be installed in a conspicuous location on the cab dash visible to driver and all passengers that conforms to NFPA 1901-2009, section 12.1.5.1 and section 14.1.2. It shall have a verbal warning indication for the following vehicle specification data:

- a. Vehicle Height
- b. Vehicle Length
- c. Gross Vehicle Weight Rating (GVWR)
- d. Vehicle Occupancy Maximum

There shall be a verbal note on the label that states the above data is based the vehicle as manufactured by the manufacturer and that the department shall be responsible for revising the label, if any modifications are done to change the above vehicle data as furnished by the manufacturer.

***Bidder Complies: \_\_ Yes \_\_ No***

**INTERIOR CAB COMMAND CENTER**

The interior of the cab/chassis, directly behind the driver and officer, will be provided with two storage cabinets and standup type desk.

Located directly against the rear wall shall be a cabinet measuring not less than 50" high x 21" wide x 28" deep. They shall be constructed of smooth minimum .125 aluminum. The top of each cabinet shall be flat used as a mounting surface. The cabinet shall have minimum 1/4" radius corners. The upper half will have a hinged door that swings toward side entrance doors. The lower half will have two (2) equal sized slide-out drawers. Each door and drawer will be provided with handles and locks.

There shall be a desk installed between outer cabinets measuring not less than 40" long x 28" deep. It shall angle slightly upward forming a standup position work surface. The primary lid shall be 304 stainless steel angled upward toward engine cover with lip on lower edge to prevent papers, maps, books from sliding off surface. A clear plexiglass hinged lid shall be installed over the primary stainless steel lid. There shall be storage beneath the hinged lids with minimum 5" depth on front section, tapering to deeper storage at rear. A securing latch shall be installed on lid to secure stored supplies/equipment

All exterior surfaces (except lids) to be painted with gray Zolatone matching interior of cab.

***Bidder Complies: \_\_ Yes \_\_ No***

**UPPER INTERIOR STORAGE CABINET**

Installed at ceiling level of upper rear cab wall shall be a cabinet constructed of minimum .125" smooth aluminum measuring a minimum of 18" high x 16" deep x 88" long. The exterior shall have a gray Zolatone finish matching the cab walls. The lower edge shall have a minimum 1/2" radius. The doors be equally split, hinged type aluminum plate with positive securing latching meeting NFPA 1901 crash criteria.

***Bidder Complies: \_\_ Yes \_\_ No***

***Bidder Complies: \_\_ Yes \_\_ No***

**FOLDING DESK**

Located behind the engine doghouse shall be a desk that folds down for secured storage and up when in use. It shall measure 42" wide x 16" deep. The desk shall be constructed of 304 stainless steel. All forward facing edges shall have a minimum 1/4" radius and rounded corners in the traffic zone. Across the back of the desk will be a 10" high aluminum riser (between the desk and the engine doghouse). The desk shall be position such as to allow personnel seated on the rear wall mounted cab seats to comfortably work at the desk.

***Bidder Complies: \_\_ Yes \_\_ No***

**SWIVEL DESK CHAIR**

Two (2) swivel type mid-back desk chairs with arm rest shall be provided. They shall have a minimum of four (4) heavy duty casters with a padded seat base and full height adjustable and tilting back rest. The chairs shall have height adjustment. Color shall be gray. Overall dimensions shall be a minimum of 37-1/2"H x 23"W x 26"D. A "bungy" type strap with securing points shall be provided for each chair to secure the chairs against the desk while the vehicle is in motion.

***Bidder Complies: \_\_ Yes \_\_ No***

**DRY-ERASE MARKER BOARD**

A minimum 48" wide x 36" high white surface marker board shall be installed on the back wall of the command cab. It shall have an anodized aluminum, satin finish frame with a full-length rail across the bottom to accommodate markers and eraser. Each corner of the frame shall have plastic ends to eliminate sharp corners.

***Bidder Complies: \_\_ Yes \_\_ No***

**ENGINE EXHAUST LOCATION**

The exhaust pipe extension shall exit on the right side of the apparatus body, forward of the rear wheels.

***Bidder Complies: \_\_ Yes \_\_ No***

**TIRE PRESSURE MONITORING**

Each tire/wheel assembly shall be equipped with a heavy-duty tire pressure safety cap. Each cap shall provide a visible indicator to indicate when the tire is properly inflated or under inflated by 10%. When properly inflated, a green indicator shall be visible and when under inflated, a red indicator shall be visible. This requirement shall be in compliance to NFPA 1901-2009, Section 4.13.4.

***Bidder Complies: \_\_ Yes \_\_ No***

**SIDE BODY WINCH RECEIVERS**

Receivers shall be mounted under the left and right body, just forward of the rear wheels. They shall be rated at not less than 10,000 lbs. each. The design will permit simple installation and removal of an electric winch assembly or rope tie-off loop assembly (see separate specifications), as applicable herein. The receivers shall be welded to the chassis frame rails and gusseted for direct and side pulls. In accordance to NFPA 1901-2009 Section 15.12.3, a sub-surface screen printed polycarbonate label with chrome bezel that reads "Max. Load Rating - 10,000 LBS" shall be installed at the receiver location. The body builder shall be prepared to present a detailed set of engineering drawings on the installation when requested to verify weight rating.

***Bidder Complies: \_\_ Yes \_\_ No***

**REAR WINCH RECEIVER**

A receiver shall be installed under the rear bumper for mounting a 9000 pound rated portable winch. It shall be bolted to the rear drop frame superstructure and have a rating of not less than 10,000 lbs. In accordance to NFPA 1901-2009 Section 15.12.3, a sub-surface screen printed polycarbonate label with chrome bezel that reads "Max. Load Rating - 10,000 LBS" shall be installed at the receiver location. Verification of engineering certification testing shall be provided upon request.

***Bidder Complies: \_\_ Yes \_\_ No***

**BODY & FRAME REQUIREMENTS**

**FRAME MODIFICATIONS**

1. Requirements: To maximize the cubic foot displacement for total required storage capacity specified herein and lower the body floor height and resulting center of gravity, the chassis shall be modified with a custom pinched and dropped frame design in order to provide a minimum of 40" of compartment depth throughout the full height of the

side compartments, fore and aft of the wheelhousing compartments.

Additionally, the dropped and pinched frame alteration design is required to give the vehicle high torsional strength, high load-carrying capacity, and maximum side-to-side stability. The manufacturer's modification process shall permit the purchaser to lift the front end of the vehicle and tow the apparatus without causing any damage to the frame, cab, body or chassis. The chassis alteration, as completed, shall provide a Resistance to Bending Movement (RBM) of at least 2.8 times that of the original unaltered chassis.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

2. **Engineering Documentation:** The bid shall include documentation for strength characteristics of the specified frame modification to the above minimum requirements. Documentation shall be in the in the form of an Aires, Pro-Engineering or equal computer analysis model of a like frame modification. The analysis, at a minimum, shall graphically show stress points with a full calculated load imposed, based on the GVWR of the chassis. A written synopsis outlining, in layman’s terminology, the frame modification procedures and resulting strength characteristics conducted by the manufacturer shall also be included. Due to long term durability concerns and the stress associated with the intended missions of the apparatus, failure to provide engineering documentation may result in disqualification of the proposal.

**Is Engineering documentation included in bid? Yes \_\_\_ No \_\_\_**

3. **Frame Warranty Requirement:** The frame modification shall be warranted in writing by the manufacturer for a period not less than the OEM chassis manufacturer’s original warranty. A copy of the warranty shall be included.

**Is Frame warranty included in bid? Yes \_\_\_ No \_\_\_**

4. **Pinch/Drop Frame Construction:** The pinch frame center structure shall be required to support torsional stress between the back of the cab and the rear axle. It shall be constructed, at a minimum, of two (2) 9" x 2-1/2" x 1/4" steel angles inverted for upper chassis support. If the proposed frame modification does not utilize an upper pinch frame, the bidder must state clearly, with engineering documentation, how the imposed loads and stresses will be distributed using an alternative method.

The drop frame outer structure shall consist of minimum 3" x 5" x 1/4" steel tube spaced at standard chassis width for chassis strength and lower body support under floors.

**Upper pinch frame rail dimensions? \_\_\_" x \_\_\_" x \_\_\_"**  
**Lower drop frame rail dimensions? \_\_\_" x \_\_\_" x \_\_\_"**

5. **Frame Headers:** The chassis headers forward of the rear axle shall be steel channels 10" deep with a 6" top flange and a 3" bottom flange, all a minimum of 5/16" thick. The chassis headers rearward of the rear axle shall be steel channels 10" deep with a 3" top flange and a 3" bottom flange, all a minimum of 5/16" thick. All channels shall be rated at a minimum of 50,000 psi. All headers and frame rails shall have gusset braces of at least 9 gauge steel.

The rated section modulus shall be not less than 20.7 with a RBM rating of not less than 745,000.

**Bidders rated section modulus: \_\_\_\_\_**

**Bidders RBM rating: \_\_\_\_\_**

6. **Rear Drop Deck Frame:** To facilitate full utilization of the storage space behind the rear axle, the rear frame shall be cut behind the spring shackle and a drop deck frame assembly welded in its place. A minimum 1/4" thick 3" x 8" steel header plate shall be welded across the ends of the cut off frame, full width between the outer ends of the frame rails (fully left to right). 8" x 3" tubular steel structural supports shall be welded to the ends of the original frame rails, extending downward to the bottom of the specified rear compartment. 5" x 3" tubular steel structural supports shall be welded laterally from the drop structure outward to the end of the specified compartment depth.

3" steel channel lateral supports shall be welded between the left and right extensions. All right angles shall be gusseted with 1/4" steel plating welded to the assembly. The overall strength characteristics shall be rated at a minimum of 10,000 lbs. And support attachments of tow hooks or tow eyes and Class III trailer hitches, if specified herein. The entire assembly shall be cleaned and painted black with a special substructure paint coating process.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

7. Re-Use of Frame Materials: Under no circumstances will the re-use of steel frame materials cut from the chassis frame assembly be reused for the modification process.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

8. Brake Line Requirements : All brake lines shall match those supplied by the chassis manufacturer and shall be attached to chassis with welded studs and rubber insulated straps.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

9. Relocation of Frame Mounted Equipment: All air reservoirs, dryers, cab tilt controls and other equipment located inside the frame rails shall be relocated, as required for the modification, in a manner that meets the chassis manufacturers and FMVSS standards.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

10. Inspection and Testing Requirements: The chassis shall have a complete inbound and outbound inspection conducted. At a minimum, after completion of all chassis frame modifications, the following test shall be conducted:

- a. Laser axle and wheel alignment check.
- b. Dynamometer run up test at typical highway speed to check drive line and wheel balance.
- c. Dynamometer test at typical highway speed under full simulated load over rear axle.
- d. Sample of testing documentation shall be included with the bid proposal. Actual chassis testing documentation will be provided for the completed apparatus.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

11. Chassis Manufacturers Modification Authorization: A letter or other form of certification shall be included with the bid stating that the chassis manufacturer has reviewed all applicable engineering and testing documentation by the apparatus manufacturer and thereby confirms that the apparatus manufacturer meets all applicable standards for the modification and does not affect the life-time frame warranty.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

12. Body Isolation: When mounted, the aluminum body shall be isolated from steel chassis using anti-corrosion tape or other equivalent isolation process equal in quality to 3-M Scotch #481, UKA black.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**BODY CONSTRUCTION**

The following specifications are meant to be minimum requirements established for the manufacture and delivery of a vehicle supporting emergency incidents, as outlined herein. Exceptions to these minimum standards will be permitted, but will be evaluated based on the bidders understanding and interpretation of the mission, compliance with maximum

height and length requirements and minimum storage capacity (cu.ft.) requirements.

The apparatus body shall be a roll-up side door fully enclosed type. The body shall be especially fabricated for severe emergency service duty.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**WARRANTY**

The body construction shall be warranted, in writing from the manufacturer, for a period of not less than ten (10) years against structural failure. A copy of the manufacturer standard warranty shall be included with the bid proposal outlining specifics of warranty and shall take precedent over any and all other warranty requirements, implied or otherwise.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**REGISTERED ENGINEER VERIFICATION**

In order to ensure the integrity of the body, chassis, and adjoining substructures, and to provide a unit that is safe for its operators and the general public, the bid response must show proof, upon request, that the manufacturer of the body designed for this contract has at least one registered Professional Engineer to oversee the entire design and construction of the unit. The Professional Engineer must hold a current State Board certification.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**MINIMUM CONSTRUCTION REQUIREMENTS**

Body shall be constructed from 5000 and 6000 Series alloy aluminum, as noted herein, for high tensile strength and corrosion resistance.

1. Internal Structure : At a minimum, the body central structure shall be interlocking, welded framework of 6061-T6 alloy aluminum, including two (2) 6" D longitudinal support channels, six (6) longitudinal 1 1/4" x 3/16" angles, and 6.38" x 1" top cap, connected with a diagonal structure to form a compound beam. A longitudinal structure interlocked with transverse partition framework shall combine to form a solid structural platform. For long-term structural integrity, all imposed loads shall be supported by structural framework. No load shall be carried by covering sheets.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

2. Compartment Floor : All exterior compartment floors shall be constructed of a minimum .125" thick 5052-H32 alloy aluminum, except wheelhousing compartments, which shall be a minimum .190" thick 5052-H34 alloy aluminum. The outer edge of all compartments shall be raised 1" above the floor bottom side rail in all side compartments to prevent water from collecting on the floors. The under side of floors shall be reinforced with minimum 2" x 1" 6061-T6 alloy parallel aluminum channels, running full depth of floor and attached at the outside edge with 5" x 5" gussets and at the inside edge with 2" x 3" angle strap. Channel spacing shall be on minimum 12" centers.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

3. Crash Rail: The lower skirt area of the body shall be provided with a protective minimum 6" x 2.75" extruded 6061-T6 alloy aluminum tube structural rail with integral rub rail and inverted trapezoid shoe grip. This rail shall serve both as a structural crash rail and rub rail. The design shall permit recessed installation of reflective safety devices or materials and trim, as specified herein.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

4. Corner Posts : All structural vertical corner posts shall be constructed of 6061-T6 alloy aluminum extrusions with a minimum 2.88" radius. Due to structural and aerodynamic requirements associated with the intended use of this emergency vehicle, formed corner posts shall not be an acceptable method of construction.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

5. Roof Rails: All structural horizontal roof rails shall be constructed with a minimum .75" radius of 6061-T6 alloy one-piece aluminum extrusions at sides, front and rear. They shall be welded as an integral part of the body superstructure. Due to structural and aerodynamic requirements associated with the intended use of this emergency vehicle, formed roof rails shall not be an acceptable method of construction.

All upper structural horizontal roof rails shall be constructed with a minimum 2.88" radius of 6061-T6 alloy one-piece aluminum extrusions at sides, front and rear. The lower structural horizontal roof rails shall be constructed of 6061-T6 alloy one-piece aluminum extrusions at sides. They shall be welded as an integral part of the body superstructure. There shall be a series of vertical channels extending from the lower roof rail to the upper roof rail. The upper side body panels shall be constructed of a minimum .100" thick 5052-H34 one-piece aluminum sheet. They shall extend from the lower roof rail to the upper roof rail and from front to rear of the body. Due to structural and aerodynamic requirements associated with the intended use of this emergency vehicle, formed roof rails shall not be an acceptable method of construction.

6. Corner Caps : Minimum 2.88" radius aluminum corner caps shall be integrally welded at all corners, forming a uniform joint between the vertical body posts and the horizontal roof rails. All seams shall be ground smooth for a finished appearance when painted.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

7. Drip Rail: Full body length heavy-duty extruded 6061-T6 alloy aluminum drip molding shall be provided, a minimum of 2-1/2" high x .75" deep for protection of overhead doors. Drip molding shall be extruded as an integral part of the top side rail for structural and waterproof integrity. Bolted or screwed on installations will not be acceptable.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

8. Roof Structural Supports: The roof shall be supported by a minimum of five (5) solid hollow extrusions measuring a minimum of 2" high x 3" wide 6061-T6 alloy aluminum longitudinal roof supports running full length from the front to rear of body. To further enhance the superstructure, minimum 2" wide x 3" high 6061-T6 alloy aluminum horizontal supports shall be welded to the roof rail between each bay compartment. The support shall be such as to permit the roof structure to support average percentile personnel to walk the full length without severe deformation or structural damage to the roof.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

9. Roof Covering : The roof shall be completely covered with minimum .125" bright aluminum tread plate. Necessary seams where multiple sheets of material are joined shall be welded and sealed.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

10. Roof Insulation : The entire roof shall be insulated with a minimum 1.50" styrofoam with a reflective foil barrier.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

11. Intermediate Vertical Structural Supports: Vertical structural supports located between each exterior compartment shall be constructed of 6061-T6 alloy aluminum extrusions, which shall also serve as the integral compartment door tracks. They shall be a minimum of 2.5" wide with a half oval exterior shape to protect door track from damage. The roll-up door track shall be an integral part of the extrusion, as described herein.

The exterior flange of the door track shall be recessed a minimum of 1/4" from the partition covering to prevent the interference when removing equipment from the compartments, thus allowing full width use and egress from the compartment.

To maximize all useable compartment space and facilitate easy removable of all applicable equipment, the door opening and inner side walls shall be flush (walls are not to be recessed inward of door opening).

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

12. Front & Rear Exterior Body Panels: The exterior panels on the front and rear of the body shall be constructed of minimum .190" thick 5052-H34 aluminum sheets. No exposed welds are permitted in the attachment process of either the front or rear panel. The rear panel shall be one-piece design with no seams. They shall be welded to the corner post superstructure. Attachment of these panels with rivets, screws or other types of fasteners is not permitted.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

13. Rear Wheelhousing Filler Panels: The wheelhousing filler panels shall be constructed of a minimum .190" (3/16") thick aluminum plate painted to match the body, unless specified otherwise. The panel shall be welded to the body superstructure around the full perimeter of the wheelhouse opening to form an integral part of the body.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**EXTERIOR COMPARTMENTS**

1. Minimum Storage Capacity: The following exterior compartment layout, dimensions, and requirements are minimum specifications. The total cu.ft. storage area must be equal to, or more than, the noted requirements under the compartment schedule herein.

Minimum weight carrying capacities of each compartment, measured directly on the floor, shall be 2300 pounds at floor level for all tall compartments and 3500 pounds for the wheelhouse compartment. Proof of load testing must be included with the bid response.

***Is proof of testing including in this response? \_\_\_ Yes \_\_\_ No***

2. Compartment Walls: The compartment wall construction shall consist of an internal structural framework of extruded 6061-T6 alloy aluminum channels covered with a minimum .100" thick 5052-H34 aluminum sheets.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

3. Integral Adjustable Shelf Channels: As applicable, all interior side walls shall be provided with integral adjustable shelf channels compatible with Unistrut hardware. The channels shall be flush with the exterior surfaces and extend to within 10" off the top of the door opening. There will be a minimum of four (4) channels in each exterior compartment, unless specified otherwise herein. Offset requirements may use surface mounted channels, as outlined in the compartment layout schedule. This system is specified to provide the maximum useable storage space within the compartment from side wall to side wall.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

Bids shall include documentation in the form of photographs or engineering parametric model drawings that depict the proposed recessed track system.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

- 4. Floor: The floor shall minimum .125" smooth plate aluminum and shall be raised not less than 1" from bottom of door opening allowing the door to close below floor level. Design shall be such as to minimize water entry into the compartment through the bottom door opening when closed.  
**Bidder Complies: \_\_\_ Yes \_\_\_ No**
- 5. Wall Finish : Interior of compartments shall be a smooth finish.  
**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**COMPARTMENT DOORS**

- 1. Door Type: All exterior compartment doors shall be roll-up type that can be opened individually.  
  
The exterior compartment doors shall be custom manufactured and built for each compartment by the body manufacturer and/or warranted by the door manufacturer for not less than 10 years. The doors must be able to withstand years of rugged service and wear. For this reason, the compartment door design, metal thickness, and attachments must be strictly adhered to.  
**Bidder Complies: \_\_\_ Yes \_\_\_ No**
- 2. Service Requirements : The design shall permit field replacement of individual damaged panels. The door track system shall be designed to permit complete removal of the doors by removal of a section of the door track with conventional hand tools.  
**Bidder Complies: \_\_\_ Yes \_\_\_ No**
- 3. Construction Materials : The compartment doors shall be of all-aluminum construction using interlocking slats made from extruded minimum 6063-T6 alloy aluminum. All individual slat edges shall have a minimum .080" radius to minimize paint chipping.  
**Bidder Complies: \_\_\_ Yes \_\_\_ No**
- 4. Exterior Surface Finish: All outer door surfaces shall be painted to match the body using the same paint process as outlined in the paint requirements herein.  
**Bidder Complies: \_\_\_ Yes \_\_\_ No**
- 5. Due to the critical requirement for maximizing available storage capacity of the body, all roll-up door tracks shall be recessed into the side walls of the compartments (even with the actual door opening). This requirement will permit slide-out trays to be not less than 1" more narrow than the specified compartment width.  
**Bidder Complies: \_\_\_ Yes \_\_\_ No**
- 6. Door Track Rollers : Each door shall be provided with self-lubricating nylon rollers (two in each end of door slat).  
**Bidder Complies: \_\_\_ Yes \_\_\_ No**  
  
The nylon door rollers shall ride within a replaceable 3-sided poly-vinyl chloride track lining for one-hand glide-open operation and extended wear protection. The inserts shall be designed to allow simple field service.  
**Bidder Complies: \_\_\_ Yes \_\_\_ No**
- 7. Door Seals: The bottom door seal shall be solid rubber for durability and top door seal shall be combination felt and plastic. The vertical outer edges shall be equipped with felt weather seal inserts that additionally reduce door rattle.  
**Bidder Complies: \_\_\_ Yes \_\_\_ No**

- 8. Door Grab Straps : Due to the full height opening requirements, each door shall be provided with a durable grab strap used to aid in opening and closing door while standing on the ground.  
**Bidder Complies: \_\_\_ Yes \_\_\_ No**
  
- 9. Door Counterbalance : Each door shall have a spring-type heavy-duty counterbalance roller assembly enclosed in the top of the compartment to provide easy, one-handed opening and closing capability. Maximum door lifting or lowering force shall not exceed 25 lbs. At any point in the cycle. This maximum shall permit one-handed lifting and closing of the doors by an average percentile male, allowing the doors to be opened and closed while the other hand is used to handle equipment.  
**Bidder Complies: \_\_\_ Yes \_\_\_ No**
  
- 10. Door Locking Requirements : The locking of compartment doors shall be accomplished with a cam-type positive locking mechanism above each door, controlled with a lock installation with lock handle at front of body, one on each side. Each lock handle to have a keyed lock (keyed alike). All doors on either side of the body shall be locked or unlocked simultaneously with a single lock handle on the left or right side of the front body panel.  
**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**BODY DIMENSIONS & COMPARTMENT LAYOUT SCHEDULE:**

All proposals shall require a scaled, computer aided design (CAD) drawing or drawings to be included outlining in detail specifically what is being proposed. The proposal drawing(s) shall include, but not be limited to: left side body and chassis; right side body; and rear of body; with all applicable doors open. Specified shelving, trays, storage racks, major equipment and components (as outlined in the compartment layout schedule) and exterior lighting, shall be shown.

- 1. Maximum wheelbase of chassis: 267"  
**Bidders Proposal: \_\_\_\_\_"**
  
- 2. Maximum cab to axle dimension of chassis: 193"  
**Bidders Proposal: \_\_\_\_\_"**
  
- 3. Maximum length of apparatus: 454"  
**Bidders Proposal: \_\_\_\_\_"**
  
- 4. Minimum overall length of apparatus body, excluding rear step: 280"  
**Bidders Proposal: \_\_\_\_\_"**
  
- 5. Overall apparatus width: 96"  
**Bidders Proposal: \_\_\_\_\_"**
  
- 6. Maximum height of apparatus (loaded, including roof mounted options) 130"  
**Bidders Proposal: \_\_\_\_\_"**

**CONFIGURATION:**

**NOTE:** Compartment width and height dimensions listed below are minimum door pass-thru clearance requirements, not interior dimensions.

Equipment and/or supplies are included only if specified within the document.

**NOTE:** Any trays and shelves supplied and listed below are subject to following dimension rules:

- Adjustable shelves - 1" less than compartment width to compensate for mounting hardware.
- Slide-trays on floor - 1" less than compartment width
- Adjustable slide-out trays - 1" less than compartment width to compensate for mounting hardware.
- Adjustable slide-out and tilt-down trays - 5" less than compartment width due to mounting hardware and tilting mechanism on tray.

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**STREET SIDE (LEFT)**

**S-1:** Forward side compartment with minimum door pass-thru dimensions of:

48" wide x 79" high x 40" deep with painted, roll-up aluminum door.

**Bidders Proposal:** \_\_\_ "W x \_\_\_ "H x \_\_\_ "D

**EQUIPMENT LAYOUT AND MOUNTING**

4. 25kw PTO generator mounted on floor of compartment within an enclosure or housing to protect the generator and generator components from corrosive road spray (see separate specification for details).
5. Housing panel recessed a minimum of 8" back from door opening providing standing area in front of the generator enclosure for reaching upper storage areas of the compartment. 240/120VAC circuit breaker box will be flush mounted to one side of the face panel. All meters, gauges and specified outlets will be mounted next to the breaker box. Installation of breakers, meters and outlets in this area is required mounted in this manner to provide easy access and unimpeded viewing.
6. Recessed storage compartment in opposite side of panel that will accommodate the light tower remote control head and cable.
7. 40" wide x 36" deep shelf on top of generator housing that is removable for generator and generator component service access.
8. One (1) interior instrument storage compartment with hinged doors
9. One (1) electric rewind cord reel
10. One (1) electric rewind utility air reel
11. One (1) utility air compressor in upper rear area of compartment.

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**S-2:** Intermediate compartment with minimum door pass-thru dimensions of:

52" wide x 79" high x 40" deep with painted, roll-up aluminum door.

**Bidders Proposal:** \_\_\_ "W x \_\_\_ "H x \_\_\_ "D

**EQUIPMENT LAYOUT AND MOUNTING**

1. One (1) interior instrument storage compartment with hinged doors
2. One (1) 600 lb. aluminum rollout tray (floor mounted) for Zumro tent storage

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**S-3:** Ahead of wheelhousing compartment with minimum door pass-thru dimensions of:

40" wide x 79" high x 40" deep with painted, roll-up aluminum door.

**Bidders Proposal:** \_\_\_ "W x \_\_\_ "H x \_\_\_ "D

EQUIPMENT LAYOUT AND MOUNTING

- 1. One (1) 600 lb. aluminum rollout tray (floor mounted)
- 2. Four (4) 500 lb. aluminum adjustable shelves

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**S-4:** Forward wheelhousing compartment with minimum door pass-thru dimensions of:

52" wide x 47" high x transverse with painted, roll-up aluminum door.

**Bidders Proposal:** \_\_\_ "W x \_\_\_ "H x \_\_\_ "D

EQUIPMENT LAYOUT AND MOUNTING

- 1. One (1) heavy duty aluminum partition (transverse)
- 2. One (1) 1000 lb. aluminum rollout tray (transverse)
- 3. Customer supplied pool storage area (number of pools to be determined at pre-construction conference.)

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**S-5:** Aft wheelhousing compartment with minimum door pass-thru dimensions of:

27" wide x 47" high x transverse with painted, roll-up aluminum door.

**Bidders Proposal:** \_\_\_ "W x \_\_\_ "H x \_\_\_ "D

EQUIPMENT LAYOUT AND MOUNTING

EQUIPMENT LAYOUT AND MOUNTING

- 1. One (1) 500 lb. adjustable aluminum shelf
- 2. Four (4) DOT cylinders on storage rack

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**S-6:** Rear of wheelhousing compartment with minimum door pass-thru dimensions of:

40" wide x 79" high x 23" deep with painted, roll-up aluminum door.

**Bidders Proposal:** \_\_\_ "W x \_\_\_ "H x \_\_\_ "D

EQUIPMENT LAYOUT AND MOUNTING

- 1. One (1) aluminum tool box with four (4) heavy duty slide out drawers. Exact drawer sizes to be determined at the pre-construction conference. Top of box to be used as storage shelf.
- 2. Three (3) 500 lb. rated aluminum adjustable shelves

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**CURB SIDE (RIGHT)**

**C-1:** Forward side compartment with minimum door pass-thru dimensions of:

48" wide x 79" high x 40" deep with painted, roll-up aluminum door.

**Bidders Proposal:** \_\_\_ "W x \_\_\_ "H x \_\_\_ "D

EQUIPMENT LAYOUT AND MOUNTING

- 1. One (1) electric rewind cord reel
- 2. Three (3) 500 lb. rated aluminum adjustable shelves

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**C-2:** Intermediate compartment with minimum door pass-thru dimensions of:

52" wide x 79" high x 40" deep with painted, roll-up aluminum door.

**Bidders Proposal:** \_\_\_ "W x \_\_\_ "H x \_\_\_ "D

EQUIPMENT LAYOUT AND MOUNTING

- 1. One (1) heavy duty aluminum partition
- 2. One (1) aluminum rollout tool board
- 3. One (1) SCBA storage board to hold eight (8) complete SCBA
- 4. One (1) 500 lb. aluminum adjustable shelf

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**C-3:** Ahead of wheelhousing compartment with minimum door pass-thru dimensions of:

40" wide x 79" high x 40" deep with painted, roll-up aluminum door.

**Bidders Proposal:** \_\_\_ "W x \_\_\_ "H x \_\_\_ "D

EQUIPMENT LAYOUT AND MOUNTING

- 1. Sixteen (16) individual aluminum storage compartments for storage of Hazmat suits

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**C-4:** Forward wheelhousing compartment with minimum door pass-thru dimensions of:

52" wide x 47" high x transverse with painted, roll-up aluminum door.

**Bidders Proposal:** \_\_\_ "W x \_\_\_ "H x \_\_\_ "D

EQUIPMENT LAYOUT AND MOUNTING

- 1. One (1) heavy duty aluminum partition (transverse)
- 2. One (1) 1000 lb. aluminum rollout tray (transverse)
- 3. Three (3) 500 lb. aluminum adjustable shelves

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**C-5:** Aft wheelhousing compartment with minimum door pass-thru dimensions of:

27" wide x 47" high x transverse with painted, roll-up aluminum door.

**Bidders Proposal:** \_\_\_ "W x \_\_\_ "H x \_\_\_ "D

EQUIPMENT LAYOUT AND MOUNTING

- 1. One (1) 500 lb. aluminum adjustable shelf
- 1. One (1) refrigerator/freezer

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**C-6:** Rear of wheelhousing compartment with minimum door pass-thru dimensions of:

40" wide x 79" high x 23" deep with painted, roll-up aluminum door.

**Bidders Proposal:** \_\_\_ "W x \_\_\_ "H x \_\_\_ "D

**EQUIPMENT LAYOUT AND MOUNTING**

1. One (1) Space Saver cascade system control panel and refill system
2. Two (2) 500 lb. adjustable aluminum shelves
3. Five (5) SCBA storage tubes

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**REAR OF BODY (Back):**

**B-1:** Rear or back of body compartment with minimum door pass-thru dimensions of:

42" wide x 55" high x 40" deep with painted, roll-up aluminum door.

**Bidders Proposal:** \_\_\_ "W x \_\_\_ "H x \_\_\_ "D

**EQUIPMENT LAYOUT AND MOUNTING**

1. Two (2) 250 lb. adjustable aluminum roll out / drop down trays
2. One (1) 600 lb. aluminum roll out tray (floor mounted)

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**RECESSED ROOF PLATFORM & STORAGE AREA**

The body shall extend above the roll-up doors to form a minimum 87" wide x 250.50" long x 10.12" deep (interior dimensions) storage area on the roof of the body. The construction shall be integral to the body design and not an "add-on" assembly. The outer side panels shall be of minimum 3/16" aluminum. The interior side walls and roof top floor shall be covered with minimum .125" bright tread plate with embossed anti-slip surface welded integrally around the full circumference capable of supporting the stored equipment and two average percentile adult males with full gear. A minimum 1" drain hole will be provided on the left and right side of the front of the roof for water drainage. A chrome cowl duct shall be provided on the exterior front of the body to cover the holes.

A minimum 20" wide opening will be provided on the right rear of the upper body to provide ladder access to the roof walkway.

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**REAR WHEEL OPENING FENDERETTES**

Removable mirror finish stainless steel fenderettes shall be attached to the rear wheel opening filler panels. They shall be minimum 12-gauge 304 stainless with a radius flare. Polished aluminum or other types of materials are not acceptable.

**Bidder Complies:** \_\_\_ Yes \_\_\_ No

**FUEL FILLER HOUSING**

A cast aluminum fuel filler housing shall be installed on the left rear wheelhousing panel. It shall have a hinged door or lid with a bead blast finish. The filler housing flange shall be polished aluminum.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

Next to the fuel fill shall be a metallic tag with raised letters that reads DIESEL FUEL ONLY.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**STONE GUARDS, FRONT & REAR CORNER POST**

The lower front and rear body corner posts shall be protected with bright aluminum tread plate shaped to fit the rounded corners. The front guards shall line up visually with the bright tread plate on the cab steps (when applicable). The tread plate shall additionally extend, at the same height, inward on the body to cover the lower body skirt. They shall be attached using round-head drive-rivets. All edges shall be sealed with silver, non-hardening sealant to prevent corrosive agent build-up between the plates and the body.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**REAR STEP BUMPER**

Bolted to the rear frame supports shall be step bumper constructed to channel steel designed to support a minimum of 600 lbs. of combined weight. It shall be covered with minimum .125" bright aluminum tread plate that includes a punched multi-directional, aggressive gripping surface forming a platform a minimum of 11" deep and minimum 90" wide. The gripping surfaces shall be circular in design, a minimum of 1" diameter and on centers not to exceed 4".

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

There shall be a warning label mounted above the rear step that reads as follows: "DANGER - DO NOT RIDE ON REAR BUMPER/STEP WHILE VEHICLE IS IN MOTION. DEATH OR SERIOUS INJURY MAY RESULT."

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**RECESSED WHEELHOUSE PANEL STEPS**

To assist in accessing equipment stored in the wheelhouse compartments, a Cast Products #C11301-1 polished aluminum surface mounted step with deep recess shall be installed in the left rear wheelhousing panel to facilitate access to equipment stored in the upper reaches of the compartment. There shall be one rear of wheel opening. The step shall be flange mounted using a minimum of four attachment points to the body panel.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**REAR WHEEL STEP BARS**

There shall be an aluminum step bar installed across the roadside (left) and curbside (right) rear wheel openings, extending from front and rear lower crash rail. They shall be bolted in place using non-corrosive bolts and lock nuts to facilitate removal of rear wheels. An extruded aluminum anti-slip foot pad shall be welded integrally to the bar in the center measuring a minimum of 12" wide. The top surface shall be ribbed for safety.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**WHEEL CHOCKS**

Two (2) ZICO model SAC-44 Quik Choc collapsible wheel chocks shall be provided.

They shall be mounted in ZICO SQCH-44-H holders located under the left body, one forward and one rear of wheels.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**LICENSE PLATE FRAME**

Located on the rear body panel shall be a Cast Products #C30004 surface-mount lighted license plate frame. It shall have a polished aluminum finish around the outer flange and bead blasted inner finish.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**REAR MUD FLAPS**

A pair of heavy duty black rubber mud flaps shall be bolted to the rear wheelhousing behind the rear wheels.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**COMPARTMENT FOLD-DOWN PLATFORM STEPS**

Compartments #1,#2,#3, and #6 roadside (left) and compartments #1,#2,#3, and #6 on the curbside (right) shall have fold-down steps installed that permits safe equipment access to the upper reaches of the corresponding compartments.

Each platform step shall be rated to support not less than 500 lbs of direct force in the fully extended position. The platform surface shall be constructed of expanded aluminum that permits safe standing with mud or snow impacted boots with a minimum 11" deep surface area.

The platform shall be held in the stored position utilizing pneumatic springs that also assist in the deployment and storage process. The springs shall be installed inside the compartment wall and shall not be exposed or exterior surface mounted. No exception on this requirement. The entire assembly shall be easily services by removal of service access plates in the side walls.

Bid shall include photos or brochure of a typical proposed installation.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

***Photos of typical installation included: \_\_\_ Yes \_\_\_ No***

**RECESSED ADJUSTABLE SHELF TRACK**

As applicable, all interior side walls shall be provided with integral adjustable shelf tracks or channels compatible with Unistrut hardware. The channels shall be flush with the exterior surfaces and extend to within 10" off the top of the door opening. There will be a minimum of four (4) channels in each exterior compartment, unless specified otherwise herein. Offset requirements may use surface mounted channels, as outlined in the compartment layout schedule. This system is specified to provide the maximum useable storage space within the compartment from side wall to side wall.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**SHELVING**

All specified shelving shall be constructed of not less than 3/16" (.188") 5052-H32 aluminum with a minimum 500 lb. equalized weight rating for each shelf. They shall have minimum 1-1/2" high flanges/lips on all sides. The flanges shall be open in each corner to permit drainage.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

Any shelving that extends transverse of any compartment shall additionally be reinforcement beneath to support a required 1000 lb. equalized weight capacity using additional UniStrut equally spaced between the left and right sides of the compartment.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**SLIDE-OUT TRAY - 600# CAPACITY**

As specified in the compartment layout schedule, there shall be trays rated at not less than 600 lb. capacity using SlideMaster brand model SM3-MP slides. The rails shall extend 100% of the rail platform depth. A latching device shall be provided that secures the tray in the opened and closed position. The slider rails with be black textured powder-coated to prevent corrosion. All four corners will be welded. 3/8" drains holes will be provided in the left and right rear corners. Tray construction will be from minimum 5052-H34 3/16" (.190) thick aluminum. Yellow/Black safety stripe tape will be applied to each side of all trays.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**TRANSVERSE COMPARTMENT SLIDE-OUT TRAY**

As specified in the compartment layout schedule, there shall be a tray that slides out both sides of the apparatus body. The extension shall be a minimum of 70% of the length of the tray. It shall have a latching device provided that secures the tray in the opened and closed positions. The slider rails with be black textured powder-coated to prevent corrosion. The tray side walls will be 3" high. All four corners will be welded. 3/8" drains holes will be provided in the left and right rear corners. Tray construction will be from minimum 5052-H34 3/16" (.190) thick aluminum. Yellow/Black safety stripe tape will be applied to each side of all trays.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**COMPARTMENT VERTICAL PARTITION**

A vertical compartment partition shall be permanently installed, as outlined in the compartment layout schedule. For strength, the partition shall have a 2" inner structural frame and be covered on both sides with a sheet of minimum .080" aluminum. It shall have a rounded vertical face. Common sided, single sheet, partitions are not permitted.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**HORIZONTAL TRANSVERSE COMPARTMENT PARTITION**

A partition shall be permanently installed , as outlined in the compartment layout schedule. For strength, the partition shall have a 2" inner structural frame and be covered on both sides with a sheet of minimum .080" aluminum. It shall have a rounded vertical face. Single sheet partitions are not permitted.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**SUIT SHELVING RACKS**

Aluminum shelves /bins with a heavy duty aluminum partition and 3/16" divider /shelves shall be installed to provide sixteen (16) individual storage slots for customer supplied hazmat suits. Each storage slot shall be 9" tall x 36" deep. The bins shall be removable and adjustable to change the configuration of the bins as necessary.

**EQUIPMENT DIVIDERS**

Dividers specified in the Compartment Layout Schedule shall be constructed of minimum 3/16" thick 5052-H32 aluminum plate.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**SLIDE-OUT TOOL DRAWER ASSEMBLY**

Located in the designated compartment will be a drawer system with four slide-out drawers. The assembly shall be constructed of galvanized steel. Each drawer face shall have a red powder-coated finish. The drawers will be mounted on 500# capacity heavy-duty ball-bearing sliders and shall include four removable dividers for each drawer. A single T-style handle shall provide ease of operation for control of the two-point drawer latch. The handle will have a chrome finish. Drawer sizes will be as follows:

- a. two (2) at the top - 4" high x 37" wide x 20" deep
- b. two (2) at the bottom - 8" high x 37" wide x 20" deep

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**TRANSVERSE LADDER STORAGE COMPARTMENT**

An enclosed, tunnel style storage compartment constructed of minimum .160 5052-H32 aluminum shall be installed transversely in the wheelhousing compartment that will accommodate one (1) 10 ft. folding or 12 ft. folding - step ladder. It shall be a minimum of 26" wide x 9" high x 88" deep. The ladder shall be retrievable from either side of the apparatus. A hinged retaining door with spring-loaded latch shall be provided over each opening to prevent the equipment from sliding out of the compartment.

There shall be a fixed aluminum shelf (transverse) separating the compartment into two equal halves.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**TOOL BOARD**

A 36" deep slide-out tool board shall be installed in the designated compartment that permits flexible mounting of shovels, brooms, axes, pry bars, hand tools and other equipment. The board shall be constructed of minimum .160" aluminum panel with smooth DA finish and aluminum angle framing. It shall be mounted on sliders in the bottom of the compartment rated at a minimum capacity of 500 lb. that permits the board to slide 70% of its depth out of the compartment. The upper section of the board shall glide between runners for support. Yellow/Black safety stripe tape shall be applied on the left and right sides for visibility when fully extended.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**SCBA SLIDE OUT STORAGE RACK**

One (1) slide-out SCBA storage rack installed in a designated compartment, as outlined in the compartment layout schedule. It shall measure a minimum 28" wide x 35" deep x 58" high and be attached to a bottom mounted slider assembly rated at 1000 lbs. The design shall permit up to four (4) 30 or 60 minute quick-release walkaway mounting brackets to be bolted to each side of the partition (total of eight, stacked two over two). The center partition for bolting the SCBA brackets shall be a minimum of 1" thick with inner tubular superstructure framing and supported at the base of the slide-out tray by support gussetts welded to the partition and floor of the tray. A pull-out handle shall be provided on the face of the partition. The assembly design shall permit the operator to lock the tray in the closed or fully opened position. The tray must be capable of extending completely out of the compartment to permit fire personnel to back directly up to either the inner or outer mounted SCBA's. Yellow/Black safety stripe tape shall be applied on the left and right sides for visibility when fully extended.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**SCBA WALKAWAY BRACKETS**

Eight (8) Flamefighter or equal walkaway mounting brackets shall be provided and installed, as outlined in the compartment layout schedule. They shall be vinyl coated quick-release tank clips, designed to accommodate the

departments SCBA's. SCBA brand and tank size shall be supplied at the pre-build conference. A safety restraint strap will be installed on each bracket.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**SCBA STORAGE TUBE**

Five (5) SCBA tank PVC storage tube for a spare SCBA bottle shall be installed, as outlined in the compartment layout schedule. Each tube shall be angled at the back and have two (2) adjustable rubber stoppers for bottle retention on the front to restrict the bottles from sliding forward into the roll-up doors.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**INSTRUMENT STORAGE LOCKERS**

A enclosed storage locker shall be installed in compartment designated in the Compartment Layout Schedule. It shall be designed to isolate all instruments from the other storage areas and contaminates within the apparatus body. The locker shall measure a minimum of 40" (**or comp't width**) wide x 40" high x 37" deep (outside). The doors shall be equal size split hinged boxed-pan type constructed of minimum 5052-H32 aluminum. The hinges shall be continuous type stainless steel with slotted attachment holes. A bent "D" ring handle and latch assembly shall secure the doors in the closed position. The latch shall have a key lock should the department wish to secure the instruments. The doors shall be provided with a Eberhard or equal spring-loaded hold-open device that positions the doors in a minimum 90 degree position when opened. The face of the doors shall have a satin DA finish. Around the circumference of the compartment opening shall be bulb-type gasketing. On the interior shall be one minimum 38" wide (**or 2" less than comp't width**) x 32" deep adjustable shelf. The back wall shall have two (2) vents to permit air to circulate within the compartment. Each vent will have a shut-off lever. The compartment shall be heated with an electric baseboard type heater.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**ROOF ACCESS LADDER**

OSHA compliant roof access ladder designed to bolt into the superstructure reinforcements on the rear of the body. It shall extend above the body a minimum of 7" to 8" to permit safe access on and off the roof. The vertical rails shall be knurled aluminum that provides an anti-slip, comfortable grip with both bare and gloved hands. Each ladder run shall be designed to prevent foot slippage under all type of weather conditions using individual open-grate steps. They shall be spaced a maximum of 12" between top of one run to top of next run. Overall width shall not be less than 19". Vertical structural tubing shall be minimum 1-1/4" aluminum.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**WARNING LABEL**

A warning label shall be installed on body at top ladder rung that reads "CAUTION - Roof is not a walking-working surface. Properly restrained cargo-storage area only".

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**ROOF TOP STORAGE COMPARTMENTS**

Located on the left and right of the apparatus roof shall be a storage compartment that measures approximately 192" long x 26" wide x 12" high. The exact dimension requirements shall be determined a the pre-construction conference.

The compartment will be constructed of .125" bright aluminum tread plate. Each lid will be lift-up type compartment door hinged on the outboard side fabricated from .125 aluminum tread plate with a minimum 1-1/2" lip around the

perimeter. A box-pan will be installed beneath the lid providing recess mounting for compartment lighting and protected routing of light wiring harness. The box-pan will run full length of the lid and also act as a sifter preventing the lid from twisting and providing a good seal around the perimeter. The lids will have a pneumatic type cylinder hold open device on each end. ¼” stainless steel, full-length pin type hinges will be installed. Closed cell neoprene rubber bulb-type gaskets will be provided around the perimeter of the lid to provide a good seal when closed. Each corner of the bottom of the compartment will have a minimum 3/8" drain hole.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**RECESSED ROOF DIVIDER PARTITION**

There will be a bright aluminum treadplate divider that extends from the left to right side walls of the recessed roof just forward of the storage compartments separating the work zone from the light tower storage area. There will be a minimum 1" gap between the partition and the floor to permit drainage.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**SPEEDI-DRI DISPENSER IN WHEELHOUSE PANEL**

Located in the right rear wheelhouse panel shall be a Speedi-Dri storage compartment for rapid dispensing. The total capacity shall not be less than two (2) 40 lb. bags. The design shall be such as to protect the stored absorbent material from water and road spray. It shall slide out a distance to permit a 5-gallon bucket to be placed on the ground beneath the dispensing valve. The dispensing valve shall be non-corroding type with a minimum 3" nozzle. The release valve shall be such that minimizes clogging and allows for free-flow of materials. The exterior surface of the assembly shall be painted to match the body. The latch shall be chromed zinc or stainless steel paddle or bent D-ring type.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**SCBA SPARE BOTTLE WHEELHOUSE STORAGE TUBES**

Located in the left and right rear wheelhousing shirts shall be storage compartments for spare SCBA bottles. Each compartment will have two (2) bottle tubes. There shall be six (6) tubes total. The tubes shall be constructed of minimum seamless Schedule 80 PVC. The tubes will be pitched downward to minimize sliding and provide drainage. A single stainless steel, hinged door will cover the opening and be secured with a thumb-release type latch.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**ELECTRIC CONTROLLED AWNING**

A deployable awning shall be installed on the left and right side of the body. The awning shall be extended and retracted by an electronic control box located as directed at the pre-build conference. Deployment or retraction shall be accomplished by depressing the control switch once.

A default switch will be incorporated that prevents the awning from being deployed while the vehicle is moving.

A wind velocity detector shall be installed for each awning on the roof of the body. When wind speeds exceed the recommendations of the manufacturer, the awning shall automatically retract. The color shall be Black and Gray Shadow.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**AWNING PERIMETER CURTAINS**

The perimeter of the awnings shall be provided with perimeter curtains (2) to block wind from operations personnel.

The curtains shall be manufactured by A&E to match the roll-out awning. The front curtain shall have an integral screen window section full length of the front of the awning. To block wind, a solid roll-down panel shall be provided. A set of skirt curtains shall be provided that attach to the lower body rails by snaps to diminish wind penetration from under the apparatus body. These curtains shall extend full width of the awning and cover the rear wheels. All curtains shall be capable of securing at ground level in a manner that prevents wind from lifting at the bottom. All sections shall be capable of folding and storing in the designated compartment.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**PAINT & GRAPHICS REQUIREMENTS**

**BODY PAINT**

1. The final finishing of this apparatus shall meet or exceed automotive standards, as follows:
  - a. Minimum paint thickness shall be 2.6 mils, as measured by a Labotron film thickness gauge.
  - b. Paint surface smoothness shall meet a minimum standard of 85 (on a scale of 100) as measured by Positector Model 3000 smoothness gauge, which measures the smoothness of the coat and quantifies the presence of orange peel and other irregularities in the surface.
  - c. Paint coat Distinctness-of-Image (DOI) shall meet a minimum standard of 75 (on a scale of 100) as measured by an ATI Systems, Inc. DOI meter, which measures the ability of the paint application to reflect images as a mirror does.
2. All primers and paint shall be 100% lead free.
3. The apparatus shall be fully sanded on all exterior surfaces with not less than 180 grit to assure removal of all imperfections in metal surface. All surfaces shall be de-greased before and after sanding.
4. All surfaces shall be primed with self-etching zinc-chromate based primer. No liquid etching solutions may be used in order to prevent residual solution from leeching under paint edges and causing flaking.
5. The unit will be completely sanded following first primer coat with no less than 320 grit so that the top coat of paint can be applied to a smooth surface. All surfaces shall receive a second filler coat of primer.
6. The entire apparatus shall then be painted with SIKKENS acrylic urethane.
7. After proper curing time, the body and doors shall be lightly sanded to remove all orange peel and blemishes and then machine polished. A final urethane base polish shall be applied to seal the surface and remove sand scratches and polishing swirls. The final finish shall be free of orange peel and have a mirror finish.
8. The apparatus body shall be painted separately while unmounted to insure full coverage.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

6. The outer surfaces of the front and rear wheels shall be painted job color.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**TOUCH-UP PAINT**

One (1) quart of touch-up paint shall be provided for each color applied to the apparatus.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**INTERIOR COMPARTMENT FINISH**

The interior walls and exteriors of permanently installed welded partitions shall be finish coated with Zolatone. It shall be light gray with contrasting speckles. The finish shall be resistant to scratches, fuel, organic solvents, chlorine and other common chemical spills. All detachable equipment and components shall be installed after the application of the coating material.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**UNDERCARRIAGE COATING**

After the apparatus has been painted, the entire undercarriage of the chassis frame, cab and body shall be spray coated with a heavy black paint. Coating shall not be applied to exhaust or drive-line components or frame-mounted apparatus components, except brackets or permanently attached equipment.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**CAB AND BODY ACCENT STRIPE**

A cab and body Scotchlite reflective stripe, 6" minimum in width, shall be applied extending in as straight a line as possible from the front fenders of the cab down the left and right sides of the body and across the rear of the body meeting minimum NFPA requirements.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**CHEVRON REAR BODY STRIPING**

The rear of the body shall be fully covered with a red/yellow reflective Chevron strip pattern using 6" red and 6" yellow reflective stripping at 45 degree angles. The angles shall intersect in the center of the door.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**FRONT OF CAB STRIPPING**

A minimum 4" high reflective Scotchlite stripe shall be installed across the front of the cab area covering a minimum of 40% of the frontal zone meeting minimum NFPA1901 requirements. Exact location and color will be determined at the pre-construction conference.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**REFLECTIVE LETTERING**

One Hundred (100) 2.5" high white reflective letters shall be applied. Lettering layout shall be determined at the pre-construction conference.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**REFLECTIVE LETTERING**

One Hundred (100) 6" high white reflective letters shall be applied. Lettering layout shall be determined at the pre-construction conference.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**12VDC ELECTRICAL SYSTEMS**

**MULTIPLEXED ELECTRICAL SYSTEM**

**A. GENERAL REQUIREMENTS:**

The following specifications are intended to provide minimum guidelines for the apparatus 12-volt electrical power systems. The system shall utilize current industry state-of-the-art multiplexing technology. Any deviations from these minimums must be clearly noted and defined under the "Exceptions" requirements of this bid proposal. Since the specified system utilizes open-market components and are available to all apparatus manufacturers, exceptions to the general design requirements are not acceptable. Any exceptions shall be explained by the applicable paragraph. Bids taking total exception to these minimum requirements will be subject to rejection.

***Bidder Complies: \_\_ Yes \_\_ No***

**B. WIRING REQUIREMENTS:**

3. The complete 12-volt wiring system and electrical appliances shall be to modern automotive and NFPA 1901 minimum standards throughout the installation. The system will comply with all appropriate SAE J1939 and/or J1708 recommended practices. The manufacturer shall supply an installation and components that provides for easy diagnostics and serviceability of the system.
4. All required DC power conducting wiring shall be of stranded copper wire of adequate gauge for the function served so as to ensure voltage drop of less than one volt at the appliance under full amperage load. Any wiring routed through the engine compartment, within 18 inches proximity of any exhaust components or other high heat components shall be not less than GXL. As specified, any required strobe lights shall be wired using shielded cable, as recommended by the light manufacturer.
5. The wiring shall be routed in protective nylon HTZL Type 6 300 °F rated loom in all exposed areas beneath the body and chassis. All wiring shall be specially harnessed with wire ties and, where not routed through grommets, shall be clipped to body members with vinyl coated harness clips.
6. Where wire passes through sheet metal, rubber grommets shall be used to protect both wiring and wire looms.
7. Primary wiring harnesses shall be bench assembled and connections machine welded. Where crimp connections are necessary, the connections shall be made using AMPS or equal connectors with heat-shrink insulators.

***Bidder Complies: \_\_ Yes \_\_ No***

**C. MULTIPLEXED ELECTRICAL MANAGEMENT SYSTEM:**

1. General Overview Requirements:

The apparatus shall be equipped with a fully multiplexed electrical system, no exception. It shall be a peer-to-peer network consisting of all solid state nodes. Each node shall have the ability to control its own inputs and outputs. All inputs and outputs will be configured into a scalable electrical harness utilizing Deutsche **(Cinch)** connectors. The nodes must be weatherproof and not require special mounting requirements away from wet environments.

The system, at a minimum, shall be capable of performing the following functions: load management sequencing, switch loads, receive digital and analog signals, continuously report vehicle status and the system shall be expandable.

"Real Time" data must be capable of being reported and displayed through dedicated operator interface modules.

The multiplex system shall be easily field re-programmable and re-configurable by either the factory or a factory authorized service center.

The system shall have the following minimum features:

- d. Total load management
- e. Load shedding capabilities (*will begin load shedding when voltage drops below selected level after a 2-minute period per output.*)
- f. Load sequencing capabilities
- g. Error reporting
- h. Continuous system monitoring and reporting
- i. Emergency warning light flasher
- j. Door ajar warning system

2. Message Capabilities: The multiplex system shall have the capability to display diagnostics messages such as short or open circuits. The system shall display load shedding levels and also display when a compartment door is not secure or other equipment is not properly stowed, such as light tower.
3. Real-time Diagnostics: The system shall provide instant message feedback based on an output failure (i.e: burned out bulb or electrical short). The error message shall remain displayed until such time as the system power is reset.
4. PC Diagnostics: The system shall incorporate a feature that enables a service representative to troubleshoot, repair and replace nodes in the system, should they for any reason fail. It will be run via a PC interface and will monitor all system information. All messages going across the communications bus must be seen on the screen, including analog information. Each node must be capable of being queried for its own voltage drop and capable of obtaining the status of all inputs and outputs from the diagnostics interface.
5. PC Programming: The system must be programmable at the factory in a language that can be downloaded to a remote service representative's PC or down loader tool with all OEM data, as programmed for this specific apparatus and allow field reprogramming changes as provided by the apparatus manufacturer.
6. System Troubleshooting Guide: A troubleshooting guide must be provided with each delivered apparatus, placed within the Owner's Manual. The guide shall outline, in simplistic language, how to perform system diagnostics and troubleshooting and how to reset default circuits.

**Bidder Complies: \_\_ Yes \_\_ No**

**D. EMI/RFI PROTECTION:**

The electrical system proposed will include means to control undesired electromagnetic and radio frequency emissions. State of the art electrical system design and components will be used to insure radiated and conducted EMI (electromagnetic interference) and RFI (radio frequency interference) emissions are suppressed at their source.

EMI/RFI susceptibility will be controlled by applying immune circuit designs, shielding, twisted pair wiring and filtering. The electrical system will be designed to full compatibility with low-level control signals and high-powered two-way radio communications systems. Harness and cable routing will be given careful attention to minimize the

potential for conducting and radiated EMI/RFI susceptibility.

**Bidder Complies: \_\_ Yes \_\_ No**

**E. PERFORMANCE MINIMUMS:**

1. Storage Temperature: The output nodes shall suffer no degradation of performance requirements within the storage temperature limits of -40 °C (-40 °F) to +80 °C (176 °F) unless otherwise specified.
2. Moisture Requirements: All boards will be conformal coated for moisture and humidity protection. Enclosures a pin connections will have a rating of IP67.
3. CAN Communications: The output nodes shall communicate through a multiplex SAE J1939 CAN BUS standard communication structure with 29 bit ID. The bit rate shall be not less than 250 kbit/sec.

**Bidder Complies: \_\_ Yes \_\_ No**

**F. CONSOLE CONTROLS & FUNCTIONS:**

1. A switch panel controlling electrical appliances and equipment installed on the chassis and body shall be centrally located in the cab within easy access to the driver. It shall be capable of installing in any area of the cab that is convenient to the driver and/or officer positions.
2. The control panel shall have backlit switches with daylight readable status indicators and hidden indicators viewable only in an "ON" situation. The panel shall have an integral alarm to draw attention to fault or warning conditions. The switches shall have both audible and tactile operator feedback, 360 degree perimeter switching, and dimmable backlighting.
3. Minimum Switch Layout:  
 LEFT SIDE SWITCHES:  
 a.  
 b.  
 c.  
 d.  
 RIGHT SIDE SWITCHES:  
 a.  
 b.  
 c.  
 d.

**Bidder Complies: \_\_ Yes \_\_ No**

**G. MINIMUM OPERATIONAL SCENARIO TO BE CONTROLLED BY THE MULTIPLEX SYSTEM:**

1. Warning Light Activation: When the Emergency Response switch is depressed, the system will determine what needs to happen next by what the engine and transmission is doing. Once the transmission is engaged, the Clear-the-Right-of-Way mode is engaged and all emergency lights are activated.
2. Compartment Lights Activation: The compartment lights will be activated anytime the left and right door lock handle is opened or rear door is opened and when the apparatus is in the neutral or parked position.
3. Ground Lights Activation: Ground lights will be activated by respective upper body scene light switches or whenever the apparatus is placed in the reverse mode of operation to further light the backup zone or when the respective left or right turn signal is activated.

**Bidder Complies: \_\_ Yes \_\_ No**

**H. ON-BOARD ELECTRICAL SYSTEM DIAGNOSTICS:**

Advanced on-board diagnostic messages will be provided to support rapid trouble shooting of the electrical power and signal system. The diagnostic messages will be displayed on a pc external tool. The message center will include the following minimum diagnostic information:

1. Multiple diagnostics on display with text description. Circuit alerts will scroll across the top of the screen in a text message.
2. Simplified warning indicators (from operator’s perspective).
3. Automatic display of further information in order of problem severity.

In addition to a visual message center, the system will activate status indicators and audible alarms designed to provide warning of problems within any circuit or signal command module. The system will include, at a minimum, the following attributes and improvements over analog type systems:

- a. On-board self-diagnostic messages and status indicators.
- b. Visual confirmation of communication of each Vehicle Power Module and Display Module.
- c. Automatic self-test on startup with provision for manual diagnostic checks.
- d. Minimize use of control relays.
- e. Provide control for NFPA 1901 mandated safety interlocks and indicators.
- f. Utilize system integration to eliminate redundant wiring and components.
- g. Improve control system reliability by reducing relay and connector contacts.
- h. Advanced electrical system load management and sequencing system.
- i. Customized software
- j. Field re-programmable to accommodate changes to the vehicle operating parameters.
- k. Fully documented hardware.

**Bidder Complies: \_\_ Yes \_\_ No**

**I. SERVICE AND MAINTENANCE DIAGNOSTICS:**

Advanced vehicle service and maintenance will be assisted with an integral software program. The software will provide troubleshooting tools to service technicians via a visual control screen. The service and maintenance program will include the following minimum features:

1. Easy to understand diagnostic procedures.
2. System simulation and pinging of nodes for status verification.

**Bidder Complies: \_\_ Yes \_\_ No**

**J. BATTERY SYSTEM:**

It shall be activated anytime the battery switch is in the "ON" position to alert the operator of the status of the battery switch.

1. The battery enclosure and system shall be located conveniently to provide for easy service and replacement.

2. The original equipment chassis manufacturer shall install a battery cutoff switch that disconnects all battery power to the apparatus, except electronic memory circuits. If the chassis manufacturer does not provide a factory installed battery cutoff switch, the apparatus body manufacturer shall install an extra-heavy-duty on/off battery solenoid switch, rated at a minimum 600 amps continuous, 900 amps momentary rating. The solenoid shall be activated by a paddle type switch installed in cab, accessible from the driver's door.
3. The switch shall serve as a master disconnect for the battery system, disconnecting the batteries from the chassis and apparatus appliances. Electronic memory circuits relating to the electronically controlled engine and transmission and other memory sensitive components shall have 12VDC power supplied through a separate bypass circuit that is not disconnected by the battery switch.
4. A single green LED indicator located in on the switch panel shall indicate the status of the batteries.
5. See Chassis specifications for battery requirements.

***Bidder Complies: \_\_ Yes \_\_ No***

**K. ENGINE AUTOMATIC HIGH IDLE DEVICE:**

1. The engine shall be equipped with an electronically controlled device that automatically increases the engine RPM level on demand.
2. The system's primary activation shall be by the automatic mode, programmed through the multiplex electrical load management system to activate whenever the system detects voltage output of less than 12.7 volts for more than 30 seconds (or as established by the apparatus manufacturer). It shall be capable of manual deactivation or engagement of the transmission or by depressing the foot brake. The system shall not activate unless transmission is in the neutral position.

***Bidder Complies: \_\_ Yes \_\_ No***

**12VDC VOLTAGE OUTPUT TESTING & DOCUMENTATION**

The apparatus low voltage system shall be tested and certified by the manufacturer prior to final delivery. A copy of the testing and successful completion will be included in the Owners Manual.

1. Reserve Capacity Test:

The unit shall be run until all engine and engine compartment temperatures are stabilized and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for ten (10) minutes. All electrical loads shall be shutoff after ten (10) minutes and the battery system shall then be capable of restarting the engine.

2. Alternator Performance Test At Idle:

Minimum continuous electrical load shall be activated while the apparatus is at idle speed. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure and corrective actions shall be employed.

3. Alternator Performance Test At Full Load:

The total continuous electrical load shall be activated with the engine running up to the manufacturer's governed

speed. The test duration shall be a minimum of two (2) hours. Activation of the load management system shall be permitted during the test. If however, an alarm sounded by excessive battery discharge, as detected by the system, or a voltage of less than 11.7 volts DC for a 12 volt nominal system for more than 120 seconds, it shall be considered a test failure and corrective actions employed.

4. Low Voltage Alarm Test:

The engine shall be shut off and the total continuous electrical load shall be activated and continue to be applied until the excessive battery discharge alarm is activated. The battery voltage measured at the battery terminals with the load still applied must be above 11.7 volts or the test shall be considered a failure and corrective actions employed.

5. Documentation:

At the time of final delivery, an Amp Draw Report complying with NFPA 1901, Section 13-15 will be completed and inserted into the Owners Manual. It will provide the following information:

- a. Documentation of the electrical system performance test.
- b. Written load analysis with the following information:
  - Nameplate rating of the alternator
  - The alternator rating under the conditions specified in NFPA 1901, section 13.3.2.
  - The minimum continuous load of each component that is specified per NFPA 1901, section 13.3.2.
  - Additional loads that, when added to the minimum continuous load, determine the total connected load.
  - Each individual intermittent load

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**SAFETY INTERLOCK SYSTEM**

The vehicle shall incorporate a safety interlock system that prevents it from being moved when any component is extended that presents a safety hazard should the vehicle be moved when those components are extended. The system shall: (1) disable the transmission once one or more of the applicable components is extended (*prevents transmission from engaging forward or reverse mode*); and (2) sound an alarm and activate a red warning light if the transmission is moved out of the neutral (park) position.

Extended components that will activate the system are:

- a.
- b.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**DOT CLEARANCE & LED MARKER LIGHTS**

The apparatus body shall be equipped with upper side, front and rear LED marker lights. The side and rear of the body will be provided with reflectors. All lights and reflectors shall conform to D.O.T. and FMVSS minimums for such vehicles of this type. All marker lights shall be incorporated into the headlight circuit of the cab/chassis.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**LED TAIL LIGHTS**

The rear tail light assemblies shall have three (3) individual minimum 6" oval LED lights for the roadside (left) and curbside (right) of the rear body. Each of the six assemblies shall have not less than 12 light emitting diodes. The upper lights shall be amber turn; center red stop/tail lights; and lower clear back-up lights. The left and right light cluster assemblies shall be recessed into the body panel. Each light shall have a chrome dress ring. Connections for each light shall be made using AMPS watertight plug assemblies, no exception. Each of the six lights shall carry a 5-year warranty, valid should only a single LED element malfunction, not a given percentage of elements.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**UPPER BODY AUXILIARY LED STOP/TURN & EMERGENCY WARNING LIGHTS**

Two (2) red LED auxiliary stop lights shall be integrated into the upper traffic direction light bar, one (1) roadside (left) and curbside (right) outer ends. They shall be connected to the same circuit as the primary lower stop lights.

In addition to the standard brake light mode, these lights shall also function as auxiliary turn signals and emergency warning lights. They shall automatically activate whenever the vehicle is placed in the emergency response mode and flash at a rate not less than 160 fpm to differentiate the pattern from other functions. The emergency warning mode shall be automatically disabled whenever either the turn signal (left or right) or the brakes are applied. The flash pattern in the turn signal mode shall be a approximately 60 fpm for immediate recognition by anyone following the apparatus that the mode has changed.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**MID-SHIP AUXILIARY LED TURN SIGNALS**

There shall be an amber auxiliary mid-ship LED turn signal mounted in the lower body crash rail, forward of the rear wheels. These lights shall flash in tandem with the front and rear turn signals.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**TRAFFIC ADVISOR**

An all-LED traffic directing light bar shall be installed on the upper rear body, centered. The light bar shall be a minimum of 42" long. The LED lights at each end of the light bar shall be red and utilized as upper auxiliary brake lights. The light bar shall be configured with eight (8) sealed LED modules (six (6) amber and two (2) red), that provide 168 diodes of lighting capability. The light bar shall direct traffic by sequencing all amber lights in one of the following four patterns:

1. From right to left; or
2. From left to right; or
3. Center outwards left and right simultaneously; or
4. In a wig-way pattern
5. Automatically sequence fully left or fully right whenever the respective turn signal is activated.

Manual controlled functions shall be activated by a separate screen on the Vista LCD control panel whenever the "Traffic Advisor" switch button is depressed.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**UPPER SIDE BODY 12VDC SCENE LIGHTS**

Two (2) each Whelen 810CAOZR surface mount 8" X 10" halogen scene lights shall be installed on the upper left and right sides of the of the body, one forward and one aft (total of 4). The scene lights shall have combination 8 to 32

degree internal optic lens. Each left and right pair shall be activated by individual switches on the cab control console.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**UPPER REAR BODY 12VDC SCENE LIGHTS**

Two (2) each Whelen 810CAOZR surface mount 8" X 10" halogen scene lights shall be installed on the upper rear body, one left and one right. The scene lights shall have combination 8 to 32 degree internal optic lens. They shall be activated by a separate switch on the cab control console.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**LED COMPARTMENT STRIP LIGHTS**

There shall be a high intensity LED compartment lighting strip in each compartment. Each of the lighting strips shall be recessed into the forward and aft compartment wall of each side compartment and the roadside and curbside (right) wall of the rear compartment. Each light assembly shall be angled inward to project the concentration of the light output into the compartment. In addition, the installation shall be as such not to impede the sliding of equipment in or out of the compartments. A clear polycarbonate lens shall cover the entire length of the module and shall have a rounded exterior surface. Each LED compartment strip shall consist of individual field replaceable modules. The housing assembly must be water-resistant. Each of the LED compartment light strips shall carry a 5-year warranty, valid should only a single LED element malfunction, not a given percentage of elements. The installation shall exceed the NFPA standard of one-foot candle average per four cubic feet of area.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**LED ROOF COMPARTMENT STRIP LIGHT**

There shall be a high intensity LED roof compartment lighting strip in each roof compartment lid (5 total). Each of the lighting strips shall be recessed into the inner support channel for each roof compartment lid. Each light assembly shall be angled downward to project the concentration of the light output into the roof compartment. A clear polycarbonate lens shall cover the entire length of the each module and shall have a rounded exterior surface. Each LED compartment strip shall consist of individual field replaceable modules. The housing assembly must be water-resistant. Each of the LED compartment light strips shall carry a 5-year warranty, valid should only a single LED element malfunction, not a given percentage of elements. The installation shall exceed the NFPA standard of one-foot candle average per four cubic feet of area.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**ROOF WORK ZONE LIGHTS**

Along both sides of the roof work zone shall be four (4) hooded work zone lights that illuminate the walking area of the roof. They shall be activated with any scene light switch, but only when the vehicle is in neutral or "park" position.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**COMPARTMENT OPEN WARNING & AUTOMATIC LIGHT ACTIVATION**

All compartment lights shall be automatically activated when the left or right lock handle is released and any other door not associated with the side compartment locking system is opened. The console switch shall be capable of over-riding the automatic system.

In the event a door is not properly closed and/or secured, a scrolling text message will be displayed on the bottom of the VISTA display screen as follows:

- a. Cab Doors Ajar
- b. Roadside Body Door Ajar
- c. Curbside Body Door Ajar
- d. Rear Body Door Ajar
- e. Roof Compartment Lids Ajar (if applicable)

If more than one location is not secured, all doors affected in the above list will scroll across the bottom of the screen. As each respective door is secured, the text will disappear from the scrolling alert.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

In addition to the text alert, there shall be a compartment open warning light installed within prominent viewing of the driver. It shall be a minimum 2-1/2" x 1-1/2" Grote or equal. The light will be activated only when the doors are not secured and the transmission is placed into a forward or reverse mode of operation. It shall also flash if the parking brake is not set. A metallic plate shall be placed in close proximity of the light that reads - "Do Not Move Apparatus When Light Is Flashing."

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**GROUND LIGHTS**

Minimum 4" diameter shock mounted ground lights shall be installed. They shall be mounted in the following locations:

- a. two (2) each forward of left & right rear wheels
- b. one (1) each aft of left & right rear wheels
- c. one (1) under rear step bumper

They shall be activated by the respective left or right side door lock handles. The rear and front (if applicable) shall be activated by either the left or right door lock handles.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**HAND-HELD SPOTLIGHT**

A Nighthawk Patrol Light, model 2000-101, hand-held spotlight rated at 100,000 cp shall be installed in the cab of the apparatus. It shall have a 50 watt halogen lamp mounted in a one piece UV treated black neoprene housing. A momentary spring loaded rocker switch will be provided on the back of the light to prevent accidentally leaving the light on. The cord shall be a 18/2 SVO coil type, 2' retracted and 12' extended. A D-ring hanger will be provided for hanging within the cab.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**KOEHLER-BRIGHT STAR LIGHT HAWK PORTABLE HAND LIGHTS**

Four (4) Koehler-Bright Star Lighthawk model #07830 orange handlight will be installed in the location determined at the pre-construction conference. The handlight shall be powered by a 4-cell lithium ion battery. They shall be equipped with a battery status indicator and four (4) pulsing red and white LED taillights. The light(s) shall be capable of 120,000 candlepower of light output. The light(s) shall feature rugged nylon construction, fixed or articulating head, waterproof, and non-slip rubber bottom and handle.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**NFPA OPTICAL WARNING DEVICES**

The apparatus shall comply with the requirements of latest edition of NFPA 1901, Chapter 11-8 "Optical Warning Devices". The flashing pattern and sequencing shall be fully compliant with this standard. All lights shall function in the "Calling for Right of Way" mode. Designated upper Zone A lights and auxiliary lighting specified herein shall be disabled in the "Blocking Right of Way" mode. Under no circumstances shall any of the "Blocking Right of Way" lights be disabled by the electrical system load manager. "Blocking mode shall be automatically activated whenever the transmission is placed in the neutral or park position. The following lights shall be provided:

**HEADLIGHT WIG-WAG FLASHERS**

The headlights shall be provided with an alternating or pulsating flash mode referenced as a wig-wag mode. It sequence shall be automatically inoperable when the headlights are in the high beam mode. Since the lights exceed the minimum NFPA 1901 requirements, the lights shall be managed by the load manager within the multiplexing system and controlled through the "Blocking Right-of-Way" circuit.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**LOWER ZONE B & D SIDE BODY WARNING LIGHTS**

A Whelen 60R02FRR red Super-LED warning light shall be mounted in the streetside (left) and curbside (right) rear lower crash rail (total of 2). The lens shall be red.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**LOWER ZONE C REAR BODY WARNING LIGHTS**

A Whelen 60R02FRR red linear Super-LED warning light with 6EFLANGE chrome flange shall be mounted on the lower rear body panel, one (1) roadside (left) and curbside (right). The lens shall be red.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**UPPER ZONE B & D SIDE BODY WARNING LIGHTS**

A Whelen 90RR5FRR red linear Super-LED warning light shall be mounted on the roadside (left) and curbside (right) of the upper apparatus body, one (1) fore and aft of the upper roof rail (total of 4). These lights fulfill the requirements for midship and rear warning lights in Upper Zone B and D.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**UPPER ZONE C REAR BODY WARNING LIGHTS**

Two (2) each Whelen 90RR5FRR red linear Super-LED warning lights with 90FLANGC chrome flange shall be mounted on the upper rear body panel, one (1) roadside (left) and curbside (right).

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**INTERCOM SYSTEM**

One (1) Sigtronics model US-45T ultrasound emergency vehicle intercom system, four (4)-place with three Motorola XTL 5000 mobile radios with the O5 head shall be installed.

All positions will have voice activated intercom. In addition, the Driver and Officer will have push-to-talk radio transmit abilities, using a Radio1/Radio 2/Radio 3 toggle switch. All radios can be heard when placed in the "All" position.

The radio, phone and intercom shall be installed by the manufacturer prior to final delivery.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**ANTENNA COAXIAL PRE-WIRING**

Four (4) two-way radio coaxial cables shall be routed from the cab roof to the cab interior . The termination point at the radio site shall have a PL259 connector soldered to the coaxial. The termination point at the antenna site shall be supplied with 1-1/8" brass base for a Motorola antenna.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**CAB MOUNTED 12VDC TERMINAL STRIP & FUSE BLOCK**

Two (2) 6-circuit terminal strip and fuse blocks will be installed in the cab. They will be powered from the chassis battery system using minimum 8-gauge wiring for subsequent connection of radios and other auxiliary equipment. The strip shall have a total of six (6) terminal points and fuse blocks that will accept either ATC fast acting blade type fuses or plug-in style circuit breakers. Each circuit will be capable of handling up to 30-amperes. The outlets and fuse blocks will be mounted behind a clear insulating cover with the fuse blocks accessible from the face of the cover.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**BODY MOUNTED 12VDC TERMINAL STRIP & FUSE BLOCK**

A 6-circuit terminal strip and fuse block will be installed in the rear body. It will be powered from the chassis battery system using minimum 8-gauge wiring for subsequent connection of radios and other auxiliary equipment. The strip shall have a total of six (6) terminal points and fuse blocks that will accept either ATC fast acting blade type fuses or plug-in style circuit breakers. Each circuit will be capable of handling up to 30-amperes. The outlets and fuse blocks will be mounted behind a clear insulating cover with the fuse blocks accessible from the face of the cover.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**CAB 12VDC POWER POINT RECEPTACLES**

Located in the cab command desk area shall be four (4) recessed power point receptacles for powering a cell phone charger and other 12VDC equipment. The main power circuit shall be protected by a 15 amp circuit breaker. An attached cover shall protect the opening of the receptacle when not in use.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**REAR VISION COLOR CAMERA SYSTEM**

A color camera will be installed on the upper rear body. The camera shall provide high-resolution Color and be mounted in an anti-corrosion aluminum alloy housing. Pixel resolution of the camera shall be not less than 510(H) x 492(V). It shall be IP68 rated for water and dust protection.

The camera shall feature a photosensor and (16) infrared LEDs for low-light/no-light conditions and shall have a minimum 110-degree viewing angle.

The image shall be displayed on the LCD Vista color screen in the console. It will be automatically displayed whenever

the vehicle is in the reverse mode of operation or manually activated by a separate activation switch location on the Vista control panel.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**120/240VAC ELECTRICAL SYSTEM REQUIREMENTS**

1. **General Requirements:** The complete wiring and electrical installation shall conform to the current National Electrical Code (NECA) applicable to mobile applications, except where superseded by NFPA. #1901 Chapter 19 standards. All electrical equipment installed shall be suitable for intended use and type locations (wet, dry, or underbody and chassis).

The system shall be installed or supervised by a licensed electrical technician(s) to assure the required level of safety and protection to the fire apparatus operators.

The wiring, electrical fixtures and components shall be to the highest industry quality standards available on the open market. The equipment shall be the type as designed for mobile type installations subject to vibration, moisture, and severe continuous usage. For this reason, use of any solid conductor (non-stranded) wiring, such as Romex, will not be accepted.

The following electrical components and wire shall be the minimum acceptable standard for this type of apparatus:

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

2. **Wiring:** All AC electrical primary wiring rated at 20 amps and higher shall be fine stranded copper type THHN. THHN cable is much more flexible for mobile routing applications and is required in lieu of industry standard THHN, which is not as flexible. The wire shall be sized to load and circuit breaker rating.

Electrical cables or conduit shall not be attached to chassis suspension components, water, fuel or brake lines, 12VDC wiring or harnesses and not be within 12 inches of any exhaust system component or 6 inches of fuel lines.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

3. **Circuit Breaker Box:** The circuit breaker box shall be equal in quality to Square D with a hinged cover or door. All circuit breakers shall be switch rated and sized to load demand.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

4. **Receptacle and Inlet Devices:** Any exterior outlets specified herein shall be mounted in cast aluminum or zinc die cast boxes with weather resistant snap open covers. An isolation gasket shall be used whenever any portion of the outlet or covers comes into contact with a body panel.

Where subjected to wet locations, the receptacle outlet and inlet devices, including those on hardwired remote power distribution boxes, shall be of grounding type provided with a wet location cover and installed in accordance with Section 210-7 Receptacles and Cord Connections of the NEC.

All receptacles located in wet locations shall be installed in a plane from vertical not less than 24 inches from the ground.

All receptacles located in a dry location shall be of the grounding type.

All receptacles shall be marked with the type of line voltage (120 volts or 240 volts) and the current rating in amps.

If the receptacles are direct current, or other than single phase, they shall be so marked.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

5. Labeling: All circuit breakers, outlets, fixtures, or appliances shall be properly labeled identifying voltage and amperage rating. The labels shall display a minimum 14 pt. letters or numerals and be of a contrasting color to the apparatus background surface to which they are affixed. If imprinted labels are utilized, they shall have a clear Mylar type surface coating that prevents smearing or damage by weather or petro-chemicals.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

6. Load Balance: To provide proper loading and efficient generator operation, the 120 volt wiring shall be split to permit a balanced load condition.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

7. Grounding: Grounding will be in accordance with Section 250-6 "Portable and Vehicle Mounted Generators" of the NEC. Ungrounded system will not be used. Only stranded or braided conductors will be used for grounding and bonding.

An equipment grounding means will be provided in accordance with Section 250-91 (Grounding Conductor Material) of the NEC.

The grounded current carrying conductor (neutral) will be insulated from the equipment grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor will be colored white or gray in accordance with Section 200-6 (Means of Identifying Grounding Conductors) of NEC.

In addition to the bonding required for the low voltage return current, each body and driving or crew compartment enclosure will be bonded to the vehicle frame by a copper conductor. This conductor will have a minimum amperage rating of 115 percent of the nameplate current rating of the power source specification label as defined in Section 310-15 (amp capacities) of the NEC. A single conductor, properly sized to meet the low voltage and line voltage requirements will be permitted to be used.

All power source system mechanical and electrical components will be sized to support the continuous duty nameplate rating of the power source.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

8. Over-current Protection: The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device will not exceed 144 inches in length, unless used on trailer applications.

For fixed power supplies, all conductors in the power supply assembly will be type THNN, THW, or use stranded conductors enclosed in nonmetallic X-Flex, LiquidTite or equal flexible conduit rated for a minimum of 194 degrees F.

For portable power supplies, conductors located between the power source and the line side of the main, over-current protection will be Type SOW or Type SEO with suffix WA flexible cord rated for 600-volts at 194 degrees F.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

9. Wiring Methods: Fixed wiring system will be limited to the following:
- a. Metallic or nonmetallic X-flex, LiquidTite or equal flexible conduit rated at not less than 194 degrees F.
  - b. Type SOW or Type SEO cord with a WA suffix, rated at 600-volts at not less than 194 degrees F.
  - c. Electrical cord or conduit will not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump plumbing, hydraulic lines, exhaust system components, or low voltage wiring. In addition, the wiring will be run as follows:
  - d. Separated by a minimum of twelve (12) inches, or properly shielded from exhaust piping.
  - e. Separated from fuel lines by a minimum of six (6) inches.
  - f. Electrical cord or conduit will be supported within six (6) inches of any junction box and at a minimum of every 24-inches of continuous run. Supports will be made of nonmetallic materials or corrosion protected metal. All supports will be of a design that does not cut or abrade the conduit or cable and will be mechanically fastened to the vehicle.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

10. Wet Locations: All wet location receptacle outlets and inlet devices, including those on hardwired remote power distribution boxes, will be of the grounding type provided with a wet location cover and installed in accordance with Section 210-7 "Receptacles and Cord Connections" of the NEC.

All receptacles located in a wet location will be not less than 24 inches from the ground. Receptacles on off-road vehicles will be a minimum of 30 inches from the ground.

The face of any wet location receptacle will be installed in a plane from vertical to not more than 45 degrees off vertical. No receptacle will be installed in a face up position.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

11. Dry Locations: All receptacles located in a dry location will be of the grounding type. Receptacles will be not less than 12 inches above the interior floor height.

All receptacles will be marked with the type of line voltage (120-volts or 240-volts) and the current rating in amps. If the receptacles are direct current, or other than single-phase, they will be so marked.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

12. Listing: All receptacles and electrical inlet devices will be listed to UL 498, Standard for Safety Attachment Plugs and Receptacles, or other appropriate performance standards. Receptacles used for direct current voltages will be rated for the appropriate service.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

13. Operational Test to NFPA 1901, section 23.16: The following test will be performed by the apparatus manufacturer prior to final delivery to test and certify that the power source and any devices that are attached to the line voltage electrical system are properly connected and in working order.

- a. The prime mover shall be started from a cold start operation and the line voltage electrical system loaded to 100

percent of apparatus load or nameplate rating of power source whichever being the lesser. The following information shall be recorded:

The cranking time until the prime mover starts and runs, if applicable.

- The voltage, frequency, and amperes at continuous full rated load.
- The prime mover oil pressure, water temperature, transmission temperature, hydraulic temperature, and the battery charge rate, as applicable.
- The ambient temperature and altitude.

- b. The power source shall be operated at 100 percent of apparatus load or of its nameplate voltage rating (whichever is the lesser) for a minimum of two (2) hours in accordance with NFPA 1901 and U.L. (See U.L. testing requirements).
- c. When the line voltage power is derived from the vehicles low voltage system, the minimum continuous electrical load as defined in Chapter 9 shall be applied to the low voltage electrical system during the operational test. Any termination of line voltage power by the low voltage load management system shall be noted and the duration of the periods of line voltage power source shutdown shall be recorded.
- d. The results of the U.L. test listed in this section shall be supplied to the purchaser at the time of delivery (*portable generators are excluded*).

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

- 14. Wiring Schematics: An electrical wiring schematic diagram generated by a CAD program shall be provided with the completed apparatus. It shall be an as built schematic listing the agency name and the serial number of the body. An indicative schematic shall be enclosed with the bid response.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**GENERATOR - POWER TAKE-OFF TYPE**

- 1. General Requirements : The apparatus shall be equipped with a complete electrical power plant system provided by a chassis engine and transmission driven power takeoff type generator. The complete wiring and generator installation shall conform to current National Electrical Code standards, as prescribed by the National Fire Protection Association (NFPA).

The system shall be installed by qualified electrical technicians to assure the required level of safety and protection to apparatus operators.

The installation shall be designed for continuous operation without overheating and undue stress on components.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

- 2. Generator Minimum Specifications:

Onan fire and emergency service series with rating of not less than 25KW (25,000 watts) at 1800 RPM

Voltage shall be both 240VAC and 120VAC single phase.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

- 3. Generator Mounting : The generator shall be supported on the reinforced floor designed to withstand the weight

and torque load of the generator under worse-case scenarios. The generator shall be installed within the forward compartment, at floor level in a manner that provides simple access for service and/or removal.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

4. Power Takeoff : A Chelsea transmission power takeoff shall be mounted directly to the Allison automatic transmission PTO output. The selected ratio shall permit the generator to operate under full load at an engine speed of approximately 1400 rpm. Over-speed protection shall be incorporated into the electronic engine setup that will disengage the PTO at 1600 rpm's and automatically reengage once the rpm's drops back to 900.

The drive-line shall be minimum 2" hollow tube type with heavy duty Spicer 1310 Series (no exception) universal joints rated for any drive-line angles required for installation. The shafting shall be splined type to allow movement between the chassis components and the generator. The drive shaft shall be precision welded and balanced prior to installation to insure smooth, vibration free performance at maximum RPM levels.

The engagement of the power takeoff shall be in the chassis cab with a switch on the Vista display panel with a scrolling "engage" message across the lower section of the screen.

The power supply to the PTO engagement control shall be wired to a neutral safety position transmission switch to prevent engagement unless the vehicle is in the neutral position.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

5. PTO Engaged Warning Message: A text message shall scroll across the bottom of the Vista display screen that reads "PTO Engaged" anytime the PTO is activated.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

6. Electronic Engine Governor System: The OEM engine electronic governor shall be programmed to automatically control the engine speed through a magnetic pickup so that the generator input speed is a constant 1800 rpm regardless of electrical load demand.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

7. Instruments and Controls: The Generator system shall be monitored by an FRC FROG-D Generator Meters Panel. The meters shall include a voltmeter, two ammeters, Hourmeter and frequency meter. The meters shall be mounted in the FROG-D enclosure and mounted in a protected location. The FROG-D panel shall include a full load circuit breaker sized for the generator installed.

This panel shall be mounted next to or integral with the circuit breaker panel. This unit shall be a single phase, three wire, 120/240VAC series

Circuit breakers shall assure overload protection and also shall be used as disconnect switches. The breakers shall be sized to generator output.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

8. Generator Housing/Mounting: To protect the generator from damage subjected by corrosive elements (i.e: road salts), water and road oils, the generator shall be installed inside the forward compartment, as outlined in the Compartment Layout Schedule, and be covered by a housing panel constructed of 3/16" aluminum. The face of the panel shall have a DA swirled finish.

The compartment shall be ventilated and have drain holes in the corners to prevent accumulation of water spray. To

prevent overheating, the compartment shall have a 120VAC "pancake" type fan installed that is engaged anytime the generator is functioning. The fan shall draw air in from the bottom of the compartment and discharge out the lower front side.

The generator housing shall also provide flush mounting of the circuit breaker panel, specified electrical outlets, meters and controls. All these items shall be surface mounted on the face of the panel, which shall be recessed back into the compartment a minimum of 8" to provide a step surface for reaching equipment located in the upper reaches of the compartment. Additionally, the top of the housing shall service as a shelf for storing or mounting equipment, but shall be removable for service access to the generator.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**ALTERNATIVE GENERATOR MOUNTING**

Should the bidder determine to offer an alternative means of mounting the generator the proposal specifications and the proposal drawings must clearly delineate how the manufacturer intends to protect the generator components from corrosive road spray. As an alternative, the bidder must provide a warranty against corrosive damage to these components for not less than 5 years.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**LABELING OF EQUIPMENT**

All circuit breakers will be labeled and will be provided for all outlets indicating output amperage, voltage, and phase.

To properly monitor the generator performance and load demands during operation, the generator will be equipped with a full instrument and control package. These monitoring devices will be mounted in the specified location next to the load center. The following FRC FROG-D Generator Meters Panel and instruments will include:

- a. digital voltmeter
- b. two digital ammeters
- c. one (1) digital frequency meter
- d. one (1) digital hourmeter
- e. one (1) PTO engagement indicator light

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**UL CERTIFIED DIELECTRIC VOLTAGE WITHSTAND TEST**

The generator and all related electrical systems shall be independently tested and certified in writing by Underwriters Laboratories (UL). The testing shall conform to NFPA 1901, Chapter 23.16.2 requirements.

The wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900 volts for 1 minute.

The dielectric tester shall have a 500 volt-amperes (VA) or larger transformer, with a sinusoidal output voltage that can be verified.

The testing shall be performed after all body work has been completed.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

The test shall be conducted as follows:

- a. Isolate the power source from the panel board and disconnect any solid state low voltage components.
- b. Connect one lead of the dielectric tester to all the hot and neutral busses tied together.
- c. Connect the other lead to the fire apparatus frame or body.
- d. Close any switches and circuit breakers in the circuits.
- e. Apply the dielectric voltage for 1 minute in accordance with the testing equipment manufacturer's instructions.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

The electrical polarity of all permanently wired equipment, cord reels, and receptacles (as applicable) shall be tested to verify that wiring connections have been properly made.

Electrical light towers, floodlights, motors, fixed appliances, and portable generators (as applicable) shall be operated at their full rating or capacity for 30 minutes to ensure proper operation.

Testing procedures shall be conducted as outlined in NFPA 1901, Chapter 23.16.5.3. The results of each test shall be recorded on an appropriate form and provided with the delivery documentation.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**2000 WATT INVERTER**

A Vanner model IT12-2400 inverter shall be mounted in the apparatus, as described in the compartment layout schedule. It shall include an on-off switch located in the cab vista contro; panel. A low level demand switch shall be provided that activates the inverter only when current is required. An automatic transfer switch shall be provided within the dedicated circuits that automatically transfers power from the AC power source (shoreline and generator) to the DC power source (batteries and alternator) for uninterrupted 120V power to dedicated circuits. The inverter shall produce TruSine(R) sine wave output.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**BREAKER BOX & LOAD CENTER**

The line voltage electrical system will comply with applicable NFPA 1901 standards and with applicable sections of the National Electrical Code #70 standards. Line voltage carrying equipment downstream of the power source will be "listed" (where applicable) in accordance with manufacturer’s instructions.

A minimum 24-place Square-D or equal quality manual reset over current device (breakers) will be installed to protect the line voltage electrical system components. A 100-amp main over current protection device will be provided that is either incorporated in the power source or is connected to the power source by a power supply assembly. The size of the main over current protection device will not exceed 125 percent of the nameplate amperage rating on the power source specification label or the rating of the next larger available size over current protection device where so recommended by the power source manufacturer.

Over current protection devices will be provided for each individual circuit and will be sized at not less than 15 amps in accordance with NEC. Each over current protection device will be marked to identify the function of the circuit it protects. The circuit breaker panel and instruments will be located in a plane facing the operator so that all circuit breakers are readily visible under normal operating conditions. The panel will be readily visible and located so that there is unimpeded access to the panel board controls.

It will be supplied with one (1) main breaker rated for the maximum amperage output of the generator.

The breaker panel will be recess mounted in the face of the generator housing panel with a protective, hinged access door. The panel will be recessed a minimum of 8-inches back from the edge of the door opening.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**AUTOMATIC TRANSFER RELAY**

There shall be an automatic transfer relay incorporated in the 120/240VAC electrical system that automatically transfers power from the shorepower input to the power distribution panel that prevents backfeed into the generator whenever the shorepower is plugged into an outside power source. The circuit shall be rated at 30 amps and power the circuits for the interior command and interior plug strips.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**EXTERIOR DUPLEX OUTLET**

Two (2) 20 amp (5-20), 120VAC duplex outlets mounted in a weatherproof exterior housing with spring-loaded covers and wired with 12/3 THNN wire shall be installed at the locations determined at the pre-construction conference They shall be protected with a GFI circuit breaker. A metallic tag with raised letters reading 120VAC shall be installed above the outlet.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**120VAC TWIST-LOCK OUTLETS**

Two (2) 20-amp, 120VAC twist-lock outlets (NEMA L5-20R), wired with 12/3 THNN wire shall be installed in the rear body. Each outlet shall be provided with weatherproof cover. A metallic tag with raised letters reading 120VAC shall be installed above the outlet.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**OUTLETS, 120VAC PLUG MOULDING STRIP**

Six (6) 120VAC, 15 amp, GFCI protected plug molding strip outlets with plugs spaced approximately 6" apart shall be installed as determined at the pre-construction conference. There shall be two (2) in the command center area and two (2) in each instrument cabinet. The exact locations shall be determined at the pre-construction conference.

The plug molding strip shall have an anodized aluminum exterior finish.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**240 VAC TWIST-LOCK OUTLET**

Two (2)30 amp, 240VAC twist-lock outlet (NEMA L6-30R) with stainless steel wall plate shall be installed in the generator panel. A metallic tag with raised letters shall be installed above the outlet.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**ELECTRIC REWIND CORD REEL WITH GROUND CONTINUITY MONITOR**

Two (2)Hannay model ECR1618-17-18 electric rewind cord reels shall be installed, as described in the compartment layout schedule. The cord reel shall be designed to accommodate not less than 200 feet of 10/4 cable.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

1. The cord reel shall have the following features:
  - a. Side disc shall have rolled edges and concentric reinforcing ribs.
  - b. Bearing shall support the axle at each end of the reel to provide smooth rotation and eliminate weight on the swivel joint.
  - c. The reel axle shall be full length of the reel.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

2. The reel shall be equipped with a 12-volt DC electric rewind motor with a SDLM-40 circuit breaker and operated by a Hannay 90030 sealed push-button momentary switch control located on the compartment adjacent to the reel, easily reached by standing on the ground and not more than 72" from ground level. A metallic tag with raised letters reading CORD REEL REWIND shall be installed next to the rewind button and contain the following information:
  - a. Current rating
  - b. Current type
  - c. Phase
  - d. Voltage
  - e. Total cable length.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

3. A Topwind assembly "C" captive roller, Hannay model EH-678, shall be provided to help guide the cord on and off the reel. A HS-3 cord stop ball shall be provided to prevent the end of the cord from being wound onto the reel.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

4. The reel shall be equipped with 200 feet of 10/4 SO yellow safety cord. A single 30-amp, 240VAC twist-lock outlet (NEMA 14-30R) shall be wired to the end of the cord. The plug shall incorporate a ground continuity and power status monitoring device. The device will be integral to the plug and provide dual, bright LED indicators with 360 degree visibility. A green light will indicate proper ground continuity and a red light will indicate loss of ground continuity or miswire. Both shall indicate current present. The cord reel shall be wired to the circuit panel with 10/3 DLOC wire routed in weather resistant conduit. Each reel shall be provided with a separate 30-amp, 240VAC breaker. The power rewind cable spool area shall be visible to the operator during the rewind operation.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

5. A label will be provided in a readily visible location adjacent to any permanently connected reel. It will indicate the following:
  - a. current rating
  - b. current type
  - c. phase
  - d. voltage
  - e. total cable length

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**REMOTE POWER DISTRIBUTION BOXES**

Two (2) Akron model EJB remote power distribution boxes shall be provided with safety yellow powder coating finish. A large handle shall be provided on top of the box that permits handling with gloved hands. Each box shall be provided with a total of four (4) outlets. The 240VAC input shall be split into two separate 120VAC, 30-amp circuits to maximize available amperage for each outlet at the end of the cord length. There shall be two (2) L5-20R, 120VAC twist-lock receptacles and/or two (2) 5-15 straight blade receptacles. Each receptacle shall be equipped with a spring-loaded snap cover. All electrical receptacles shall be UL listed components. The cast aluminum box shall be a least 1/4" thick and the four corner edges a minimum of 3/4" thick, providing for durability under extreme fire service use applications. To prevent damage associated with raised indicator lamps, the box shall be fitted with 3/8" thick polypropylene faceplates on each side of the box which act as backlighting so that plug orientation to the receptacle is quick and easy to align. A NEMA L6-30P, 4-wire male plug shall be recessed into one end of the box to supply power from a remote source to the four (4) receptacles.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

An Extenda-Lite EJB-VMT yellow powder-coated aluminum mounting bracket shall be attached to the wall next to the reels. It shall permit the power distribution box to be stored near the cord reel with the cord attached.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**TRIPOD TELESCOPING LIGHTS WITH GROUND CONTINUITY MONITOR**

Two (2) Havis-Shields MagnaFire 3000 telescoping flood light model KR-SB-856-TM-S shall be installed on the rear body.

The light head shall be a model KR-56 with 120 VAC quartz halogen lamp rated at 750 watts, 20,600 lumens. Each lamp head shall be mounted on a model KR-SB-800 removable tripod telescoping pole with switch located on the light head. The lights shall be provided with a male plug compatible with the specified outlet. If the light assembly is mounted against a painted surface, brushed finish stainless steel plates will be installed on body behind the nested position of the light heads to prevent damage. The plug shall incorporate a ground continuity and power status monitoring device. The device will be integral to the plug and provide dual, bright LED indicators with 360 degree visibility. A green light will indicate proper ground continuity and a red light will indicate loss of ground continuity or miswire. Both shall indicate current present.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**UPPER BODY RECESSED FLOOD LIGHTS**

Havis-Shields MagnaFire 3000 model KR-2139 flood light(s) shall be installed.

The light will be recessed in a cast aluminum housing that positions the light at a 10 degree downward angle.

The light fixture will be a single 900 watt, 220 volt lamp that draws 4.2 amps. The light element will be rated at 32,000 lumens. It must be able to be relamped from the front without removal of the assembly.

The casting for recessing the light head will recess 2.5" into the body. The face of the perimeter of the casting will have a polished finish.

Each side shall be controlled by a separate circuit breaker and be activated by a labeled switch strategically located next to the generator and load center installation.

There will be a total of four (4) installed as follows:

- two (2) on the upper roadside (left) of the body, one (1) fore and aft
- two (2) on the upper curbside (right) of the body, one (1) fore and aft

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**LIGHT TOWER**

A Command Light, part number CL615-2MH, light tower shall be provided for installation on the apparatus. The light tower shall be installed on the <<location>>. The controls for the light tower shall be installed in the location determined at the pre-construction conference.

The light tower shall extend 130" above the mounting surface and shall extend to full upright position in less than 15 seconds. The overall size of nested light tower shall be approximately 46" wide x 73" long x 14" high and weigh approximately 350 pounds.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

Light Tower Construction and Design

The Command Light assembly shall be of aluminum construction, with stainless steel shafts and bronze bushings for long life and low maintenance.

The electrically controlled unit shall not require usage of the vehicle's air supply for operation, thereby eliminating the chance for air leaks in the vehicle braking system. Hydraulic or pneumatic type floodlights are not acceptable alternatives to the specified all electric light tower.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

Light Tower Electrical System

The light tower shall be a two-stage articulating device with a lighting bank on top of the second stage capable of continuous 360 degree rotation. The light shall be elevated by electric linear actuators, one (1) actuator shall elevate the light bank and one (1) actuator shall adjust the light bank angle from 0 to 110 degrees. Power for the light bank shall be supplied through power collecting rings thus allowing continuous 360 degree rotation in either direction.

The tower base shall have a light that illuminates the envelope of motion during any movement of the light tower mast.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

Light Tower Controls

The light tower shall be controlled with a hand-held 12 foot umbilical line remote control. The storage station for the remote control unit shall be equipped with a button to activate the "Auto-Park" automatic nesting feature. The controls on the remote box shall be:

- Three (3) switches, one (1) for each light bank.
- One (1) light bank rotation switch.
- One (1) switch for elevating lower and upper stage.
- One (1) indicator light to indicate when light bank is out of roof nest position.
- One (1) indicator light to indicate when light bank is rotated to proper nest position.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

Light Tower Floodlights

The Command Light shall be equipped with the following bank of floodlights:

Floodlight manufacturer:	Command Light
Number of lamp heads:	Four (4) 1500 watt Quartz Halogen Two (2) 1000 watt Metal Halide
Voltage:	240 volts
Total watts of light tower:	8000 watts

Configuration: The light heads shall be mounted three (3) lamp heads on each side of the light tower. The four (4) Quartz Halogen shall be the upper and lower lamp heads with the two (2) Metal Halides in the middle of the cluster giving two (2) vertical lines of three (3) when the lights are in the upright position.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**120V WALL BASE BOARD HEATERS**

There shall be a four (4)120 volt heater base board heater installed in the apparatus. There shall be two (2) located in the personnel compartment, and one located in the bottom of each instrument cabinet. They shall be thermostatically controlled.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**REFRIGERATOR**

A minimum 3.9 cu.ft. refrigerator with freezer shall be installed. It shall operate from the 120VAC system. Dimensions shall be a minimum 33-7/8" high x 18-3/4" wide x 19-1/8" deep.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**BREATHING AIR SYSTEM REQUIREMENTS**

**SCBA FILL ENCLOSURE & CASCADE CONTROL PANEL**

The fill station shall be designed for mobile applications and shall be bolted securely to the designated compartment floor. The fill station shall be totally enclosed, constructed of 3/16 inch plate steel and designed to contain a SCBA or SCUBA cylinder and metal fragments in the event of rupture during the fill process.

The fill station shall be designed to vent rapidly expanding air from an unlikely event of a cylinder rupture. The vent shall be through the body floor opening.

The fill station shall be ergonomically designed to allow the filling of two (2) SCBA or SCUBA bottles either separately or simultaneously. Access to the enclosure for loading the SCBA shall be via a manually operated slide up door and a tilt out bottle holder. The door shall be provided with assisting devices to assure smooth operation and reduce operator fatigue.

The loading position from the compartment floor to the bottle connector shall be 14.25" in the lower holder and 22.60" in the upper holder. The maximum length of either the SCBA or SCUBA bottle with the valve and fill adapter shall be 29 inches in the lower holder and 27 inches in the upper holder. The fill station door shall be constructed of .25" stainless steel. The SCBA cradles shall contain two (2) fill positions. Each fill position shall be lined with material to protect each SCBA or SCUBA cylinder from abrasion. To ensure operator protection, fully automatic safety interlocks, that prevent SCBA or SCUBA cylinder filling until the door is completely closed, shall be supplied. Two (2) fill hoses with SCBA adapters

shall be provided and located within the enclosure. A bottom rubber seal shall be provided to seal out road dirt.

A polypropylene base plate shall be provided in the bottom perimeter footprint to frame in the rubber seal and protect from dissimilar metal corrosion to the body. Fill enclosure shall be 43.00" high x 13.25" wide x 23.25" deep and weigh 400 lbs. The enclosure shall be installed in compartment

The cascade fill control panel will be mounted adjacent to the fill enclosure and become an integral part of the assembly. The panel shall be minimum 14-ga brushed stainless steel.

The panel shall have flow-directional schematic on the face using blue pinstripping. There shall be four (4) cylinder gauges with on/off valves next to each gauge for controlling the cascading sequences from each storage cylinder. A minimum 4" diameter liquid-filled fill gauge will be provided to monitor the fill pressures in the SCBA bottles. An adjustable pressure reducing regulator with a distinctively different large control knob will be located adjacent to the fill gauge. There shall be a storage cylinder fill inlet on the face of the panel to permit remote refilling of the storage cylinders. All hoses shall be minimum Synflex 6,000 psi with not less than a 3:1 safety factor using stainless steel fittings.

A minimum 0-300 psi low-pressure regulator will be incorporated into the panel for integrating utility air connections to the storage cylinders. The regulator will permit use of the stored compressed air to be used off hose reels and outlets, as applicable, for operating pneumatic tools or inflating tires or air bags.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**SCUBA ADAPTERS**

A set of scuba adapters including a DIN and yoke adapter shall be included with the cascade refill system.

**COMPRESSED AIR STORAGE CYLINDERS**

The storage system shall include four (4) 6000 psig DOT cylinders which shall be manufactured in accordance with DOT codes.

Each cylinder shall be equipped with a burst disc and CGA 702 isolation valve. Each cylinder shall have a storage volume of 509 scf @ 6000 psig.

The storage system shall be piped for cascade operation. They shall be secured in accordance with all applicable codes and standards. Receivers must be accessible for visual inspection and shall not be enclosed.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

The high pressure breathing air storage system shall meet or exceed all current DOT code requirements for four (4) DOT cylinders as specified herein. The air storage cylinders shall be mounted on a horizontal, self-standing, steel rack. The rack shall be made of formed, fabricated steel protected with a scratch resistant, powder coat finish. The finish color shall be blue.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**UTILITY AIR REQUIREMENTS**

**UTILITY AIR COMPRESSOR**

A utility type low pressure air compressor system shall be installed in the apparatus, as outlined in the compartment layout schedule. It shall be modular in design, with the compressor and reservoir supplied as two separate components,

as follows:

1. Base-plate Mounted Compressor: The compressor (pump) shall be a two-stage, air-cooled, splash-lubricated design and shall include an integral fan/flywheel to provide cooling air. A dry-type intake filter(s) shall be provided. The compressor shall be a "V" design and shall include a centrifugal unloader, finned inter-cooler and sealed crankcase. Pump shall be cast iron.

The electric motor shall be a minimum five (5) horsepower, 240 volt, single-phase and include thermal protection.

The compressor (pump) and motor shall be mounted on a steel skid with vee-belt drive. OSHA belt guard and compressor controls. Controls shall include pressure switch (for auto start/stop), pressure gauge, relief valve and check valve. The system shall also include dual control which enables the user to operate the compressor in either auto start/stop or constant run modes (for operation of high volume rescue tools). No exception.

Due to the duty cycle for the intended emergency service use of this system, the compressor shall be rated at not less than 20 cfm, 150 psig.

2. Air Storage Tank: The air receiver shall be minimum 60-gallon capacity, horizontal design and shall include safety relief valve, pressure gauge and four mounting legs/feet. The drain valve shall be located in a convenient location for service and shall drain beneath the apparatus body, not within any compartment.

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**UTILITY AIR HOSE REEL**

A Hannay utility air hose reel, model E1516-17-18 shall be installed as outlined in the compartment layout schedule. The reel shall be supplied with a 12-volt electric rewind motor wired through the battery switch from the chassis battery system. The rewind control button shall be weatherproof and shall be located next to the reel location, convenient to the operator from ground level. A metallic label with engraved letters that reads AIR REEL REWIND shall be installed next to the rewind button, accordance to NFPA 1901, section 25.10.9.5.2.

The reel shall be mounted in the top of the specified compartment, as listed in the compartment layout schedule, and shall be bolted to reinforcement plates. The installation shall permit simple removal for service.

The piping for the air reel system shall be through high-pressure Synflex air brake hose with threaded couplings. A shut-off valve shall be installed at the air supply source.

150 feet of blue 3/8" braided service hose with brass fittings for subsequent installation of quick-disconnect coupler by the purchaser shall be installed on the reel.

An air reel data label shall be provided in a readily visible location adjacent to any permanently connected air reel, in accordance to NFPA 1901, section 25.10.5. It will indicate the following:

- Air Type: Utility
- Operating Pressure
- Total Hose Length
- Air Hose ID

***Bidder Complies: \_\_\_ Yes \_\_\_ No***

**WEATHERPAK MTR WEATHER STATION**

A Weatherpak MTR Hazmat weather station (PN S80110) complete shall be installed on the apparatus. A side mount push up mast shall be furnished and installed.

A (PN S80116) side cab mounted pole shall be installed on the curbside exterior wall of the cab behind the rear cab doors

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**COLLAPSIBLE TRAFFIC CONES**

Five (5) 28" collapsible traffic cones shall be provided with the completed apparatus. They shall be equipped with an internal light, which includes a steady-burn and flashing setting. Each shall have two (2) retro-reflective white bands, one (1) 6" and one (1) 4". This requirement shall be in compliance to NFPA 1901-2009, Section 10.5.2 - Item 9.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**BREAKAWAYSAFETY VESTS**

Six (6) Condor brand safety vests, polyester orange 2PDLA, shall be furnished with the completed apparatus.

*Bidder Complies: \_\_\_ Yes \_\_\_ No*

**AUTOMATIC DEFIBRILATOR**

A Physio Lifepak 15 Monitor/Defibrillator complete shall be included on the apparatus. The following options shall be included. Product specifications for the Lifepak 15 are listed below the options to be included.

- 1) With 12-lead option installed on the defibrillaor transmit 12-lead ECG reports to remote fax
- 2) Pulse oximtry (SpO2) monitoring
- 3) CO2 monoritoring
- 4) Blue tooth LFENET Blue wireless data transfer
- 5) Capnograph EtCO2 monitoring
- 6) Noninvasive blood pressure (NIBP)
- 7) Methemoglobin monitoring

**Product Specifications for Monitor/Defibrillator**

The following specifications are for a portable multi-parameter monitor/defibrillator.

**1. Operating Modes**

- 1.1. AED Mode; the device shall function with automated ECG analysis and a prompted protocol for patients in cardiac arrest.
- 1.2. Manual Mode; the device shall provide manual defibrillation, synchronized cardioversion, and noninvasive pacing and ECG and vital sign monitoring.
- 1.3. Archive mode; the device shall automatically store patient data and will allow the operator to access stored patient records.
- 1.4. Setup Mode; the device shall allow the operator to configure the Setup Options of the device.
- 1.5. Service Mode; the device shall allow the operator to execute device diagnostic tests and

calibrations without the need for physically opening the case.

1.6. Demo Mode; the device shall provide simulated waveforms and trend graphs for demonstration purposes. The device shall immediately revert to normal clinical operation if a therapy cable is connected.

## 2. User Interface

### 2.1. Controls:

2.1.1. All critical emergency therapy controls shall be grouped together in a logical orientation. Each control is dedicated to a single function to provide for fast, unambiguous access. These controls include Power ON; CPR controls (CPR Metronome), ENERGY SELECT, CHARGE, ANALYZE, SYNC and SHOCK; and pacing controls PACER, RATE, CURRENT and PAUSE.

2.1.2. Critical controls are color coded to enable clear visibility and to help the user distinguish each control for rapid access.

2.1.3. All critical measurement controls are dedicated to single function hard keys to provide for fast, unambiguous access. These controls include LEAD, SIZE, NIBP and 12-LEAD.

2.1.4. Additional operational controls are dedicated to single function hard keys to provide for fast unambiguous access. These controls include TRANSMIT, PRINT, EVENTS, DISPLAY MODE, CODE SUMMARY and HOME SCREEN.

2.1.5. All controls are accessible on the front panel of the device while operating the unit in all typical settings including patient treatment and transport (i.e. equipped with carrying case).

2.1.6. All controls operate with a single press except the ON control, which requires the user to push and hold the ON button for a few seconds to turn the device off to prevent turning off the device inadvertently.

2.1.7. The SYNC control is located separate from the primary defibrillation controls to prevent accidental activation during cardiac arrest.

### 2.2. Audible Prompts

2.2.1. While in Manual mode, the monitor allows the operator to enable or disable voice prompts.

2.2.2. Shock tone can be set to ON or OFF when full charge is reached.

2.2.3. Volume settings are adjustable for CPR metronome, alarms, QRS beep, voice prompts and tones; some tones can be silenced with one push of a button.

### 2.3. Patient Connection

2.3.1. Patient connections: All patient connections are visible and accessible on the front panel of the device while operating the unit in all typical settings including patient treatment and transport (i.e. equipped with carrying case) or when housed on a closed shelf.

2.3.2. Therapy Cable offers a solid, positive connection to device that is not vulnerable to shock or impact; it is easily inserted or removed with a gloved hand without the need

February 2009 2

for additional tools for quick replacement during patient use in case it becomes damaged.

2.3.3. ECG cable offers a solid connection and easy removal without side-to-side tension to preserve integrity of cable.

2.3.4. CO2 connector accepts sensors for intubated and non-intubated patient applications without additional adapters, to maximize clinical functionality. CO2 monitoring activates automatically when a sensor is connected.

2.3.5. SPO2/SPCO/SPMet all use a common connection and include lock out for

incompatible sensors. SPO2/SPCO/SPMet monitoring activates automatically when a proper sensor is connected.

2.3.6. NIBP connector is self-locking and can be easily removed with one hand.

2.3.7. P1/P2 connector(s) are available from the front of the device.

2.3.8. 100mm Printer access is available from the front of the device.

#### 2.4. Display

2.4.1. The device active viewing area is 212 mm (8.4 in) diagonal; 171 mm (6.7 in) wide and 128mm (5.0 in) high.

2.4.2. The device display is dual-mode color backlit display with a resolution of 640 x 480 pixels.

2.4.3. The primary mode is a black background with color waveforms and text data. Waveforms and values are automatically color synchronized to real-time display of patient data to facilitate assessment at a glance (ex. blue pulse oximetry waveform matched with blue pulse oximetry value; green ECG waveform matched with green heart rate).

2.4.4. A secondary mode is black parameter and real time patient data on a white background, for clear viewing in bright sunlight. The user may toggle between primary and secondary viewing modes with each mode available in less than 1 second.

2.4.5. The device displays patient ECG and alphanumeric characters for patient parameter values, device instructions, and prompts.

2.4.6. The device provides the option to display one or two additional waveforms.

2.4.7. The device can be set up for display of up to three simultaneous waveforms.

2.4.8. The device includes a 'home screen' key which, when depressed, returns the display to normal patient monitoring mode without the need to cycle or backtrack through menus.

2.4.9. The display displays status of one or two batteries (including installed, active, low, require replacement, remaining capacities), Bluetooth connections and selected energy.

#### 3. Defibrillator

3.1. The device uses a biphasic truncated exponential waveform with the following characteristics:

3.1.1. Voltage compensation to address varying patient impedance.

3.1.2. Variable duration based on patient impedance.

3.1.3. Escalating energy levels up to 360J to maximize clinical options and treat the widest range of patients. The full range of energy levels are accessible at any time (except internal defibrillation), as limited by pre-determined patient impedance ranges.

3.2. The device has the following energy accuracy:

3.2.1.  $\pm 1J$  or 10% of setting, whichever is greater, into 50 ohms.

3.2.2.  $\pm 1J$  or 10% of setting, whichever is greater, into 50 ohm.  $\pm 2J$  or 15% of setting whichever is greater into 25-175 ohms.

3.3. The device offers the following paddle options:

3.3.1. Hands-free pacing/defibrillation/ECG electrodes.

3.3.2. Adult Standard Hard Paddles and Pediatric Paddles with standard slip on, conical shaped pediatric paddle attachments with a nominal surface area of 15.4 cm<sup>2</sup>.

3.3.3. Standard paddles with the ability to select energy and charge the defibrillator without having to refer to the defibrillator control panel to facilitate ease of use.

February 2009 3

3.4. The therapy cable has a length of 2.4m (8 ft), not including electrode assembly.

3.5. The charge time to 360 joules does not typically exceed 10 seconds.

3.6. The device can monitor the patient ECG for a potentially shockable rhythm and alert the operator, even while in Manual defibrillation mode.

#### 4. External Defibrillation (AED)

4.1. The device is capable of being set up to power on in the AED mode.

4.2. The device can be set up to automatically and continuously monitor the patient ECG for a potentially shockable rhythm.

4.3. The device allows the operator to configure the output energy delivery sequence to be used during Advisory mode as 200/200/360 or 200/300/360 joules.

4.4. During AED mode when a shockable ECG rhythm is detected the device can be ready to deliver a shock within 20 seconds with a fully charged battery installed.

4.5. The device is capable of adjusting the AED protocol by providing the ability to adjust settings for energy protocol, Auto Analyze timing, Motion Detection, Pulse Check, CPR time after a shock, CPR time after No Shock Advised, Initial CPR, Preshock CPR, Metronome parameters, and stacked shocks to meet AHA, IEC and local protocols.

4.6. AED mode is allowed only with a hands-free electrode system.

4.7. The device allows switching from AED mode to Manual mode with or without a password or not allowed based on local protocol.

4.8. The device allows switching from AED mode to pacing.

4.9. The device allows advisory monitoring.

4.9.1. The device allows use of all the monitoring functions without initiating the AED prompted protocol when the device is turned on.

4.9.2. When needed, the AED mode prompted protocol can be initiated by pressing ANALYZE.

4.9.3. The device can be set up to restrict access to Manual mode therapies—that is, manual defibrillation, sync cardioversion, or pacing—by unauthorized users.

4.9.4. When in Advisory Monitoring, an ADVISORY MODE-MONITORING message appears continuously.

4.9.5. All configured monitoring functions such as NIBP, SpO2 and 12-lead ECG can be used in Advisory Monitoring.

4.9.6. The uppermost real-time waveform display is reserved for ECG information, Lead II; dashes are shown until the patient is connected to an ECG cable or therapy cable.

4.9.7. In Advisory Monitoring, LEAD II and PADDLES lead are the only ECG monitoring leads allowed.

4.9.8. An ECG analysis system is active and automatically evaluates the patient ECG for a potentially shockable rhythm. If a shockable ECG rhythm such as VF is detected, a PUSH ANALYZE prompt occurs. Pressing ANALYZE causes the device to enter AED Mode.

#### 5. Manual Defibrillation Mode

5.1. The device operates in manual mode using adult and pediatric hands-free pacing/defibrillation/ECG electrodes, adult standard paddles, or pediatric paddles.

5.2. The device can be set up to operate in Manual mode when it is turned on.

5.3. While in manual mode, the device allows the operator to select the following energy settings; 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30, 50, 70, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325 and 360 joules or a user configurable sequence of 150-360 (1st shock), 150 - 360 (2nd shock), 150 - 360 joules (3rd shock).

5.4. The device allows the operator to select energy, charge and shock from front panel controls or from controls located on the paddles.

#### 6. Synchronized Cardioversion

6.1. The device allows for a shock to be automatically delivered that is synchronized to a patient's

ECG.

6.2. An indicator is shown on the ECG QRS where the shock will be delivered.

February 2009 4

6.3. The device allows adjustment of the shock delivery point by the use of an ECG size control.

6.4. During synchronous cardioversion, the device begins energy transfer within 60ms of the QRS peak.

6.5. The Synch Mode may be set up to return to asynchronous mode after a synchronize shock or stay in synch mode.

7. Pacer

7.1. The device operates in demand and non-demand modes.

7.2. The device allows the user to program a preferred/default starting mode.

7.3. The device allows the operator to set the default rate and current values.

7.4. The device generates pacing pulses at a rate of 40 to 170ppm.

7.5. The accuracy of the pacing output rate is within +/- 1.5% over the entire range.

7.6. The device generates a monophasic, truncated exponential current pulse (20 +/- 1.5ms).

7.7. The device allows the operator to select the pacing output current from 0 to 200mA.

7.8. The device incorporates a pacing pause function which allows the operator to reduce the pacing rate by a factor of 4, to allow assessment of the patient's underlying ECG rhythm.

7.9. The pacing circuit includes automatic adjustment of the refractory period (function of rate) from 200 to 300ms +/- 3%, to ensure the delivered rate is consistent with the operator selected rate.

8. ECG Monitor

8.1. The device monitors patient ECG via the following means:

8.1.1. Three (3) wire cable for 3-lead ECG monitoring.

8.1.2. Five (5) wire cable for 7-lead ECG monitoring.

8.1.3. Ten (10) wire cable for 12-lead ECG acquisition. The cable should be multisegmented (main trunk, 4-wire section, 6-wire section) to facilitate multiple functionality and minimize replacement costs.

8.1.4. When the 6 chest electrodes are removed, the 10 wire cable functions as a 4-wire cable.

8.1.5. QUIK-COMBO® pacing/defibrillation/ECG electrodes for paddles monitoring.

8.2. Lead selection; the device shall provide the following monitoring options:

8.2.1. Leads I, II, III with the 3-wire cable.

8.2.2. Leads I, II, III, AVR, AVL, and AVF with the 4-wire cable (simultaneous acquisition).

8.2.3. Leads I, II, III, AVR, AVL, AVF and C with the 5-wire cable (simultaneous acquisition).

8.2.4. Leads I, II, III, AVR, AVL, AVF, VI, V2, V3, V4, V5, and V6 with the 10-wire cable (simultaneous acquisition).

8.3. The monitor allows the operator to adjust the ECG size using the following settings: 4, 3, 2.5, 2, 1.5, 1, 0.5, 0.25 cm/mV; (fixed at 1 cm/mV for 12-lead).

8.3.1. The monitor digitally displays patient heart rates from 20 to 300 bpm.

8.3.2. The monitor flashes a heart symbol for each patient QRS detected.

8.4. The monitor incorporates a continuous patient surveillance system, which, while in advisory mode or as a VF/VT alarm in manual mode, will monitor the patient via paddles lead or Lead II for potentially shockable ECG rhythms and alert the operator to CHECK PATIENT if a shockable ECG rhythm is detected.

8.5. The device provides a continuous 1V/mV x 1.0 gain analog ECG output.

8.6. The device provides common mode rejection of at least 90dB at 50/60Hz.

8.7. The device offers the following frequency response settings:

8.7.1. Monitoring electrodes: 0.5 to 40Hz or 1.0 to 30Hz (monitoring frequency response);

0.05 to 40Hz or 0.05 to 150Hz (diagnostic frequency response).

8.7.2. Paddles: 2.5 to 30Hz.

8.7.3. Analog ECG Output: 0.67 to 32Hz (except 2.5 to 30Hz for Paddles ECG).

#### 9. 12-Lead ECG Algorithm

9.1. The device incorporate University of Glasgow 12-Lead ECG analysis program.

9.2. The analysis program includes interpretative statements to describe the 12-lead ECG including statements such as “Meets ST Elevation MI Criteria”.

February 2009 5

9.3. The 12-lead ECG provides information related to leads disconnected and noisy ECG and requires user interaction to proceed with acquiring a 12-lead ECG report and interpretation with noisy ECG data.

9.4. The device provides the option of printing the interpretation on the 12-Lead ECG report.

9.5. The device provides the option of printing the 12-Lead ECG report at 25mm/sec or 50mm/sec.

9.6. The 12-lead ECG report shall offer a 3-Channel Standard format with an optional 4-Channel Standard, 3-Channel Cabrera or 4-Channel Cabrera format.

9.7. The device offers the option of printing automatically on the acquisition of a 12-Lead.

9.8. The device includes trending of ST measurement after an initial 12-Lead analysis and automatically generates a 12-Lead ECG to alert the operator if any change in ST elevation or depression is detected.

9.9. The 12-Lead ECG is derived from ten (10) physical ECG leads rather than extrapolated from only five (5) leads to ensure clinical accuracy consistent with the established monitoring standard.

9.10. The 12-Lead ECG algorithm distinguishes between adult and pediatric patients using different algorithms established by user-input age.

9.11. The 12 -Lead ECG algorithm distinguishes between male and female patients using different algorithms established by user-input gender.

#### 10. Pulse Oximetry (SPO2), Carbon Monoxide (SPCO) and Methemoglobin (SPMet) monitoring

10.1. The device incorporates SPO2, SPCO and SPMet monitoring using Masimo® Rainbow® technology and compatible sensors.

##### 10.2. Pulse Oximetry (SPO2)

10.2.1. The device measures, displays and stores SPO2 values in the range of 50 to 100%.

10.2.2. The device updates the SPO2 displayed value (on average) every 4, 8, 12, or 16 seconds.

10.2.3. The saturation accuracy of the SPO2 circuit shall be 70 to 100%.

10.2.4. The device display saturation rates from the SPO2 circuit to within  $\pm 2$  digits without motion and  $\pm 3$  with motion.

10.2.5. Historical trended values can be displayed on-screen or on printed trending report.

10.2.6. The device displays pulse rates from 25 to 240 pulses per minute.

10.2.7. The device displays pulse rates from the SPO2 circuit to within  $\pm 3$  pulses per minute without motion and  $\pm 5$  pulses per minute with motion.

10.2.8. The SPO2 display section of the monitor shall include a dynamic signal strength bar graph.

10.2.9. The device has user-adjustable sensitivity and averaging time settings to compensate for low perfusion states and patient movement, respectively.

10.2.10. The device emits a pulse tone proportional to the displayed SPO2 value.

10.2.11. The device can be set up to turn SPO2 tone to off.

10.2.12. The device is capable of displaying an IR (pleth) waveform.

10.2.13. This waveform is configurable as part of pre-defined lead group with the option to

display as a default. SPO2 waveform has autogain control.

10.3. Carbon Monoxide (SPCO)

10.3.1. The device measures, displays and stores SPCO values in the range of 0 to 40%.

10.3.2. The device displays SPCO values to within  $\pm 3$  digits accuracy.

10.3.3. Historical trended values can be displayed on-screen or on printed trending report.

10.4. Methemoglobin (SPMet)

10.4.1. The device measures, displays and stores SPMet in the range of 0 to 15.0%.

10.4.2. The resolution is 0.1% for SpMet value from 0 to 10% and 1% for values from 10 to 15%.

10.4.3. The device displays SPMet circuit to within  $\pm 1$  digits accuracy.

10.4.4. Historical trended values can be displayed on-screen or on printed trending report.

10.5. Noninvasive Blood Pressure (NIBP)

February 2009 6

10.5.1. The device is capable of displaying blood pressure values in mmHg.

10.5.2. The device measures Systolic Pressure in range: 30 to 255 mmHg.

10.5.3. The device measures Diastolic Pressure in range: 15 to 220 mmHg.

10.5.4. The device measures Mean Arterial Pressure (MAP) in range: 20 to 235 mmHg.

10.5.5. The device measures BP with accuracy of maximum mean error of  $\pm 5$  mmHg.

10.5.6. The device typically performs a blood pressure measurement in 20 seconds.

10.5.7. The device measures Pulse rate in range: 30 to 240 PPM.

10.5.8. The device measures pulse rate with accuracy  $\pm 2$  PPM or  $\pm 2\%$ , whichever is greater.

10.5.9. The device offers a choice of initial cuff inflation pressures.

10.5.10. The device can be set to perform automatic recurring measurements at the following set intervals - 2, 3, 5, 10, 15, 30, 60 minutes.

10.5.11. The device allows the user to set a pre-defined default setting for NIBP interval.

10.5.12. The device allows automatic cuff deflation in case of excessive pressure (greater than 290 Hg) or in case measurement time exceeds 120 seconds.

10.5.13. A range of disposable and reusable NIBP cuffs are available, including latex free.

10.5.14. NIBP cuffs are single bladder to facilitate placement independent of patient artery for rapid setup.

10.5.15. Historical trended values shall be displayed on-screen or on printed report.

11. Capnography (EtCO2 monitoring)

11.1. The device incorporates capnography, using Oridion Microstream® technology.

11.2. Capnography monitoring activates automatically upon connecting FilterLine® or Smart CapnoLine®.

11.3. The device allows monitoring of intubated and non-intubated patients without the need for additional equipment, adapters, or setup.

11.4. The device does not have any CO2 sensor external to the device due to external sensor vulnerability to damage and high replacement cost.

11.5. The device is capable of displaying CO2 value in kPa, Vol %, or mmHg.

11.6. The device does not use any separate water traps or filters – these should be integrated into the sensor to facilitate ease of use and setup.

11.7. The device is specific to CO2 and not adversely affected by the presence of Non-CO2 gases. There is no requirement for user input to indicate which gases are present.

11.8. The device uses disposable CO2 intubated and non-intubated sensors to eliminate risk of cross contamination between patients.

11.9. The capnography option is compatible with Oridion FilterLine and Smart CapnoLine CO2 accessories.

11.10. The device measure CO2 pressure in range: 0 to 99 mmHg (0 to 13.2kPa). The device shall

display CO2 waveform.

11.11. The device measures CO2 with the following accuracy:

11.11.1. 0 to 80 bpm: 0 to 38 mmHg  $\pm 2$  mmHg; 39 to 99 mmHg  $\pm 5\%$  of reading plus 0.08% for every 1mmHg above 38 mmHg.

11.11.2. >80 bpm: 0 to 18 mmHg  $\pm 2$  mmHg; 19 to 99 mmHg:  $\pm 4$ mmHg or  $\pm 12\%$  of reading whichever is higher.

11.12. The device measures respiration rate in a range of 0 to 99 breaths/minute.

11.13. The device measures respiration rate with the following accuracy:

11.13.1. 0 to 70 bpm:  $\pm 1$  bpm

11.13.2. 71 to 99 bpm:  $\pm 2$  bpm

11.14. The device has a typical initialization time of 30 seconds.

11.15. The initialization time will not exceed 180 seconds.

11.16. The rise time of the CO2 waveform is less than or equal to 190 msec.

11.17. The response time of CO2 waveform including the delay time and rise time is 3.3sec.

11.18. This waveform can be set up as part of pre-defined lead group with the option to display as a default.

11.19. The device automatically compensates for ambient pressure changes.

11.20. Historical trended values display on-screen or on printed report.

February 2009 7

11.21. The CO2 system can be easily calibrated by certified technicians through the service menu using standard procedures with known sample gas value.

### 13. Alarms

13.1. The device incorporates a Quick Set feature which activates default values for parameter and patient alarms. Alarms are established relative to baseline rate and specific to each vital sign.

13.2. The user may select a wide or narrow tolerance of alarms around baseline.

13.3. The user may select a range of silence periods for the alarms.

13.4. The silence function applies only to the specific alarm that has been violated; new alarms will include an audible tone and are silenced separately.

13.5. Audible tone is always provided for VF/VT alarm.

13.6. The device incorporates a VF/VT alarm which activates continuous patient surveillance of potentially shockable ECG rhythms during manual mode operation with therapy electrodes and through standard ECG electrodes.

### 14. Trending

14.1. The device offers on-screen trending with choice of HR, PR (SPO2), PR (NIBP), SPO2 (%), SpO (%), SpMet (%), CO2(ETCO2/FiCO2), RR (CO2), NIBP, IP1, IP2, or ST.

14.2. Trending is activated automatically for each vital sign used – no additional user intervention is required other than opting to view the trended data on-screen.

14.3. The device includes a timescale of 30 minutes, 1, 2, 4 or 8 hours, or autoscale.

14.4. The device includes up to 8 hours of trend data.

14.5. The device includes trending of ST measurement after an initial 12-lead analysis. A 12-lead ECG will automatically print to alert the operator following a series of consistent ST elevations or depressions.

14.6. A printed trend summary is available either on-demand or at the conclusion of the event summary.

### 15. Printer

15.1. The device prints a continuous strip of the displayed patient information.

15.2. The device includes a 100mm (3.9 in) thermal recorder that is easily accessible from the front of the device. Paper shall be of standard roll format to facilitate replacement and minimize waste.

15.3. The device prints at 25mm/sec or 12.5mm/sec +/- 5% (measured in accordance with AAMI EC-11, 4.2.5.2).

15.4. The delay from display to printing is 8 seconds.

15.5. The device allows the operator to set up automatic printing of waveform events as they occur, in any combination.

15.6. The device offers the following frequency response settings for the printer:

15.6.1. 0.5 to 40Hz (monitoring frequency)

15.6.2. 1 to 30Hz (monitoring frequency)

February 2009 8

15.6.3. 0.05 – 40 Hz (diagnostic frequency)

15.6.4. 0.05 to 150 Hz (diagnostic frequency)

16. Data Management

16.1. The device captures and stores patient data, events (including waveforms and annotations), continuous ECG waveform and diagnostic 12-Lead ECG reports in internal memory.

16.2. The device allows the operator to enter the following patient information:

16.2.1. Last Name

16.2.2. First Name

16.2.3. Incident ID

16.2.4. Patient ID

16.2.5. Age

16.2.6. Sex

16.3. If patient age has been previously entered while acquiring a 12-Lead ECG that value is automatically entered in the age field. If the age has been previously entered into the patient information field noted it will be used when acquiring the first 12-Lead ECG without further user intervention.

16.4. The device allows stored reports to be retrieved for transmission to a remote location. Transmitted reports must be received by a personal computer (PC) with appropriate software installed.

16.5. The device provides a means to manage archived patient records. Access to these records in the device has optional password protection. Options to manage archived records shall include:

16.5.1. Transmit archived patient records

16.5.2. Print archived patient records

16.5.3. Delete archived patient records

16.5.4. Add demographic data to archived patient records

16.6. The total memory capacity of the device is at least 400 single waveform events or 360 minutes of continuous ECG. Maximum memory capacity for a single patient includes up to 200 single waveform reports and 90 minutes of continuous ECG.

16.7. Memory is internal rather than by removable cards, to eliminate replacement cost issues and to protect data integrity/patient confidentiality.

16.8. The device allows the operator to store the following report options:

16.8.1. Short, medium, or long Code Summary

16.8.2. Initial ECG

16.8.3. Auto vital sign measurements every five minutes and whenever alarm limits are exceeded

16.8.4. 3-channel or 4-channel format 12-Lead ECG report

16.8.5. Continuous waveform - 360 minutes continuous ECG record

16.8.6. Trend summary (includes patient information, vital signs data and vital signs graphs).

16.8.7. Vital Signs – includes patient information, event and vital signs log.

16.8.8. Snapshot – includes patient information and 8 seconds of transmitted ECG captured at the time of transmission.

16.9. Data Management Architecture

16.9.1. When transferring data, the device outputs data in a format compatible with hospital cardiology information systems such as the Marquette MUSE CV® cardiovascular information system.

16.9.2. The data transferred from the device can be transferred and managed using Webbased distribution and management. The data center is managed by the manufacturer on a 7/24 basis.

17. Communications

17.1. The device is capable of transferring data records via a direct connection to a PC.

17.2. The device is capable of transferring data records by an internal Bluetooth to other Bluetooth devices.

February 2009 9

17.3. The device provides the option of transmitting 12-Lead ECG reports to a personal computer installed with appropriate software via a direct cable or wireless connection.

17.4. The device and communication system supports the following 12-lead features:

17.4.1. Alert at the receiving end that a 12-lead ECG has arrived

17.4.2. Transmission to multiple locations

17.4.3. Auto forwarding of 12-lead ECG report

17.4.4. Sharing of electronic 12-lead report via email

17.4.5. Acknowledgement of successful transmission at the device

18. Power

18.1. Battery Options; the device operates using Lithium-ion, rechargeable batteries.

18.2. The device operates with one or two batteries; it operates from only one battery at a time, monitors the state of each battery and automatically switches to the second battery when a low battery is detected for the first battery, without interruption of functional operation.

18.3. Operating Time; two (2) new fully charged Lithium-ion batteries provide the following prior to shutdown at 20 C (68 F):

18.3.1. Monitoring typical 360 minutes, minimum 340 minutes

18.3.2. Pacing typical 340 minutes, minimum 320 minutes

18.3.3. Defibrillation (360 J) typical 420 shocks minimum 400 shocks

18.4. Capacity after Low Battery warning

18.4.1. Monitoring typical 21 minutes, minimum 12 minutes

18.4.2. Pacing typical 20 minutes, minimum 10 minutes

18.4.3. Defibrillation (360 J) typical 30 shocks minimum 6 shocks

18.5. The device displays battery icons at the top display area for each battery placed in the device. The battery icons indicate the state of battery charge and which of the two batteries is being used to supply power to the device. Low battery status is indicated with a low battery icon, flashing battery icon and a low battery message warning message.

18.6. The batteries icons will not be active for any battery pack not provided from the original manufacturer.

18.7. The Lithium-ion batteries have four horizontal bars, or battery charge indicators that indicate when the individual battery has: greater than 70% charge (four bars), greater than 50% charge (three bars), greater than 25% charge (two bars), and 25% or less charge (one bar).

18.8. When both batteries reach a low battery condition, the device emits an audible voice prompt to replace the battery.

18.9. The device retains the operator parameter settings with an inadvertent power loss of less than 30 seconds.

18.10. The device displays a service indicator when a fault is detected.

19. Maintenance

19.1. Each time the monitor/defibrillator is powered on, it performs internal self-tests to check that internal electrical components and circuitry work properly.

19.2. The defibrillator stores the results of all user-initiated self-tests in a test log.

19.3. When the defibrillator is on and a problem is detected that requires immediate service, such as a malfunctioning charging circuit, the Service LED is illuminated.

19.4. The defibrillator performs an automatic self-test daily at 03:00 (3:00 A.M.), if not in use. During the automatic self-test, the defibrillator turns itself on (**ON** LED illuminates) briefly, completes self-test, stores the self-test results in a test log and turns itself off.

19.5. The device is capable of a manual user test that includes charging and discharging the defibrillator, and printing a report.

19.6. The device has provision to transfer the test log report to a PC by a cable or by wireless means.

19.7. The device has provisions to upgrade for future AHA specifications.

19.8. The device offers a user replaceable screen protector.

19.9. The device offers a removable/Interchangeable shock-absorbing handle.

20. Physical Characteristics

February 2009 10

20.1. The device does exceed the following weight limits:

20.1.1. Basic monitor/defibrillator with new roll of paper and two batteries installed 8.6 kg (18.9 lb)

20.1.2. Full featured monitor/defibrillator with new roll of paper and two batteries installed 9.1 kg (20.1 lb)

20.1.3. Lithium-ion battery: 0.59 kg (1.3 lb)

20.1.4. Accessory bags and shoulder strap: 1.77 kg (3.9 lbs)

20.1.5. Standard paddles: 0.95 kg (2.1 lbs)

20.2. The device does exceed the following dimensions:

20.2.1. Height: 31.7cm (12.5 in).

20.2.2. Width: 40.1cm (15.8 in).

20.2.3. Depth: 23.1cm (9.1 in).

21. Environmental conditions for operation as specified

21.1. The device operates from 0° to 45°C (32° to 113°F). It operates from -20° to 0° C (-4° to 32° F) or 45° to 60°C (113° to 160°F) for 1 hour after storage at room temperature.

21.2. The non-operating temperature range of the device is -30° to +70°C (-22° to 158°F) except therapy electrodes and batteries.

21.3. The device operates in relative humidity from 5 to 95%, non-condensing.

21.4. The device operates from ambient to 429mmHg (-1,253 to 15,000 ft) with NIBP: -152 to 3,048 m (-500 to 10,000 ft).

21.5. The device meets vibration per MIL-STD-810E Method 514.4, Propeller Aircraft - category 4 (figure 514.4-7 spectrum a) Helicopter - category 6 (3.75 Grms), Ground Mobile - category 8 (3.14 Grms) EN 1789: Sinusoidal Sweep, 1 octave/min, 10-150 Hz, ±0.15 mm/2 g.

21.6. The device operates after 5 drops on each side from 18 inches onto a steel surface EN 1789: plus a 30-inch drop onto each of 6 surfaces.

21.7. The device operates after a functional shock per IEC 60068-2-27 and MIL-STD-810E shock requirements 3 shocks per face at 40 g, 6 ms half-sine pulses.

21.8. The device operates after 1000 bumps at 15 g with pulse duration of 6 msec.

21.9. The device can withstand an impact per IEC 60601-1 0.5 + 0.05 joule impact UL 60601-1 6.78 Nm impact with 2-inch diameter steel ball: Meets IEC62262 protection level IK 04.

21.10. The device is dust- and splash-proof (IP44) per IEC 529.

21.11. The device meets EMC emissions standards: EN 60601-1-2:2001 Medical Equipment - General Requirements for Safety - Collateral Standard: Electromagnetic Compatibility - Requirements and Tests, EN 60601-2-4:2003: (Clause 36) Particular Requirements for the Safety of Cardiac Defibrillators and Cardiac Defibrillator-Monitors.

21.12. The device withstands 60 hour exposure to the chemicals: Betadine (10% Povidone-Iodine solution), Coffee, Cola, Dextrose (5% Glucose solution), Electrode Gel/Paste (98% water, 2% Carbopol 940), HCL (0.5% solution, pH=1), Isopropyl Alcohol and NaCl (0.9% solution).

Cosmetic discoloration of the paddle well shorting bar shall be allowed following exposure to HCL (0.5% solution).

## 22. Configuration Settings

22.1. To prevent unauthorized access to the setup and service menus, the device requires separate 4 digit numeric security passcodes to be entered.

22.2. General: allows selection of the following:

22.2.1. Language choice.

22.2.2. Code Summary format of short, medium, long.

22.2.3. Trend Summary format of short medium, long.

22.2.4. Site number up to 14 characters.

22.2.5. Device ID up to 14 characters.

22.2.6. Auto Log: automatic recording and storage of vital signs every 5 minutes ON or OFF.

22.2.7. Line filter setting of 50 or 60 Hz.

22.2.8. Screen message timeout value of 5, 10 or 30 seconds.

February 2009 11

22.3. Manual Mode: allows selection of the following;

22.3.1. Resume sync after shock ON or OFF.

22.3.2. Pads default energy setting of 2, 5, 10, 50, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 360, or Energy Protocol (Power-on energy setting (joules) for standard paddles and therapy electrodes).

22.3.3. Energy protocol allows presetting energy for sequence of 3 shocks: each shock may be preset to a value of 150 J to 360 J with the requirement that energy value for shock 2 cannot be less than shock 1 energy level, and the energy value for shock 3 cannot be less than shock 2 energy value.

22.3.4. Voice prompts ON or OFF in manual mode.

22.3.5. Shock tone ON or OFF when full charge is reached.

22.3.6. Manual Access selection of AED / Confirm Once, AED / Confirm Always, AED / Passcode Once, AED / Passcode Always, AED / Restricted.

22.3.7. Set passcode to enter manual access when AED / Passcode Once or AED / Passcode Always are selected for Manual Access.

22.4. AED Mode: allows selection of the following:

22.4.1. Energy protocol allows presetting energy for sequence of 3 shocks: each shock may be preset to a value of 150 J to 360 J with the requirement the energy value for shock 2 cannot be less than shock 1 energy level, and the energy value for shock 3 cannot be less than shock 2 energy value.

22.4.2. Stacked Shocks Enable consecutive shocks without CPR.

22.4.3. Automatically analyzes after each shock ON or OFF.

22.4.4. Motion detection ON or OFF.

22.4.5. Allow a pulse check prompt choices of Never (Never prompt for Pulse Check), After Second NSA (After every "No Shock Advised" (NSA) except for first analysis NSA result), After Every NSA (Only after "No Shock Advised"), or Always (After every

three-shock stack and every NSA).

22.5. CPR Setup

22.5.1. CPR Time 1 can set CPR interval after each shock to 15, 30, 45, 60, 90, 120, 180 seconds, 30 minutes.

22.5.2. CPR Time 2 can set CPR interval after No Shock Advised decision to 15, 30, 45, 60, 90, 120, 180 seconds, 30 minutes.

22.5.3. Initial CPR provides the choice to enable an initial CPR time period immediately after the device is turned on, to Analyze first, or to disable an initial CPR time period.

22.5.4. Initial CPR Time can be set to 15, 30, 45, 60, 90, 120 or 180 seconds.

22.5.5. Pre-Shock CPR provides the ability to have a CPR interval after shock advised decision of 15 or 30 seconds or to be disabled. Note Pre-Shock CPR applies to the second and all subsequent shocks.

22.6. Metronome

22.6.1. Enable provides the metronome during CPR and may be Off or On.

22.6.2. The C:V ratio for an Adult with No Airway can be set to 30:2, 16:1, 15:2, 12:1, 10:1 or 100:0.

22.6.3. The C:V ratio for an Adult with an Airway can be set to: 30:2, 16:1, 15:2, 12:1, 10:1 or 100:0.

22.6.4. The C:V ratio for a Youth with No Airway can be set to: 30:2, 16:1, 15:2, 12:1, 10:1 or 100:0.

22.6.5. The C:V ratio for a Youth with- Airway can be set to: 30:2, 16:1, 15:2, 12:1, 10:1, or 100:0.

22.7. Pacing: allows selection of the following:

22.7.1. Default pacing rate of 40 to 170ppm.

22.7.2. Default output current of 0 to 200mA.

22.7.3. Default mode of DEMAND or NON-DEMAND.

February 2009 12

22.7.4. Default internal pacing detection ON or OFF.

22.8. Monitoring Setup allows selection of the following;

22.8.1. Channels... Set up to 5 groups of multi-channel waveforms to display as follows:

22.8.1.1. Set 1 Select multi-channel waveforms for Set 1

22.8.1.2. Set 2 Select multi-channel waveforms for Set 2

22.8.1.3. Set 3 Select multi-channel waveforms for Set 3

22.8.1.4. Set 4 Select multi-channel waveforms for Set 4

22.8.1.5. Set 5 Select multi-channel waveforms for Set 5

22.8.2. Channel 1 waveform selections include: Paddles, ECG Lead I, ECG LEAD II, ECG Lead III, aVR, aVL, aVF, V1, V2, V3, V4, V5 or V6. Note 2 When a 3-lead cable is used, Channel 1 displays only ECG leads I, II, or III, even if any other lead (except Paddles lead) is selected in setup. Paddles selection in Channel 1 suppresses ECG lead selections in Channels 2 and 3.

22.8.3. Channel 2 waveform selections include: None, Cascading ECG, ECG Lead I, ECG Lead II, ECG Lead III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6, CO2, P1, P2 or SpO2.

22.8.4. Channel 3 waveform selections include: None, ECG Lead I, ECG Lead, II, ECG Lead III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6, CO2, P1, P2, or SpO2.

22.8.5. Continuous ECG storage of ECG waveform Off or On.

22.8.6. SPO2 Tone SPO2 Pulse tone Off or On.

22.8.7. CO2... Set up CO2 defaults as follows:

22.8.7.1. Set CO2 units of measure to mmHg, kPa or %

22.8.7.2. Set body temperature correction factor for EtCO2 value to Off or On

22.8.8. NIBP... Set up NIBP defaults as follows:

22.8.8.1. Initial cuff pressure to 180, 160, 140, 120, 100, or 80 mmHg.

22.8.8.2. Measurement interval to Off, 60, 30, 15, 10, 5, 3 or 2 minutes.

22.9. 12-lead ECG acquisition. The device uses the University of Glasgow 12-Lead ECG Analysis Program and provides the following setup choices:

22.9.1. Transmit automatically on acquisition Off or On.

22.9.2. Print automatically on acquisition Off or On.

22.9.3. Print speed for 3-Channel 12-Lead report of 25 mm/sec or 50 mm/sec

22.9.4. 12-Lead interpretation Off or On.

22.9.5. Print format for 12-Lead reports of 3-Channel Standard, 4-Channel Standard, 3-Channel Cabrera or 4-Channel Cabrera.

22.10. Events: allows selection of the following:

22.10.1. Selection of events 2 through 11 from a pre-configured list.

22.10.2. Selection of events 12 through 22 from a pre-configured list.

22.10.3. User customization of up to 18 events to be included in the list.

22.11. Alarms: allows selection of the following:

22.11.1. Set volume for alarms, tones, and voice prompts.

22.11.2. Enable or disable parameter alarms at power up.

22.11.3. VF/VT alarm enabled or disabled.

22.12. Printer: allows selection of the following:

22.12.1. Auto print event selection:

22.12.1.1. Print defibrillation events ON or OFF

22.12.1.2. Print pacing events ON or OFF

22.12.1.3. Print CHECK PATIENT events ON or OFF

22.12.1.4. Print SAS events ON or OFF

22.12.1.5. Print patient alarms ON or OFF

22.12.1.6. Print operator annotated events ON or OFF

22.12.1.7. Print initial rhythm ON or OFF

22.12.2. Default ECG frequency response of:

February 2009 13

22.12.2.1. Monitor 0.5 - 40Hz

22.12.2.2. Diagnostic 0.05 - 150Hz

22.12.3. Print alarm Waveforms with an alarm events in CODE SUMMARY Off or On.

22.12.4. Print event waveforms with user-entered events in CODE SUMMARY Off or On.

22.12.5. Print waveforms with vital signs in CODE SUMMARY On or Off.

22.13. Transmission: allows selection of the following:

22.13.1. Setup 72 data transmission sites

22.13.1.1. Site name up to 14 characters

22.13.1.2. Output port to Bluetooth®, Direct Connect or both

22.13.1.3. Clear list of site

22.13.1.4. Select default destination site to None. After sites are defined or select from the list.

22.13.1.5. Select default report for data transmission of Snapshot, All, Code Summary, Trend Summary, Vital Signs, 12-Lead or Continuous ECG.

22.13.1.6. Wireless Enable wireless communication Off or On.

22.13.1.7. Enable filtering of Bluetooth device searches to On or Off.

22.13.2. Clock: allows selection of the following:

22.13.2.1. Set the current date and time.

22.13.2.2. Select real or elapsed time on the display.

22.13.2.3. Daylight Savings Time ON or OFF.

- 22.13.2.4. Select time zone form non or Universal Time code for 74 time zones
- 22.13.3. Reset Defaults: allows selection of the following:
  - 22.13.3.1. Cancel and return to Setup Screen.
  - 22.13.3.2. Reset all values to the factory default settings.
- 22.13.4. Print Defaults: Provides printout of the current device configuration setup.
- 22.13.5. Send Configuration: Transfer the device setup configuration to another device.
- 22.13.6. Set Passcode: allows selection of the following:
  - 22.13.6.1.1. Set passcode to enter Setup mode (the current passcode appears 0000). Rotate and press SPEED DIAL to select digits.
  - 22.13.6.1.2. Select passcode access for Archives mode to No Passcode, Archives Only, Delete Only, Archives/Delete.
  - 22.13.6.1.3. Set passcode to enter Archives mode 0000 (Rotate and press SPEED DIAL to select digits).
- 22.13.7. Delete Records... Set passcode to delete records in Archives mode 0000. (Rotate and press SPEED DIAL to select digits.)
- 22.13.8. The device allows the entire list of configuration settings to be transferred to other identical devices via the Configuration Setup Tool Software application using a direct connect cable, thereby eliminating the need to configure Setup Options on each device separately.

**23. Other**

- 23.1. Device is designed to help the operator meet HIPAA (Health Insurance Portability and Accountability Act of 1996) requirements.  
GDR 3301779\_A

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**INSTALL CUSTOMER SUPPLIED RADIOS**

Three (3) customer supplied radios shall be installed by the successful bidder. Radio model numbers and radio locations shall be determined at the pre-construction conference. Radio coaxial shall be included. Customer shall furnish the antenna for each radio.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**DOT SAFETY KIT**

Prior to departure from the manufacturing site, the completed apparatus shall have a DOT compliant safety kit placed in the cab within reach of driver containing the following equipment: one set of triangle markers; one 12v flashlight; one 2-1/2# BC fire extinguisher; and plastic carrying case.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**OWNERS MANUAL**

A 3-ring binder shall be provided with the completed apparatus that contains, at a minimum, the following information:

- 1. All "as wired" schematics for both 12VDC and 120/240VAC systems.
- 2. Operational and troubleshooting procedures.

3. Paint and key codes.
4. All data, operations manuals, warranty information and schematics, as supplied by equipment options manufacturers.
5. Body, frame and paint warranty documents.
6. CD-ROM of electrical system programming and schematics stored in a plastic sleeve.

The manufacturers and applicable dealer's telephone numbers and contact persons names shall be supplied within the binder.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**FUEL TANK FILLED AT DELIVERY**

The fuel tank shall be filled upon final delivery at the factory.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**PRE-CONSTRUCTION CONFERENCE**

Immediately after notification of contract award, the successful bidder shall schedule a pre-construction conference between the appointed representatives of the purchaser and the contractor. The conference shall be held not later than 30 days after notification at the location of the purchasers choosing. The contractor shall present a set of final engineering construction drawings and line item production shop order complying with the specifications outlined herein. Should the purchaser deem that the contractor has not properly interpreted the specifications or does not intend to manufacture the emergency vehicle as specified, appropriate corrective actions shall be agreed upon and the conference shall be re-scheduled. Should the purchaser determine, at the second conference, that the contractor remains unable to meet the intent of the specifications, the contract may be deemed null and void.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**FACTORY FINAL INSPECTION**

A factory final inspection will be conducted prior to release of the completed apparatus for delivery. The inspection will verify compliance to the specifications and fit and finish. Upon correction of any discovered discrepancies, the vehicle will be released for delivery under its own power to the appointed destination. A final acceptance inspection will be conducted upon arrival to ensure all discovered discrepancies have been properly corrected.

**Bidder Complies: \_\_\_ Yes \_\_\_ No**

**COST FORM**

Heavy HAZMAT Truck

Total price for the manufacture and delivery of a “new” emergency support vehicle chassis and body in compliance with this bid specification:

---

**SECTION C -EXCEPTION AND ADDITIONAL RESPONSE AREA**



**ADDITIONAL RESPONSE AREA**

## IMPORTANT NOTE

Due to heightened security at One Government Center, if your bid is to be delivered to the bid-opening site by other than US Mail, UPS or Federal Express, **you must complete, print and attach this label to the front of the container holding your document. Note: Upon entering One Government Center, you will be required to show a photo ID.**

Formal bid to: Lucas County Support Services  
One Government Center, Suite 480  
Toledo OH 43604-2247

Item for bid \_\_\_\_\_

Invitation to Bid No. or Request for Proposal No. \_\_\_\_\_

Date of Bid Opening \_\_\_\_\_

Bid Opening Time \_\_\_\_\_

Vendor Name \_\_\_\_\_