Robert E. Shannon
City Attorney of Long Beach
333 West Ocean Boulevard
Long Beach, California 90802-4664
Telephone (562) 570-2200

AGREEMENT

29380

THIS AGREEMENT is made and entered, in duplicate, as of August 18, 2005 for reference purposes only, pursuant to Resolution No. RES-05-0076 adopted by the City Council of the City of Long Beach at its meeting on August 16, 2005, by and between PLACER FIRE EQUIPMENT, INC., a California corporation, located at 10203 Missile Way, Mather Air Force Base, California 95655 ("Contractor"), and the CITY OF LONG BEACH ("City"), a municipal corporation.

WHEREAS, Section 1802 of the Long Beach City Charter permits the City to make purchases under the purchasing contracts of other governmental agencies when authorized to do so by a resolution; and

WHEREAS, the City of Long Beach desires to purchase three (3) weapons of mass destruction support vehicles and one (1) dive support unit; and

WHEREAS, the County of San Luis Obispo has a contract for the purchase of these items which has been designated as Purchase Order No. 22000832 ("San Luis Obispo Contract"); and

WHEREAS, Resolution No. RES-05-0076 authorizes the City to purchase these items from Contractor by virtue of the San Luis Obispo Contract;

NOW, THEREFORE, in consideration of the terms and conditions contained herein, the parties agree as follows:

1. The San Luis Obispo Contract with Contractor is incorporated by this reference as if fully set forth in this Agreement, and the same terms and conditions contained in the San Luis Obispo Contract shall be applicable here except as follows:

a. Wherever the San Luis Obispo Contract refers to the County of San Luis Obispo, it shall be deemed to refer to the City of Long Beach;

b. Contractor shall sell, furnish and deliver to the City equipment of substantially the same type and kind purchased by the County of San Luis Obispo and on the same terms and conditions offered to the County of San Luis Obispo, except as modified by mutual agreement between the City of Long Beach and Contractor, ordered

by the City, not to exceed $981,909.00, including tax, for a period extending until the warranty on the equipment expire. To the extent that the San Luis Obispo Contract and this Agreement are inconsistent, the following priority shall govern: (1) this Agreement and (2) the San Luis Obispo Contract.

c. Payment for the equipment purchased from Contractor by City shall be made by the City on delivery to and acceptance of the equipment by the City and submittal of an invoice to the City. Payment is due thirty (30) days after the date of the invoice.

2. Neither this Agreement nor any money that becomes due to Contractor hereunder may be assigned by Contractor without the prior written consent of the City manager or his designee.

3. Any notice given under this Agreement shall be in writing and personally delivered or deposited in the U.S. Postal Service, return receipt, and shall be delivered or mailed to Contractor at the relevant address first stated above, and to the City at 333 West Ocean Boulevard, Long Beach, California 90802 Attn: City Manager.

4. The terms appearing on the back of City's Purchase Order are incorporated herein. If there is a conflict between this Agreement or the City's Purchase Order and the San Luis Obispo Contract, then this Agreement and the City's Purchase Order shall govern. Contractor is called "Vendor" in the City's Purchase Order.

5. Contractor shall cooperate with the City in all matters relating to taxation and the collection of taxes, particularly with respect to the self-accrual of use tax. Contractor shall cooperate as follows: (i) for all leases and purchases of materials, equipment, supplies, or other tangible personal property totaling over $100,000 shipped from outside California, a qualified Contractor shall complete and submit to the appropriate governmental entity the form in Appendix "A" attached hereto; and (ii) for construction contracts and subcontracts totaling $5,000,000 or more, Contractor shall obtain a sub-permit from the California Board of Equalization for the Work site. "Qualified" means that the Contractor purchased at least $500,000 in tangible personal property that was subject to sales or use tax in the previous calendar year.

Robert E. Shannon
City Attorney of Long Beach
333 West Ocean Boulevard
Long Beach, California 90802-4664
Telephone (562) 570-2200

In completing the form and obtaining the permit(s), Contractor shall use the address of the Work site as its business address and may use any address for its mailing address. Copies of the form and permit(s) shall also be delivered to the City Engineer. The form must be submitted and the permit(s) obtained as soon as Contractor receives a Notice to Proceed. Contractor shall not order any materials or equipment over $100,000 from vendors outside California until the form is submitted and the permit(s) obtained and, if Contractor does so, it shall be a material breach of this Contract. In addition, Contractor shall make all purchases from the Long Beach sales office of its vendors if those vendors have a Long Beach office and all purchases made by Contractor under this Contract which are subject to use tax of $500,000 or more shall be allocated to the City of Long Beach. Contractor shall require the same form and permit(s) from its subcontractors.

Contractor shall not be entitled to and by signing this Contract waives any claim or damages for delay against City if Contractor does not timely submit these forms to the appropriate governmental entity. Contractor may contact the City's Director of Financial Management, at (562) 570-6427 for assistance with the form.

IN WITNESS WHEREOF, the parties have caused this document to be duly

//

//

//

//

//

//

//

//

//

//

//

Robert E. Shannon
City Attorney of Long Beach
333 West Ocean Boulevard
Long Beach, California 90802-4664
Telephone (562) 570-2200

executed with all formalities required by law as of the date first stated above.

PLACER FIRE EQUIPMENT, INC., a California corporation

October 27, 2005

By _____
President

Doug Feldman
(Type or Print Name)

October 27, 2005

By _____
Secretary

Tom Island
(Type or Print Name)

"Contractor"

CITY OF LONG BEACH, a municipal corporation

December 5, 2005

By _____
City Manager

"City"

This Agreement is approved as to form on 11/7, 2005.

ROBERT E. SHANNON, City Attorney

By _____
Senior Deputy

Robert E. Shannon
City Attorney of Long Beach
333 West Ocean Boulevard
Long Beach, California 90802-4664
Telephone (562) 570-2200

DFG:dfe 09/07/05(AGR_PurchaseWMD&DiveSupportUnit-PlacerFireEquip) #05-03223
L:\APPS\CtyLaw32\WPDOCS\D007\P004\00079246.WPD

Placer Fire Equipment, Inc.

July 10, 2005

The City of Long Beach
2600 Temple Avenue
Long Beach, CA 90806

Gentlemen:

Placer Fire Equipment and Hackney Emergency Vehicles are pleased to offer the enclosed proposals for (3) WMD Support Units and (1) Dive Support Unit. These units would be an add-on purchase to the recent apparatus award made to us by San Luis Obispo County, California in which we were the low responsive bidder.
Enclosed is a copy of the purchase order given to Placer Fire Equipment.

Delivery shall be in 270-300 calendar days from receipt of purchase order at Placer Fire Equipment. Pricing includes delivery to Long Beach and 8.25% California Sales Tax.

Drawings for each unit are enclosed and will be finalized upon completion of the Pre-Construction Conference.

Please review the attached proposals and contact myself at Placer Fire Equipment or Roy Cobb, our Sales Representative at 916.300.2287 if you have any questions or need additional information.

Sincerely,

Doug Feldman, President
Placer Fire Equipment

Enclosures

10203 Missile Way • Mather AFB, CA 95655
(916) 856-1818 • FAX (916) 856-6509
www.placerfire.net

County of San Luis Obispo
Department of General Services
1087 Santa Rosa Street *Phone: (805) 781-5900*
San Luis Obispo, CA 93408-0000 *Fax: (805) 781-1074*
Internet: www.co.slo.ca.us/purchasing

Purchase Order

Vendor
PLACER FIRE EQUIPMENT, INC
ATTENTION DOUG FELDMAN
10203 MISSILE WAY
MATHER AFB CA 95655

Information	
Document	22000832
Document Date	06/01/2005
Vendor Number	1000007895
Payment Terms	Payment due upon receipt.
Buyer	Barbara Adams
Phone Number	805-781-5906
Delivery Date	10/31/2005
Inco Terms	Free on board
Destination	San Luis Obispo
RFQ Number	
Collective	

Shipping Address
)UNTY OF SAN LUIS OBISPO
)F/COUNTY FIRE - SLO STATION
)5 N SANTA ROSA ST
)N LUIS OBISPO CA 93405

Send Invoice To
COUNTY OF SAN LUIS OBISPO
CDF/COUNTY FIRE - SLO STATION
635 N SANTA ROSA ST
SAN LUIS OBISPO CA 93405

Item	Material/Description	Quantity	UM	Net Price	Net Amount
	HACKNEY HAZMAT VEHICLE PER ALTERNATE PROPOSAL RESPONSE TO RFP PS-886 AND DEPARTMENTAL ADDITIONS TO VEHICLE:				
1	Hazardous Materials Unit	1.00	EA	215,527.00	215,527.00
2	Cab & Chassis	1.00	EA	67,705.00	67,705.00
				Net Value	283,232.00
				Tax	20,534.32
				Total Amount	$ 303,766.32

FAX AND MAIL PURCHASE ORDER
Please direct to DOUG FELDMAN FAX number (916) 856-6509.
In order to expedite, this PO will be faxed and mailed.
DO NOT DUPLICATE

NSTRUCTIONS TO VENDOR:
his Purchase Order is subject to the Terms and Conditions incorporated herein by this reference herein attached.

IGNATURE Jim Gater DATE 06/02/2005
Purchasing/Accounting)

Placer Fire Equipment, Inc.

July 11, 2005

The City of Long Beach
2600 Temple Avenue
Long Beach, CA 90806

Thank you for allowing Placer Fire Equipment, Inc to present the following proposal for three (3) Hackney DF0682 WMD Support Units per the enclosed specifications:

Price FOB Long Beach, CA (Each)	$217,800.00
Price FOB Long Beach, CA (3 Units)	$653,400.00
8.25% California Sales Tax:	$53,905.50
Apparatus Total:	$707,305.50

Delivery: not more than 270-300 calendar days after receipt of purchase order.

Three (3) cab and chassis payments of $73,964 (which includes required CA sales tax) is due upon completion of the cab and chassis or $2,200 flooring will be added to the final invoice for each cab and chassis.

Terms: Net cash on delivery and acceptance.

Final acceptance of the apparatus to be in Long Beach, California.

Quote is good for 45 days from receipt.

Thank you for your consideration of our proposal. If we can answer any questions please contact Roy Cobb at (916) 300-2287 at your convenience.

Sincerely,

Doug Feldman, President
Placer Fire Equipment, Inc

10203 Missile Way • Mather AFB, CA 95655
(916) 856-1818 • FAX (916) 856-6509
www.placerfire.net

LONG BEACH F.D. ADD-ON RECONCILIATION

ITEMS ADDED TO MEET LONG BEACH F.D. REQUIREMENTS

UPGRADE CAB TO 4-DOOR	$	6,561.00
LONG BEACH F.D. STANDARD COMMUNICATIONS/INFORMATION SYSTEMS	$	31,000.00
RUBBER COVERED BACKING BUZZERS (2)	$	560.00
LOCKING LADDER COVER	$	517.00
UPGRADE COMPARTMENT LIGHTS TO LED	$	200.00
UPGRADE LIGHTING SYSTEM/LIGHT BAR TO WHELEN LED	$	1,200.00
UPGRADE SIREN/SIREN SPEAKERS TO LONG BEACH F.D. STANDARD	$	524.00
ADDITIONAL LOOSE EQUIPMENT	$	1,343.00

ITEMS ADDED **$ 41,905.00**

ITEMS DELETED TO MEET OPERATIONAL REQUIRMENTS

REMOVE ROOFTOP STORAGE/COMPARTMENT MODULE	$	(8,890.00)
REMOVE HAZMAT LAB MODULE AND ACCESSORIES	$	(24,856.00)
DELETE LIGHT TOWER	$	(18,974.00)
DELETE CORD REELS/JUNCTION BOXES/EXTRA OUTLETS	$	(7,900.00)
DELETE HAZMAT REQUIRED ELECTRICAL SYSTEMS	$	(7,400.00)
DELETE EXTRA SHELVES/TRAYS TO MEET LONG BEACH F.D. REQUIREMENTS	$	(9,948.00)
DELETE AWNINGS/PERIMETER CURTAINS	$	(7,968.00)
DELETE SPARE TIRE & WHEEL	$	(984.00)
DELETE PERFORMANCE BOND	$	(6,205.00)
DELETE AIR BOTTLE STORAGE SYSTEMS	$	(2,456.00)
DELETE TWO-TONE CAB/BODY PAINT	$	(1,756.00)

ITEMS DELETED **$ (97,337.00)**

SAN LUIS OBISPO COUNTY PURCHASE PRICE **$ 283,232.00**

ITEMS ADDED	$	41,905.00
ITEMS DELETED	$	(97,337.00)
MULTI-UNIT DISCOUNT	$	(10,000.00)
UNIT PRICE	$	217,800.00
CALIFORNIA SALES TAX	$	17,968.50
TOTAL UNIT PRICE	$	235,768.50
TOTAL PRICE FOR (3) UNITS	$	707,305.50

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

CAB AND CHASSIS SPECIFICATIONS

The cab and chassis shall be of suitable size and design for use in the fire service as an emergency response vehicle configuration. The cab chassis shall be provided with all the standard components for an International 4400 and shall comply with the specifications herein:

A. GENERAL	
Manufacturer:	International Trucks
Model:	4400
Cab:	Four-door
G.V.W.R.:	Minimum 33,000 lbs.
Wheelbase:	
Minimum Grade Ability:	23% / 1.8% @ 55 mph
Terrain:	Capable of on and limited off road use
B. ENGINE AND EQUIPMENT	
Engine:	DT570, 330 @ 2200 - 335 peak HP @ 2200 RPM
Torque:	950 lb/ft @ 1200 RPM
Engine high idle:	Supply with Navistar electronic high idle code12VXY
Oil Filters:	Spin-on full flow with 30 quart capacity oil change system and crankshaft viscous damper
Air Cleaner:	Single element with air restriction gauge mounted on the air cleaner
Embers Separator:	Grille mounted to keep hot embers out of engine air intake
Fuel Filter:	Engine mounted spin-on
Fuel/Water Separator:	Fleetguard with heater, sight glass, 30 Micron filter and drain indicator light
Exhaust System:	Single muffler with internal catalytic converter, straight discharge perpendicular to outer edge of body, just forward of rear wheels
Ember Separator:	2586075C1
Engine Brake:	Diamond Logic or equal combination engine and exhaust, electronically activated
Fan Clutch:	Horton DriveMaster 2-speed with front tether air inlet and nylon fan
Radiator Core:	940 sq.in. aluminum radiator core and 1025 sq.in. charge air cooler. Manual core shut-off valves provided.
Deaeration System:	with polypropylene tank
Coolant:	Texaco Long Life ethylene glycol pre-charged to -40F with spin-on coolant filter

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

Coolant System Hoses:	Premium with torque clamps
Alternator:	Leece-Neville 4949PA, 270 amp with self excite charge circuit gauge
Starter:	Delco-Remy MT41, 12 volt
Starter Switch:	Key operated
Engine Shutdown:	Key operated, electric
Air Compressor:	Bendix Tu-Flo 750, 16.5 CFM
Governor:	Electronic
Cruise Control:	Electronic with controls integral to the steering wheel
Throttle Control:	Electronic, stationary, variable speed control mounted on steering wheel
Oil Drain Plug:	Magnetic
C. TRANSMISSION AND EQUIPMENT	
Automatic:	Allison 3000EVS, 6-speed
Vocation Programming:	Group 71, Package 119
Transmission Controls:	Electronic push-button, right hand control
Cooler:	Water to oil tube, heat exchanger type
PTO Outputs:	Two (2) with constant 1800 RPM (maximum) at approximately 1200-1300 engine RPM.
Oil Drain Plug:	Magnetic
D. FRONT AXLE AND SUSPENSION	
Front Axle:	International I-120SG, I-Beam type
Rating:	12,000 lbs. minimum
Front Suspension:	12,000 lbs. taper or multi-leaf springs with shocks
Spring Pins:	Rubber bushings, maintenance free
Front Bearing::	Oil lubricated seals
Power Steering:	Sheppard M-100, power
Steering Column:	Tilting
Steering Wheel:	2-spoke, 18" diameter, black
E. REAR AXLE AND SUSPENSION	
Rear Axle:	Dana Spicer 21090S, single reduction
Rating:	21,000 lbs. minimum
Rear Suspension:	Single Vari-Rate, 21,000 lb with 4500 lb auxiliary rubber spring
Axle Lube:	EmGard 75W-90 Synthetic

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

Drain Plug:	Magnetic
Rear Oil Seals:	Oil lubricated
F. BRAKE SYSTEM EQUIPMENT	
ABS:	Bendix ABS, full vehicle wheel control system, 4-channel with diagnostics
Front:	Air S-Cam, 16.5" x 5", includes 20 sq.in. MGM long stroke brake chambers
Rear:	Air S-Cam, 16.5" x 7", includes MGM TR3030 long stroke chamber and heavy duty spring actuated parking brake with two (2) rear spring brake chambers
Air Lines:	Color coded nylon with compressor air supply line through the air cleaner
Air Dryer:	Bendix AD-9 with heater
Drain Valve:	Automatic Bendix DV-2 with heater for air tank
Slack Adjusters:	Automatic front and rear
Drop/Pinch Frame Conversion Package	IH 08WEB - extended ABS cables and air lines
Air Gauge:	Air pressure gauges (2) located in instrument cluster on dash
G. WHEELS AND TIRES	
Wheels:	Six (6) 22.5 x 8.25 polished aluminum, 10-stud hub piloted, flanged nut with steel hubs
Front Tires:	Two (2) 11R22.5 Michelin highway tread
Rear Tires:	Four (4) 11R22.5 Michelin highway tread
H. CHASSIS EQUIPMENT	
Mud Flaps:	Black rubber front and rear with spring-loaded holder on rear
Tow Hooks:	Front, frame mounted (2)
Bumper:	Front, full width, aerodynamic, chrome plated steel
I. FUEL TANKS AND EQUIPMENT	
Fuel Tank:	Minimum 50 gallon (189L) capacity, right side D-style steel with quick connect outlet, mounted under cab
Fuel System:	Nylon fuel lines with O-ring snap-on quick-connect fitting at both ends
J. CAB AND EQUIPMENT	
Cab:	Four-door

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

Grille:	Chrome, integral to hood
Hood/Fenders:	Tilting fiberglass, three piece construction
Glass:	Tinted windshield and cab door glass
Door Glass:	Retractable door glass on all doors
Climate Control:	Heater, defroster and integral air conditioner using HFC-134A refrigerant
Grab Handles:	Two (2) total; one at each door entrance, chrome with anti-slip rubber inserts
Primary Mirrors:	Two (2) Lang Mekra heated bright finish aerodynamic rectangular, 7.09" x 15.75" with bright finish breakaway brackets. Integral convex mirrors both sides with Led clearance lights on lower face of mirrors. Electric actuated.
Convex Mirrors:	8" left and right side mounted convex mounted under the primary mirrors
Interior Trim Level:	Deluxe
Headliner:	Insulated with storage pocket over windshield
Driver Seat:	H.O. Bostrom Sierra Air 140, air suspension, high back with integral headrest, vinyl, isolated, with 2-position front cushion adjustment, 6 to 17 degree seat back adjustment and air lumbar adjustment with red 3-point lap and shoulder belt
Officers Seat:	H.O. Bostrom Sierra Air 140, air suspension, high back with integral headrest, vinyl, isolated, with 2-position front cushion adjustment, 6 to 17 degree seat back adjustment and air lumbar adjustment with red 3-point lap and shoulder belt
Rear Crew Seat:	Rear bench seat with red 3-point lap and shoulder belt for outer seat positions and lap belt for center seat position
Sunvisors:	Left and right side padded interior
Overhead Console:	In addition to the console listed under the Body Electrical section, there will be an International overhead, molded plastic console with dual storage pockets, retainer nets and CB radio pocket; smoke gray with black netting over storage boxes.
Trim:	Smoke gray color on all trim; plastic "A" pillar cover; printed cloth headliner; molded plastic door trim panels (driver and officer side); door storage pocket on driver door, full length;

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

	instrument panel trim molded plastic, Drawbridge gray with black center section and hidden cup holder
K. INSTRUMENTS AND CONTROLS	
Instrument Cluster:	Includes odometer display, miles, trip miles, engine hours, trip hours, fault code readout; warning system for low fuel, low oil pressure, high engine coolant temperature, and low battery voltage (visual and audible); cluster gauges (electronic engine oil pressure, electronic engine water temperature, electronic fuel, electronic tachometer, voltmeter
Auxiliary Gauges:	Allison oil temperature and air cleaner restriction (Filter Minder)
L. LIGHTING AND ELECTRICAL	
Electrical System:	Fully Multiplexed
Programming:	O8HAB Overlay Harness Package
Data Link Connector:	In cab for vehicle programming and diagnostics of chassis
Wiring, Chassis:	Color-coded and continuously numbered
Turn Signals:	Front flush mounted to include reflectors and auxiliary side turn signals with solid state flasher. Self-canceling turn signal switch
Headlights:	Long-life halogen, composite Aero design for two light system; includes daytime running lights. Headlight dimmer with flash-to-pass feature.
Parking Lights:	Integral with front turn signal and rear tail lights
Interior Lights:	Door activated rectangular cab dome light, center mounted with timed theater dimming
Batteries:	Three (3) Group 31, International Maintenance-free, 2250CCA minimum total. Battery jumper studs provided.
Circuit Breakers:	Manual-reset on main panel, SAE Type III with trip indicators
Windshield Wipers:	2-speed electric with intermittent feature and dual control integral with turn signal lever, plus low washer fluid indicator
Horn:	single electric
Radio:	Panasonic CR-W400U AM/FM civil defense radio with weather band, CD player; digital clock; and four (4) dual cone speakers

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

Power Source:	2-post terminal type on dash; and cigar lighter type outlet
M. PAINT	
Cab:	Solid Red, base coat, clear coat application (see Body Paint section for any applicable repaint information)
Frame and Undercarriage:	Black

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

"OCCUPANT MUST BE SEATED & BELTED" WARNING PLATE

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, section 14-1.3.5. It shall having a universal pictorial warning and verbal warning as follows: "WARNING - Occupants must be seated and belted when apparatus is in motion."

ENGINE EXHAUST LOCATION

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

AUTOMATIC BATTERY CONDITIONER

There shall be an IOTA Power Products, model DLS45 automatic battery conditioner installed and connected to the shorepower input. An IQ-3 microprocessor controlled automatic 3-stage "Smart-Charger" will be incorporated into the system that provides bulk, absorption, and float stage charging for rapid, safe battery charging without over-charging. It shall be rated at a minimum of 45 amps and capable of charging up to three batteries in series simultaneously, as well as auxiliary batteries for hand lights and other equipment. Output current shall be rated at 45 amps. LED bar graph shall be provided to monitor battery charge level. Location of bar graph to be determined at the Pre-Construction Conference.

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

SHORE-POWER INLET

There will be a 30-amp shoreline inlet located near the driver door. The electrical inlet will include a spring-loaded cover to prevent water from entering the receptacle when the shoreline is not connected. The unit will be completely sealed to prevent contamination of the mechanism, insuring long life.

The electrical receptacle will be wired to the electrical devices with no less than 10-gauge wire that is properly supported and shielded from damage and fraying.

ENGINE COMPARTMENT LIGHTS

Two (2) minimum 5" engine compartment lights shall be provided under the chassis hood. One will be located on each side of the engine.

AUXILIARY RED/CLEAR CAB DOME LIGHT

In addition to the standard chassis manufacturers installed cab ceiling lights, there shall be (2) Weldon model 8081-6978-68 red and clear auxiliary cab dome lights installed in the cab ceiling. They shall have a manual, push-button switch on each light for both the red and clear functions. Locations shall be determined at the Pre-Construction Conference.

CAB STEP LIGHTS

A minimum 3" white light shall be installed under the left and right front cab doors in a neoprene shock absorbing mount. They shall be recessed into the bright tread plate panel or other approved location just beneath the cab door and be automatically activated whenever the left and right front cab doors are opened.

A second set of minimum 3" white light shall be installed under the left and right rear cab doors matching the forward lights. They shall be automatically activated whenever the left and right cab doors are opened. Door jam switches shall be added to the chassis cab if not provided by the OEM cab manufacturer.

AIR HORN, STUTTERTONE

There shall be two (2) Grover model 1501 20" Stuttertone air horns installed. They shall be spun brass with a heavy chrome finish.

An air protection valve shall be provided in the air horn plumbing that will not allow the chassis air brakes system to drop below 90 psi.

An auxiliary air supply tank will be incorporated into the chassis air brake system behind the "wet" tank. It shall have a minimum of 1454 cubic inch displacement. A one-way

check valve shall be placed between this tank and the primary air tanks for the air brake system. The tank shall be dedicated for air brake use. No exceptions to this requirement.

AIR HORN ACTIVATION

The air horns shall be activated by a heavy duty, LineMaster #491S clam-shell type pedal foot switch located on the cab floor on the left and right side. There shall be a metallic tag with raised letter on the switch that reads "AIR HORNS".

AIR HORN ACTIVATION DISABLE

To prevent accidental discharge while the apparatus is stationary, the air horns may not be sounded unless the transmission is in the "drive" mode.

AIR HORN MOUNTING

To reduce cab interior noise levels, the air horns shall be mounted on the sides of the cab hood, one left and one right.

CAB ENTRANCE STEP & SLIDE-OUT BATTERY TRAY

There shall a cab entrance step furnished full length of the left side of the cab below the front and rear cab doors providing full enclosure of the visible undercarriage. The step area shall be fabricated of .125" bright aluminum anti-slip surface treadplate and extend the full width of the cab door conforming to NFPA 1901, Chapter 11-7. All edges not formed by machine break shall be unbroken seam welded. A hinged compartment door with securing latch shall be provided to access the chassis batteries.

A slide-out battery compartment shall be installed between the step and cab door. It shall be opened and/or secured with a two-point latch. The air reservior, as applicable, shall be relocated to provide space for the slide-out tray.

FUEL TANK COVER & REAR CAB STEP

The fuel tank shall be fully encased with .125" bright aluminum anti-slip tread plate. The enclosure design shall incorporate the OEM tank step recess and fuel filler and extend back to completely covers all space below the front and rear doors. All edges not formed by machine break shall be continuously seam welded. When required, there shall be a minimum 17" wide x 7" deep auxiliary step using Grip-Strut anti-slip insert suspended just below the tank.

Next to the fuel fill shall be a metallic tag with raised letters that reads DIESEL FUEL ONLY.

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

REAR TOW LOOPS

A pair of heavy-duty hinged tow loops, rated to pull the rated at 10,000 lbs. capacity shall be bolted to the left and right outside drop frame extension rails beneath the rear step bumper. The loops shall be rated for pulling only, not lifting.

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

BODY & FRAME REQUIREMENTS

FRAME MODIFICATIONS

1. Requirements: To maximize the cubic foot displacement for total required storage capacity within all equipment compartments and lower overall body 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) if at least 2.8 times that of the original unaltered chassis.

2. Modification Documentation: The bid shall include documentation for strength characteristics of the specified frame modification to the above minimum stress requirements. Documentation shall be in the form of an Aires and 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. A written synopsis outlining, in laymans terminology, the frame modification procedures and resulting strength characteristics conducted by the manufacturer shall also be included. Due to long term durability requirements and the stress associated with the intended missions of the apparatus, failure to provide engineering documentation may result in disqualification of the proposal.

3. Frame Warranty Requirement: The pinch/drop frame modification shall be warranted in writing by the manufacturer for a period of not less than the OEM chassis manufacturers original warranty or 10 years, whichever is shorter. A copy of the warranty shall be included with the Proposal.

4. Pinch/Drop Frame Construction: The upper pinch frame center structure shall be engineered 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.

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

The combination of upper pinch and lower drop is a minimal requirement to provide maximum load strength where off-road and rough road responses are required.

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.

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" steel channel 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 gussetted 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.

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

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.

9. 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.

10. 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.

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.

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.

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.

2. Compartment Floor: All exterior compartment floors shall be constructed of a minimum .125" 5052-H32 alloy aluminum, except wheelhousing compartments, which shall be a minimum .190". 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.

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.

4. Corner Posts: All structural vertical corner posts shall be constructed of minimum 4" radius 6061-T6 alloy aluminum extrusions. 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.

5. Roof Rails: All structural horizontal roof rails shall be constructed of minimum 6" radius 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.

6. Corner Caps: Minimum 4" radius aluminum corner caps shall be integrally welded at all corners, forming an uniform joint between the vertical body posts and the horizontal roof rails. All seams shall be ground smooth for a finished appearance when painted.

7. Drip Rail: Full body length heavy-duty extruded 6061-T6 alloy aluminum drip molding shall be provided, a minimum of 3" 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.

8. Roof Structural Supports: The roof shall be supported by a minimum of five (5) hat-section shaped 1" x 3" 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 4" high 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.

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.

10. Roof Insulation: The entire roof shall be insulated with a minimum .75" styrofoam with a reflective foil barrier.

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 an 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).

12. Front & Rear Exterior Body Panels: The exterior panels on the front and rear of the body shall be constructed of minimum .125" 5052-H32 aluminum. 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.

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.

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.

2. Compartment Walls: The compartment wall construction shall consist of an internal structural framework of extruded 6061-T6 alloy aluminum channels covered with .080" and .125" 5052-H34 alloy aluminum sheets.

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 from within 10" off the floor 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.

4. Wall Finish: Interior of compartments shall be a smooth finish.

5. Interior Hand Grips: Stamped hand grips (with rolled edges) shall be provided in all compartments, except wheelwell compartments, to assist personnel pulling themselves to the upper reaches of the compartments. Protruding grab handles are not permitted.

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.

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.

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.

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.

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.

6. Door Track Rollers: Each door shall be provided with self-lubricating nylon rollers (two in each end of door slat.

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.

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.

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.

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.

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.

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 following compartment layout schedule) and exterior lighting, shall be shown.

1. Maximum wheelbase of chassis:	207"
2. Maximum cab to axle dimension of chassis:	97"
3. Maximum overall length of apparatus:	342"
4. Minimum length of apparatus body, including rear step:	18.5 ft.
5. Overall apparatus width:	96"
6. Maximum height of apparatus (loaded):	124"

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.

ROAD SIDE (LEFT)

No. 1,RS: Forward side compartment with minimum dimensions of:

48" wide x 82" high x 40" deep with painted, roll-up aluminum door.

EQUIPMENT LAYOUT AND MOUNTING

1. 600 lb. rollout tray on floor

2. 1000 lb. Capacity bi-slide tray above drop and pinch "A" frame

3. 1000 lb. Capacity bi-slide tray vertically adjustable

4. One (1) 1000 lb. Capacity adjustable shelves above adjustable bi-slide tray

No. 2, RS: Wheelhousing compartment with minimum dimensions of:

74" wide x 57" high x transverse with painted, roll-up aluminum door.

EQUIPMENT LAYOUT AND MOUNTING

1. Individual transverse tunnels across top of compartment for following equipment (see separate specification for details):

-- two (2) stokes basket stretchers
-- two (2) long back boards
-- two (2) stair chairs

2. 1000 lb. Capacity bi-slide tray on floor

3. 1000 lb. Capacity bi-slide tray vertically adjustable

No. 3, RS: Rear of wheelhousing compartment with minimum dimensions of:

40" wide x 82" high x 38" deep with painted, roll-up aluminum door.

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

EQUIPMENT LAYOUT AND MOUNTING

1. Two (2) full height partitions

CURB SIDE (RIGHT)

No. 1, CS: Forward side compartment with minimum dimensions of:

48" wide x 82" high x 40" deep with painted, roll-up aluminum door.

EQUIPMENT LAYOUT AND MOUNTING

1. 600 lb. rollout tray on floor

2. 600 lb. rollout tray vertically adjustable above floor mounted tray

3. 1000 lb. Capacity bi-slide tray above drop and pinch "A" frame

4. 1000 lb. Capacity bi-slide tray vertically adjustable

5. Two (2) 1000 lb. Capacity adjustable shelves above adjustable bi-slide tray

No. 2, RS: Wheelhousing compartment with minimum dimensions of:

74" wide x 57" high x transverse with painted, roll-up aluminum door.

EQUIPMENT LAYOUT AND MOUNTING

1. Individual transverse tunnels across top of compartment for following equipment (see separate specification for details):

-- two (2) stokes basket stretchers
-- two (2) long back boards
-- two (2) stair chairs

2. 1000 lb. Capacity bi-slide tray on floor

3. 1000 lb. Capacity bi-slide tray vertically adjustable

No. 3, CS: Rear of wheelhousing compartment with minimum dimensions of:

40" wide x 82" high x 52" deep with painted, roll-up aluminum door.

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

EQUIPMENT LAYOUT AND MOUNTING

1. 600 lb. Capacity rollout tray on floor

2. Two (2) vertically adjustable 600 lb. Capacity rollout trays

OVERALL APPARATUS HEIGHT WARNING PLATE

A minimum 6" wide x 3" high red plate with white letters shall be prominently displayed on the center of the cab dash that displays the overall unloaded height at the highest point on the apparatus. It shall read "WARNING - *(clearance height at time of delivery)* CLEARANCE".

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.

ANTI-SLIP TREAD PLATE ROOF

The roof shall be covered with embossed, anti-slip patterned, bright aluminum tread plate to act as a safe walking zone.

REAR MUD FLAPS

A pair of heavy duty black rubber mud flaps shall be bolted to the rear wheelhousing behind the rear wheels.

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.

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 anti-slip embossed tread plate, forming a platform a minimum of 11" deep and minimum 90" wide.

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."

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 and right rear wheelhousing panels to facilitate access to equipment stored in the upper reaches of the compartment. There shall be one each forward of wheel opening and one each rear of wheel opening. Each step shall be flange mounted using a minimum of four attachment points to the body panel.

REAR WHEEL STEP BARS

There shall be an aluminum step bar installed across the left and 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 expanded metal 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.

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.

TRANSVERSE ADJUSTABLE SHELF

A transverse shelf shall be provided in the forward body compartment as outlined in the compartment layout schedule. It shall be reinforcement beneath to support a required 1000 lb. equalized weight capacity.

SLIDE-OUT TRAY - 600# CAPACITY

As specified in the compartment layout schedule, there shall be six (6) 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.

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

TRANSVERSE COMPARTMENT SLIDE-OUT TRAYS

As specified in the compartment layout schedule, there shall be four (4) trays 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.

COMPARTMENT VERTICAL PARTITIONS

Two (2) vertical compartment partitions shall be permanently installed, as outlined in the compartment layout schedule. For strength, the partition shall have a 2.5" 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.

BASKET STRETCHER, BACKBOARDS, & STAIR CHAIR STORAGE TUNNELS

Enclosed storage tunnels constructed of minimum 1/8" 5052-H32 aluminum shall be installed in the upper section of the transverse wheelhousing compartment measuring 74" wide x 9" high x 88" deep with three (3) separate sections or compartments that will accommodate the following: two (2) Long Beach F.D. supplied Stokes baskets high); two (2) for multiple long backboards (18.5" wide x 4.44" high - each); and one stair chair. All the equipment shall be retrievable from either side of the apparatus. A single, hinged, fold-down retaining door with spring-loaded latch shall be provided over compartment openings to prevent the equipment from sliding into the roll-back exterior compartment doors.

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. A locking ladder cover shall be provided to prevent civilian use of the ladder.

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

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 no 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.

PAINT CHASSIS CAB

The chassis cab shall be completely repainted. It shall exceed automotive standards as

specified in the body painting requirements, except as follows:

1. All emblems, latches and clip-on gaskets shall be removed prior to paint preparation.

2. The cab shall be fully sanded on all exterior surfaces, door jambs and under the hood with no less than 180 grit to assure removal of all imperfections in metal surface. All surfaces shall be de-greased before and after sanding.

3. The entire cab, door jams and under side of hood shall then be painted with SIKKENS acrylic urethane.

4. After proper curing time, the cab shall be lightly sanded to remove all orange peel and blemishes and then machine polished to a high luster. 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.

TOUCH-UP PAINT

One (1) quart of touch-up paint shall be provided for each color applied to the apparatus.

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.

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.

A minimum 4" high white reflective Scotchlite stripe shall be installed on the full width of the front bumper extending around the end curvatures meeting minimum NFPA1901 requirements. Breaks are permitted on each side of bumper mounted equipment or holes.

SIMULATED GOLD LEAF LETTERING

Simulated gold leaf lettering large engine turned with a black shadow shall be provided. (46) 6" letters and (25) 4" letters shall be provided. Location and text to be determined at the Pre-Construction Conference.

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

12VDC ELECTRICAL SYSTEM REQUIREMENTS

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.

B. WIRING REQUIREMENTS:

1. 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.

2. 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. All other wiring shall be not less than GPL. As specified, any required strobe lights shall be wired using shielded cable, as recommended by the light manufacturer.

3. Any required signal conductors shall be shielded twisted pairs rated by the system manufacturer to carry the multiplex command signals from the switch panel to the control modules.

4. The wiring shall be routed in protective nylon HTZL Type 6 300 degree F. Rated loom in all areas. 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.

5. Where wire passes through sheet metal, rubber grommets shall be used to protect both wiring and wire looms.

6. 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.

C. MULTIPLEXED ELECTRICAL MANAGEMENT SYSTEM:

1. General Overview Requirements:

The apparatus shall be equipped with a fully multiplexed electrical system, no exception. The system shall be compatible with the chassis supplied multiplexed electrical system and fully interfaced using the same diagnostics.

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 scaleable electrical harness utilizing Deutsche 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, perform and report diagnostics, 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:
-- Total load management
-- Load shedding capabilities (*will begin load shedding when voltage drops below selected level after a 2-minute period per output.)*
-- Load sequencing capabilities
-- "On-board" diagnostics readout
-- Error reporting
-- Full color graphics data display
-- Continuous system monitoring and reporting
-- Emergency warning light flasher
-- Door ajar warning system
-- Real time clock
-- Vehicle operational hours tracking

2. Message Capabilities:

The multiplex system shall have the capability to display diagnostics messages such as short or open circuits, ram or other memory system failures and input and output status. 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 (as applicable).

3. Real-time Diagnostics:

The system shall provide instant message feed back based on an output failure (i.e: burned out bulb or electrical short). The error message shall remain displayed until such time as the "acknowledge" button is depressed. The output shall turn off whenever there is a short circuit or over current condition and shall not reactivate until 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 Owners Manual. The guide shall outline, in simplistic language, how to perform system diagnostics and troubleshooting and how to reset default circuits.

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.

The apparatus proposed will have the ability to operate in the electromagnetic environment typically found in fire ground operations. The contractor will be able to demonstrate the EMI and RFI testing has been done and meets SAE J551 requirements.

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.

E. CONSOLE CONTROLS & FUNCTIONS:

1. A combination switch and **color** visual display 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 measure not more than 10.25" wide by 7.75" high and be capable of installing in any area of the cab that is convenient to the driver and/or officer positions.

The full color display shall be visible in direct sunlight, but shall not be overpowering during night operations. Once the headlights are activated the screen shall automatically dim to 50% of its intensity so as not to interfere with night driving operations.

Additionally, the display screen will have, as a minimum, the following displays
-- System diagnostic controls and alpha/numeric readouts for displaying system defaults or failures
-- Compartment Open warning graphics - overhead color depiction of apparatus cab and body that graphically displays which doors are not secured. For safety purposes, the following minimum scenario shall be provided: When the apparatus is in the neutral (or parked) mode, the overhead view graphic display of the apparatus will depict which door(s) are open. Once the apparatus is placed into the drive mode a scrolling message shall appear across the top of the Vista display screen and the overhead view graphic display of the door(s) that are open will flash. A beeping sound will also be activated as a secondary warning to the driver of unsecured door(s).

2. The control panel shall have four switches on each side of the LCD display screen that performs the following minimum functions:

-- LEFT SIDE SWITCHES & LCD DISPLAY:

a. LEFT SCENE LIGHTS *(activates all left 12VDC scene lights)*
b. RIGHT SCENE LIGHTS *(activates all right 12VDC scene lights)*
c. REAR SCENE LIGHTS *(activates all rear 12VDC scene lights)*
d. GENERATOR ACTIVATION (if applicable) *(activates PTO and engine fast idle to preset minimum RPM for proper operation of engine and PTO devices)*

-- RIGHT SIDE SWITCHES & LCD DISPLAY:

a. BACKUP CAMERA *(activates automatically in reverse mode)*
b. SPARE
c. SPARE
d. SPARE

3. Switch functions shall be provided adjacent to each switch on the display screen. When activated, the nomenclature display button shall change colors to instantly identify that the circuit has been activated.

4. Lower panel switches below the color LCD monitor display as follows:
a. E-MASTER *(activates all pre-set emergency response warning lights)*
b. BLOCKING OVERRIDE *(deactivates all blocking lights in Zone A or reactivates lights that have shut down in the blocking mode for emergency discretionary purposes)*
c. HOME *(returns the currently displayed screen back to the "Home" screen location)*
d. SYSTEM INFO *(displays system diagnostic menus)*
e. SERVICE INFO (*displays chassis make, model and serial number; engine and transmission serial numbers; oil capacities; service interval recommendations; other information required for routine maintenance; body builders serial number, dealer and/or service contact info; and other pertinent information that may be deemed necessary.*
f. SPARE
g. HORN/SIREN *(overrides chassis horn button switch to activate designated warning device)*

F. 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.

G. 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 the VISTA control screen located adjacent to the driver position. The on-board 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 operators 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:

1. On-board self-diagnostic messages and status indicators.

2. Visual confirmation of communication of each Vehicle Power Module, Display Module, and ECU.

3. Automatic self-test on startup with provision for manual diagnostic checks.

4. Minimize use of control relays.

5. Provide control for NFPA 1901 mandated safety interlocks and indicators.

6. Utilize system integration to eliminate redundant wiring and components.

7. Improve control system reliability by reducing relay and connector contacts.

8. Advanced electrical system load management and sequencing system.

9. Imbedded service interval information.

10. Customized software programmed to reflect the vehicle's unique configuration.

11. Field re-programmable to accommodate changes to the vehicle operating parameters.

12. Fully documented hardware.

H. 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 the VISTA control screen. The service and maintenance program will include the following minimum features:

1. Easy to understand diagnostic procedures.

2. Automatic failure detection.

3. Appropriate warning regarding the location of welding-sensitive components.

4. System simulation and pinging of nodes for status verification.

I. BATTERY SYSTEM:

1. The battery enclosure and system shall be located conveniently to provide for easy service and replacement.

2. Battery cables shall be of sufficient size to carry the full load of apparatus and to start the vehicle using a minimum of 1/0 AWG stranded copper. The cable shall be shielded from exhaust and mufflers. Rubber grommets shall be provided where cable enters the battery box.

3. 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.

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 light located in the center of the Vista LCD display shall indicate the status of the batteries. It shall be activated anytime the battery switch is in the "ON" position to alert the operator of the status of the battery switch.

5. See Chassis specifications for battery requirements.

J. 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.

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

MULTIPLEX SYSTEM DIAGNOSTICS DOWNLOADER

A diagnostics downloader interface and readout module shall be incorporated into the multiplexed electrical system that permits field reprogramming via the internet and email.

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.

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.

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.

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.

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.

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

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:

1. Documentation of the electrical system performance test.

2. Written load analysis with the following information:

-- a. Nameplate rating of the alternator
-- b. The alternator rating under the conditions specified in NFPA 1901, section 13.3.2.
-- c. The minimum continuous load of each component that is specified per NFPA 1901, section 13.3.2.
-- d. Additional loads that, when added to the minimum continuous load, determine the total connected load.
-- e. Each individual intermittent load

DO NOT MOVE TRUCK MESSAGE DISPLAY

To prevent accidents or damage caused by unsecured appendages on the cab and body, the following messages shall be displayed on the cab mounted display screen that are displayed whenever the transmission is shifted out of the neutral position and one or more of the following is detected:

-- Street side cab doors are not secured
-- Street side body doors are not secured
-- Curb side cab doors are not secured
-- Curb side body doors are not secured
-- Rear door is not secure (if applicable)
-- Street side roof box lid not secured (if applicable)
-- Curb side roof box lid not secured (if applicable)
-- Light tower not stowed (if applicable)
-- Observation platform rails not stowed (if applicable)
-- Awning is not stowed (if applicable)

The above text messages are required in addition to the minimum flashing light and audible warnings required by NFPA 1901. Due to the number of flashing warning lights and audible alarms typically supplied within the confines of the cab, the text messages are considered critical to the safe operation of the apparatus, Thus no exceptions will be permitted to this requirement.

GRAPHICS DISPLAY

In addition to the text message and flashing lights to warn of non-secured or stowed equipment, an overhead graphic color display will be visible on the Vista monitor.

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

Whenever a compartment door is not secured, yellow flashing indicators will depict which doors are not secured (cab, left side, right side and rear). If the roof compartment lids are not closed (if applicable), the roof compartment graphics will flash. If the light tower (if applicable) is not stowed, a graphic depicting the light tower raised will flash. If the awning (if applicable) is not stowed, a graphic depicting the awning extended will flash.

CAB CONSOLE

A console shall be installed between the front cab seats that will accommodate radio control heads, siren control head, console panel, maps, note books and etc. The design shall not interfere with access to the engine service access cowling or chassis manufacturers dash mounted gauges, switches or other options. The console surface shall measure approximately 18" wide x 23" long.

A minimum 18" wide x 10" long x 10" deep storage compartment shall be provided at the back of the console. It shall have a hinged and latched door on top to conform to NFPA 1901, preventing stored books and objects from becoming projectiles should the vehicle become involved in an accident.

The VISTA control panel shall be flush mounted in the upper left corner easily accessible to the driver.

Mounted on the console shall be a flexshaft map light and three (3) recessed 12-VDC power point receptacles with rubber covers.

Ample space will be provided for subsequent installation by the end user of radios, monitors or other applicable equipment.

DOT CLEARANCE & LED MARKER LIGHTS

The apparatus body shall be equipped with upper side, front and rear LED (no exception) 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.

LED TAIL LIGHT ASSEMBLY

Two (2) Whelen CAST 4 LED tail surface mounted light assemblies shall be installed on the lower left and right rear body panels. The cluster shall consist of a Whelen 60R00BRR LED red stop/tail light, left and right; 60C00VCR white LED backup light, left and right; and 60AOOTAR LED amber turn signal left right. Whelen 60R00BRR LED red flashers at bottom of cluster.

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

UPPER BODY AUXILARY LED STOP/TURN & EMERGENCY WARNING LIGHTS

Two (2) Federal 4" red LED auxiliary stop light shall be flush mounted on the left and right upper rear body. They shall be connected to the same circuit as the primary lower stop light using watertight connectors.

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.

AUXILIARY BRAKE LIGHT ACTIVATION

The rear brake lights shall be automatically activated whenever the auxiliary engine brake is engaged.

BRAKE LIGHT IMPULSE ALERT SIGNAL

Upon application of the brakes, the upper auxiliary LED brake lights will emit two rapid impulse flash sequences to warn vehicles behind the apparatus that braking actions have been initiated. This alert is required to gain the attention of any motorist following the apparatus and watching the emergency flashing light pattern that a new alert mode is being initiated.

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.

UPPER SIDE BODY 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.

UPPER REAR BODY 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.

In addition to the switch activation capability, the rear scene lights shall be automatically activated whenever the transmission is placed in the reverse mode of operation.

ROPE TYPE LED COMPARTMENT LIGHTING

Rope type LED lighting shall be installed in each compartment. They shall be installed vertically on the left and right side wall. Connections shall be made using weatherproof "screw-on" plugs. The installation shall be installed in a manner that minimizes exposure to damage.

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:

-- Cab Doors Ajar
-- Roadside Body Door Ajar
-- Curbside Body Door Ajar
-- Rear Body Door Ajar

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.

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."

GROUND LIGHTS

Minimum 4" diameter shock mounted ground lights shall be installed. They shall be mounted in the following locations:
-- one (1) each forward of left & right rear wheels
-- one (1) each aft of left & right rear wheels
-- one (1) under rear step bumper

They shall be activated in the following scenarios:

1. When any body compartment door is opened
2. Manually from respective scene light switches
3. When the apparatus is shifted to the reverse mode
4. Left and right sides activated by respective turn signal

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:

UPPER ZONE A WARNING LIGHTS

A NFPA compliant Whelen model FN60QLED, 60" long light bar will be installed on the forward section of the cab roof. It will be an all LED configuration consisting of: two (2) front corner red Linear12's front; red Linear8 on the right side end cap; red Linear8 on the left side end cap; and four (4) forward facing Linear8's (two red and two white). All outer lens will be clear.

LOWER ZONE A FRONT CAB WARNING LIGHTS

Two (2) Whelen 60R02SSR red Super-LED red warning lights with chromed flange shall be provided at the front of the cab. Both lights shall be steady burning.

The forward and side facing lights on the hood will be mounted in a polished aluminum housing that contours to the hood and fenders.

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.

LOWER ZONE B & D INTERSECTION WARNING LIGHTS

A Whelen 60R02SSR red Super-LED warning light shall be mounted in the left and right

side of the cab fenders..

LOWER ZONE B & D SIDE BODY WARNING LIGHTS

A Whelen 60R02SSR red Super-LED warning light shall be mounted in the lower left and right apparatus body crash rails; one forward and one aft (total of 4).

LOWER ZONE C REAR BODY WARNING LIGHTS

Provided in taillight bezels.

UPPER ZONE B & D SIDE BODY WARNING LIGHTS

A Whelen 90RR5SSR red Super-LED warning light shall be mounted on the right and left side of the upper apparatus body, one at the rear body corner and one at the front body corner.

UPPER ZONE C REAR BODY WARNING LIGHTS

A Whelen 90RR5SRR red Super-LED and 60R02SSR red Super-LED warning light shall be mounted on the upper left and right rear body (total of 4).

SIREN, UNITROL ELECTRONIC

An Unitrol model UTM4 electronic siren shall be mounted in cab control console convenient to the driver and officer. A noise-canceling mike shall be provided for the PA system.

HORN/SIREN SWITCH

A switch shall be provided on the control console that permits the driver to select activation of either the chassis OEM horn or the siren from the steering wheel horn button.

SIREN BUMPER SPEAKER

Mounted under the right side of the front bumper shall be a Whelen UnderPro SA31101P siren speaker.

SIREN BUMPER SPEAKER

Mounted under the left side of the front bumper shall be a Whelen UnderPro SA31101D siren speaker.

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

COMMUNICATIONS/HEADSETS/COMPUTER ALLOWANCE

An amount not to exceed $31,000 allowance for all communications/vehicle headset systems, vehicle locator system, and computer shall be provided.

Long Beach F.D. to designate the vendor who will receive the allowance.

BACK-UP ALARM

A back-up alarm rated at not less than 102 DBA shall be installed under the rear of the apparatus body that meets minimums requirements of NFPA 1901. It shall be automatically activated whenever the transmission is in the reverse mode of operation.

REAR VISION CAMERA SYSTEM

A SafetyVision high resolution black and white rear vision camera shall be installed and integrated to the dash mounted Vista LCD monitor. It shall automatically engage whenever the apparatus is placed in the reverse mode of operation and manually by an individual activation switch on the VISTA control panel.

The camera shall be mounted in a weather-resistant housing to protect the connection from water and other forces. The camera shall feature a solid-state imager, electronic iris, wide angle lens, built-in heater and waterproof connector. The housing shall resist up to 60 G's of shock and vibration resistance to 6.8 G's. It shall be subjected to salt spray testing to handle road conditions. The viewing area shall not be less than 118 degrees horizontal and 93 degrees vertical.

RUBBER COVERED BACKING BUZZER

A backing buzzer with (2) rubber covered buttons shall be installed at the rear, 1 each side above the taillights.

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

240/120VAC ELECTRICAL SYSTEM REQUIREMENTS

1. General Requirements: The complete wiring and electrical installation shall conform to the current National Electrical Code (NEMA) 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:

2. Wiring: All AC electrical primary wiring rated at 20 amps and higher shall be fine stranded copper type THNN. THNN 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.

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.

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.

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.

6. Load Balance: To provide proper loading and efficient generator operation, the 120 volt wiring shall be split to permit a balanced load condition.

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.

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.

9. Wiring Methods: Fixed wiring system will be limited to the following:

-- Metallic or nonmetallic X-flex, LiquidTite or equal flexible conduit rated at not less than 194 degrees F.

-- Type SOW or Type SEO cord with a WA suffix, rated at 600-volts at not less than 194 degrees F.

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:

-- Separated by a minimum of twelve (12) inches, or properly shielded from exhaust piping.

-- Separated from fuel lines by a minimum of six (6) inches.

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.

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.

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 receptacle 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.

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.

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 *(not applicable to portable generators)*.

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.

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.

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.

3. Generator Mounting: The generator shall be mounted underneath the cab under the rear portion.

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.

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.

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.

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.

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:

-- digital voltmeter
-- two digital ammeters
-- one (1) digital frequency meter
-- one (1) digital hourmeter
-- one (1) PTO engagement indicator light

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.

The test shall be conducted as follows:
--1. Isolate the power source from the panel board and disconnect any solid state low voltage components.
-- 2. Connect one lead of the dielectric tester to all the hot and neutral busses tied together.
-- 3. Connect the other lead to the fire apparatus frame or body.

-- 4. Close any switches and circuit breakers in the circuits.
-- 5. Apply the dielectric voltage for 1 minute in accordance with the testing equipment manufacturer's instructions.

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.

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 down stream of the power source will be "listed" (where applicable) in accordance with manufacturers 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 thee 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. Location of the breaker box to be determined at the Pre-Construction Conference.

120VAC TWIST-LOCK OUTLETS

Four (4) 15-amp, 120VAC twist-lock outlets (NEMA L5-15R), wired with 12/3 THNN wire

shall be installed, two at the front of the body and two at the rear of the body. Each outlet shall be provided with weatherproof cover. A metallic tag with raised letters reading 120VAC shall be installed above the outlet.

1000W TELESCOPING QUARTZ FLOOD LIGHTS

Two (2)120VAC Fire Research model FC530 bottom raise telescoping pole with M10 flood light head rated at 1000 watts shall be mounted on the apparatus body. Two (2) at the rear body, and one each at the front body corners. The poles shall be push-up type with 4" off-set mounting brackets. They shall rotate 360 degrees left and right and the head shall tilt up and down. The lens shall be heat tempered. Each light shall be controlled directly from the circuit breaker control panel with appropriate labeling. If the light assembly is mounted against a painted surface, a brushed finish stainless steel plates will be installed on body behind the nested position of the light heads to prevent damage.

1000W TRI-POD QUARTZ FLOOD LIGHTS WITH GROUND CONTINUITY MONITOR

Two (2)120VAC Fire Research FOCUS 1000 watt removable tri-pod flood lights shall be mounted on the rear of the apparatus body. The tri-pod poles shall be model FC600 with FC603 mounting brackets. The poles shall be capable of being used as a grab handle while mounted on the body. The poles shall rotate 360 degrees left and right and the head shall tilt up and down. The lamp heads shall be FOCUS model M10, 120VAC, 8.3 amp. The lens shall be heat tempered. Each light shall be controlled directly from the circuit breaker control panel with appropriate labeling. A coiled cord with plug matching the specified receptacle will be provided to permit the light assembly to be removed from the apparatus and used remotely. If the light assembly is mounted against a painted surface, a brushed finish stainless steel plates will be installed on body behind the nested position of the light heads to prevent damage. The plug shall incoroporate 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.

LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

MISCELLANEOUS EQUIPMENT REQUIREMENTS

OWNERS MANUALS

Two (2) 3-ring binders (one original and one copy) 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 dealers telephone numbers and contact persons names shall be supplied within the binder.

DIAGNOSTIC SOFTWARE DEALER SUPPLIED

One (1) set of diagnostic software for the Navistar engine, Allison Transmission, ABS braking system shall be provided. All computer connection hardware shall be provided.

NOTEBOOK COMPUTER TO RUN SOFTWARE

A notebook capable of operating the diagnostic software shall be included.

EQUIPMENT ALLOWANCE

A $1343 equipment allowance shall be provided.

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.

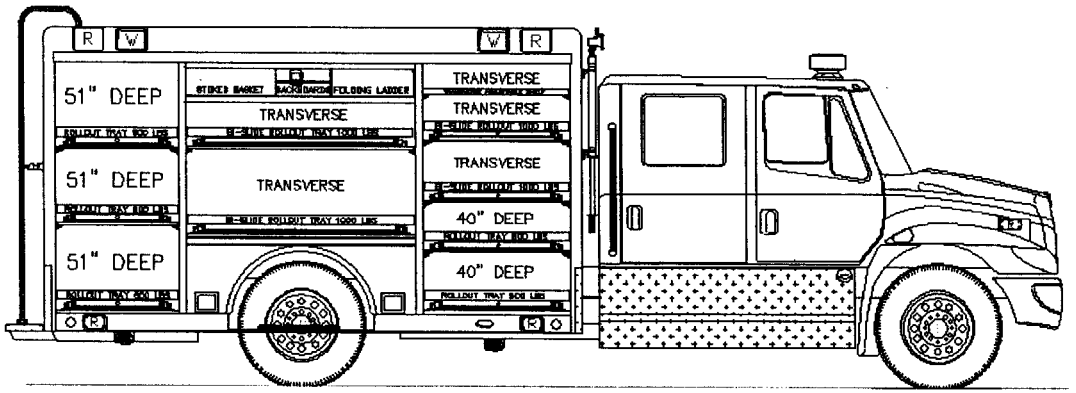
LONG BEACH FIRE DEPARTMENT
WMD RESCUE UNIT SPECIFICATIONS

PRE-CONSTRUCTION CONFERENCE

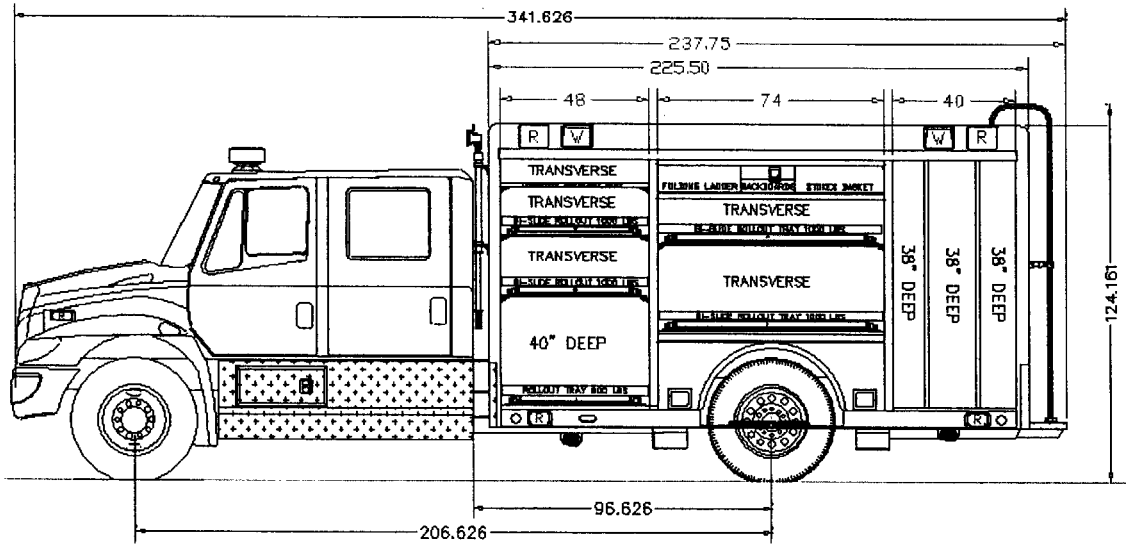
A Pre-Construction Conference between the appointed representatives of the purchaser and Placer Fire Equipment shall be held not later than 60 days after notification at the fire departments headquarters. Placer Fire Equipment shall present a set of final engineering construction drawings and line item production shop order complying with the specifications outlined herein.

FACTORY FINAL INSPECTION

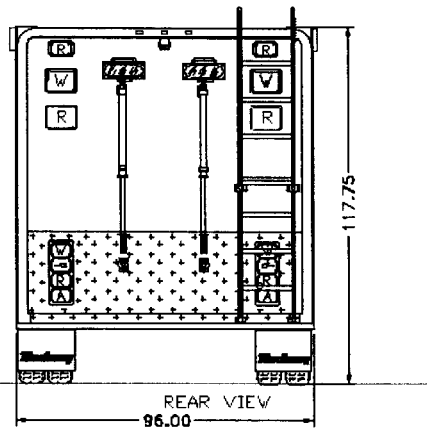
A factory final inspection will be conducted prior to release of the completed apparatus for delivery at Hackney Emergency Vehicles in Washington, North Carolina. The inspection will verify compliance to the specifications and fit and finish. Expenses for travel for three (3) persons will be included in the contract price and include airfare; hotel accommodations; rental car, and meals while at the factory. 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. This will be for the inspection of the (3) WMD units and the Dive Support Unit



CURBSIDE



ROADSIDE



REAR VIEW

EMERGENCY SUPPORT VEHICLE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PL. DECIMALS± 3 PL. DECIMALS± ANGLES± FRACTIONS±	Hackney EMERGENCY VEHICLES EMERGENCY VEHICLES DIVISION WASHINGTON, NC 27889-0880
DRAWN BY: DATE	LONG BEACH F.D. WMD UNIT
APPROVED BY: DATE	

Placer Fire Equipment, Inc.

July 9, 2005

The City of Long Beach
2600 Temple Avenue
Long Beach, CA 90806

Thank you for allowing Placer Fire Equipment, Inc to present the following proposal for one (1) Hackney DF0773R Dive Support Unit per the enclosed specifications:

Price FOB Each Long Beach, CA	$253,675.00
8.25% California Sales Tax:	$20,928.18
Apparatus Total:	$274,603.18

Delivery: not more than 270-300 calendar days after receipt of purchase order.

Terms: Net cash on delivery and acceptance.

Cab and chassis payment of $73,964 (which includes required CA sales tax) is due upon completion or $2,200 flooring will be added to the final invoice.

Final acceptance of the apparatus will be in Long Beach, California.

Quote is good for 45 days from receipt.

Thank you for your consideration of our proposal. If we can answer any questions please contact Roy Cobb at (916) 300-2287 at your convenience.

Sincerely,

Doug Feldman, President
Placer Fire Equipment, Inc

10203 Missile Way • Mather AFB, CA 95655
(916) 856-1818 • FAX (916) 856-6509
www.placerfire.net

Placer Fire Equipment, Inc.

July 11, 2005

The City of Long Beach
2600 Temple Avenue
Long Beach, CA 90806

Re: San Louis Obispo Add / On: PO 22000832

San Luis Obispo County issued Placer Fire Equipment, Inc. a Purchase Order for the referenced Hackney HAZMAT vehicle. No contract was issued or signed.

Thank you for your consideration of our proposal. If we can answer any questions please contact Roy Cobb at (916) 300-2287 at your convenience.

Sincerely,

Doug Feldman, President
Placer Fire Equipment, Inc

10203 Missile Way • Mather AFB, CA 95655
(916) 856-1818 • FAX (916) 856-6509
www.placerfire.net

LONG BEACH F.D. ADD-ON RECONCILIATION

ITEMS ADDED TO MEET LONG BEACH F.D. REQUIREMENTS

UPGRADE CAB TO 4-DOOR	$	6,800.00
LONG BEACH F.D. STANDARD COMMUNICATIONS/INFORMATION SYSTEMS	$	31,000.00
RUBBER COVERED BACKING BUZZERS (2)	$	560.00
LOCKING LADDER COVER	$	517.00
UPGRADE COMPARTMENT LIGHTS TO LED	$	200.00
UPGRADE LIGHTING SYSTEM/LIGHT BAR TO WHELEN LED	$	1,200.00
REAR TRAILER HITCH/BRAKE/CONTROLLER/PLUG	$	988.00

ITEMS ADDED **$ 41,265.00**

ITEMS DELETED TO MEET OPERATIONAL REQUIRMENTS

REMOVE HAZMAT LAB MODULE AND ACCESSORIES	$	(24,856.00)
DELETE CORD REEL/JUNCTION BOX/EXTRA OUTLETS	$	(3,100.00)
DELETE HAZMAT REQUIRED ELECTRICAL SYSTEMS	$	(7,400.00)
DELETE EXTRA SHELVES/TRAYS TO MEET LONG BEACH F.D. REQUIREMENTS	$	(16,521.00)
DELETE SPARE TIRE & WHEEL	$	(984.00)
DELETE PERFORMANCE BOND	$	(6,205.00)
DELETE TWO-TONE CAB/BODY PAINT	$	(1,756.00)

ITEMS DELETED **$ (60,822.00)**

SAN LUIS OBISPO COUNTY PURCHASE PRICE **$ 283,232.00**

ITEMS ADDED **$ 41,265.00**

ITEMS DELETED **$ (60,822.00)**

MULTI-UNIT DISCOUNT **$ (10,000.00)**

UNIT PRICE **$ 253,675.00**

8.25% CALIFORNIA SALES TAX **$ 20,928.18**

FINAL PRICE **$ 274,603.18**

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

CAB AND CHASSIS SPECIFICATIONS

The cab and chassis shall be of suitable size and design for use in the fire service as an emergency response vehicle configuration. The cab chassis shall be provided with all the standard components for an International 4400 and shall comply with the specifications herein:

A. GENERAL	
Manufacturer:	International Trucks
Model:	4400
Cab:	Four-door
G.V.W.R.:	Minimum 33,000 lbs.
Wheelbase:	
Minimum Grade Ability:	23% / 1.8% @ 55 mph
Terrain:	Capable of on and limited off road use
B. ENGINE AND EQUIPMENT	
Engine:	DT570, 330 @ 2200 - 335 peak HP @ 2200 RPM
Torque:	950 lb/ft @ 1200 RPM
Engine high idle:	Supply with Navistar electronic high idle code12VXY
Oil Filters:	Spin-on full flow with 30 quart capacity oil change system and crankshaft viscous damper
Air Cleaner:	Single element with air restriction gauge mounted on the air cleaner
Embers Separator:	Grille mounted to keep hot embers out of engine air intake
Fuel Filter:	Engine mounted spin-on
Fuel/Water Separator:	Fleetguard with heater, sight glass, 30 Micron filter and drain indicator light
Exhaust System:	Single muffler with internal catalytic converter, straight discharge perpendicular to outer edge of body, just forward of rear wheels
Ember Separator:	2586075C1
Engine Brake:	Diamond Logic or equal combination engine and exhaust, electronically activated
Fan Clutch:	Horton DriveMaster 2-speed with front tether air inlet and nylon fan
Radiator Core:	940 sq.in. aluminum radiator core and 1025 sq.in. charge air cooler
Deaeration System:	with polypropylene tank
Coolant:	Texaco Long Life ethylene glycol pre-charged to -40F with spin-on coolant filter
Coolant System Hoses:	Premium with torque clamps

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

Alternator:	Leece-Neville 4949PA, 270 amp with self excite charge circuit gauge
Starter:	Delco-Remy MT41, 12 volt
Starter Switch:	Key operated
Engine Shutdown:	Key operated, electric
Air Compressor:	Bendix Tu-Flo 750, 16.5 CFM
Governor:	Electronic
Cruise Control:	Electronic with controls integral to the steering wheel
Throttle Control:	Electronic, stationary, variable speed control mounted on steering wheel
Oil Drain Plug:	Magnetic
C. TRANSMISSION AND EQUIPMENT	
Automatic:	Allison 3000EVS, 6-speed
Vocation Programming:	Group 71, Package 119
Transmission Controls:	Electronic push-button, right hand control
Cooler:	Water to oil tube, heat exchanger type
PTO Outputs:	Two (2) with constant 1800 RPM (maximum) at approximately 1200-1300 engine RPM.
Oil Drain Plug:	Magnetic
D. FRONT AXLE AND SUSPENSION	
Front Axle:	International I-120SG, I-Beam type
Rating:	12,000 lbs. minimum
Front Suspension:	12,000 lbs. taper or multi-leaf springs with shocks
Spring Pins:	Rubber bushings, maintenance free
Front Bearing::	Oil lubricated seals
Power Steering:	Sheppard M-100, power
Steering Column:	Tilting
Steering Wheel:	2-spoke, 18" diameter, black
E. REAR AXLE AND SUSPENSION	
Rear Axle:	Dana Spicer 21090S, single reduction
Rating:	21,000 lbs. minimum
Rear Suspension:	Single Vari-Rate, 21,000 lb with 4500 lb auxiliary rubber spring
Axle Lube:	EmGard 75W-90 Synthetic
Drain Plug:	Magnetic

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

Rear Oil Seals:	Oil lubricated
F. BRAKE SYSTEM EQUIPMENT	
ABS:	Bendix ABS, full vehicle wheel control system, 4-channel with diagnostics
Front:	Air S-Cam, 16.5" x 5", includes 20 sq.in. MGM long stroke brake chambers
Rear:	Air S-Cam, 16.5" x 7", includes MGM TR3030 long stroke chamber and heavy duty spring actuated parking brake with two (2) rear spring brake chambers
Air Lines:	Color coded nylon with compressor air supply line through the air cleaner
Air Dryer:	Bendix AD-9 with heater
Drain Valve:	Automatic Bendix DV-2 with heater for air tank
Slack Adjusters:	Automatic front and rear
Drop/Pinch Frame Conversion Package	IH 08WEB - extended ABS cables and air lines
Air Gauge:	Air pressure gauges (2) located in instrument cluster on dash
G. WHEELS AND TIRES	
Wheels:	Six (6) 22.5 x 8.25 polished aluminum, 10-stud hub piloted, flanged nut with steel hubs
Front Tires:	Two (2) 11R22.5 Michelin highway tread
Rear Tires:	Four (4) 11R22.5 Michelin highway tread
H. CHASSIS EQUIPMENT	
Mud Flaps:	Black rubber front and rear with spring-loaded holder on rear
Tow Hooks:	Front, frame mounted (2)
Bumper:	Front, full width, aerodynamic, chrome plated steel
I. FUEL TANKS AND EQUIPMENT	
Fuel Tank:	Minimum 50 gallon (189L) capacity, right side D-style steel with quick connect outlet, mounted under cab
Fuel System:	Nylon fuel lines with O-ring snap-on quick-connect fitting at both ends
J. CAB AND EQUIPMENT	
Cab:	Four-door
Grille:	Chrome, integral to hood

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

Hood/Fenders:	Tilting fiberglass, three piece construction
Glass:	Tinted windshield and cab door glass
Door Glass:	Retractable door glass on all doors
Climate Control:	Heater, defroster and integral air conditioner using HFC-134A refrigerant
Grab Handles:	Two (2) total; one at each door entrance, chrome with anti-slip rubber inserts
Primary Mirrors:	Two (2) Lang Mekra heated bright finish *aerodynamic rectangular*, 7.09" x 15.75" with bright finish breakaway brackets. Integral convex mirrors both sides with Led clearance lights on lower face of mirrors. Electric actuated.
Convex Mirrors:	8" left and right side mounted convex mounted under the primary mirrors
Interior Trim Level:	Deluxe
Headliner:	Insulated with storage pocket over windshield
Driver Seat:	H.O. Bostrom Sierra Air 140, air suspension, high back with integral headrest, vinyl, isolated, with 2-position front cushion adjustment, 6 to 17 degree seat back adjustment and air lumbar adjustment with red 3-point lap and shoulder belt
Officers Seat:	H.O. Bostrom Sierra Air 140, air suspension, high back with integral headrest, vinyl, isolated, with 2-position front cushion adjustment, 6 to 17 degree seat back adjustment and air lumbar adjustment with red 3-point lap and shoulder belt
Rear Crew Seat:	Rear bench seat with red 3-point lap and shoulder belt for outer seat positions and lap belt for center seat position
Sunvisors:	Left and right side padded interior
Overhead Console:	In addition to the console listed under the Body Electrical section, there will be an International overhead, molded plastic console with dual storage pockets, retainer nets and CB radio pocket; smoke gray with black netting over storage boxes.
Trim:	Smoke gray color on all trim; plastic "A" pillar cover; printed cloth headliner; molded plastic door trim panels (driver and officer side); door storage pocket on driver door, full length; instrument panel trim molded plastic,

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

	Drawbridge gray with black center section and hidden cup holder
K. INSTRUMENTS AND CONTROLS	
Instrument Cluster:	Includes odometer display, miles, trip miles, engine hours, trip hours, fault code readout; warning system for low fuel, low oil pressure, high engine coolant temperature, and low battery voltage (visual and audible); cluster gauges (electronic engine oil pressure, electronic engine water temperature, electronic fuel, electronic tachometer, voltmeter
Auxiliary Gauges:	Allison oil temperature and air cleaner restriction (Filter Minder)
L. LIGHTING AND ELECTRICAL	
Electrical System:	Fully Multiplexed
Programming:	O8HAB Overlay Harness Package
Data Link Connector:	In cab for vehicle programming and diagnostics of chassis
Wiring, Chassis:	Color-coded and continuously numbered
Turn Signals:	Front flush mounted to include reflectors and auxiliary side turn signals with solid state flasher. Self-canceling turn signal switch
Headlights:	Long-life halogen, composite Aero design for two light system; includes daytime running lights. Headlight dimmer with flash-to-pass feature.
Parking Lights:	Integral with front turn signal and rear tail lights
Interior Lights:	Door activated rectangular cab dome light, center mounted with timed theater dimming
Batteries:	Three (3) Group 31, International Maintenance-free, 2250CCA minimum total
Circuit Breakers:	Manual-reset on main panel, SAE Type III with trip indicators
Windshield Wipers:	2-speed electric with intermittent feature and dual control integral with turn signal lever, plus low washer fluid indicator
Horn:	single electric
Radio:	Panasonic CR-W400U AM/FM civil defense radio with weather band, CD player; digital clock; and four (4) dual cone speakers
Power Source:	2-post terminal type on dash; and cigar lighter type outlet

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

M. PAINT	
Cab:	Solid White, base coat, clear coat application (see Body Paint section for any applicable repaint information)
Frame and Undercarriage:	Black

ADDITIONAL ITEMS FOR OPTION:

RACOR B-3200 FUEL WATER SEPARATOR
ELECTRIC FUEL REPRIME
MANUAL HEATER CORE SHUTOFF VALVES
FRONT DISC BRAKES
BATTERY JUMPER STUDS

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

"OCCUPANT MUST BE SEATED & BELTED" WARNING PLATE

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, section 14-1.3.5. It shall having a universal pictorial warning and verbal warning as follows: "WARNING - Occupants must be seated and belted when apparatus is in motion."

BATTERY CHARGER - KUSSMAUL AUTO CHARGE 1000

The Auto Charge 1000 is a high output automatic battery charger with a maximum output of the charger is 15 amperes. To prevent overcharging and water boil off, the charging stops when the batteries are fully charged. The Auto Charge 1000 handles these rechargeable handlights and radio loads with a built-in "BATTERY SAVER". Any of these such auxiliary electrical loads are connected to the Battery Saver output. The Battery Saver output is rated at a maximum 3 amperes and is protected by an automatic overload protector. The Auto Charge 1000 is equipped with an bar graph indicator may be mounted remotely from the charger assembly.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

SHORE-POWER INLET

There will be a 30-amp shoreline inlet located near the driver's door. The electrical inlet will include a spring-loaded cover to prevent water from entering the receptacle when the shoreline is not connected. The unit will be completely sealed to prevent contamination of the mechanism, insuring long life.

The electrical receptacle will be wired to the electrical devices with no less than 10-gauge wire that is properly supported and shielded from damage and fraying.

ENGINE COMPARTMENT LIGHTS

Two (2) minimum 5" engine compartment lights shall be provided under the chassis hood. One will be located on each side of the engine.

AUXILIARY RED/CLEAR CAB DOME LIGHT

In addition to the standard chassis manufacturers installed cab ceiling lights, there shall be Weldon model 8081-6978-68 red and clear auxiliary cab dome lights installed in the cab ceiling. They shall have a manual, push-button switch on each light for both the red and clear functions. Location shall be determined at the Pre-Construction Conference.

CAB STEP LIGHTS

A minimum 3" white light shall be installed under the left and right front cab doors in a neoprene shock absorbing mount. They shall be recessed into the bright tread plate panel or other approved location just beneath the cab door and be automatically activated whenever the left and right front cab doors are opened.

A second set of minimum 3" white light shall be installed under the left and right rear cab doors matching the forward lights. They shall be automatically activated whenever the left and right cab doors are opened. Door jam switches shall be added to the chassis cab if not provided by the OEM cab manufacturer.

AIR HORN, STUTTERTONE

There shall be one (1) Grover model 1501 20" Stuttertone air horn installed. It shall be spun brass with a heavy chrome finish.

An air protection valve shall be provided in the air horn plumbing that will not allow the chassis air brakes system to drop below 90 psi.

An auxiliary air supply tank will be incorporated into the chassis air brake system behind the "wet" tank. It shall have a minimum of 1454 cubic inch displacement. A one-way check valve shall be placed between this tank and the primary air tanks for the air brake system. The tank shall be dedicated for air brake use.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

AIR HORN ACTIVATION

The air horn shall be activated by a heavy duty, LineMaster #491S clam-shell type pedal foot switch located on the cab floor on the left and right sides. There shall be a metallic tag with raised letter on the switch that reads "AIR HORNS".

AIR HORN ACTIVATION DISABLE

To prevent accidental discharge while the apparatus is stationary, the air horn may not be sounded unless the transmission is in the "drive" mode.

AIR HORN MOUNTING

To reduce cab interior noise levels, the air horns shall be mounted on the sides of the cab hood on the left.

CAB ENTRANCE STEP & BATTERY COMPARTMENT

There shall a cab entrance step furnished full length of the left side of the cab below the cab door providing full enclosure of the visible undercarriage. The step area shall be fabricated of .125" bright aluminum anti-slip surface treadplate and extend the full width of the cab door conforming to NFPA 1901, Chapter 11-7. All edges not formed by machine break shall be unbroken seam welded. A hinged compartment door with securing latch shall be provided to access the chassis batteries.

FUEL TANK COVER/STEP

The fuel tank shall be fully encased with .125" bright aluminum anti-slip tread plate. The enclosure design shall incorporate the OEM tank step recess and fuel filler. All edges not formed by machine break shall be continuously seam welded. When required, there shall be a minimum 17" wide x 7" deep auxiliary step using Grip-Strut anti-slip insert suspended just below the tank.

Next to the fuel fill shall be a metallic tag with raised letters that reads DIESEL FUEL ONLY.

REAR TOW LOOPS

A pair of heavy-duty hinged tow loops, rated to pull the rated at 10,000 lbs. capacity shall be bolted to the left and right outside drop frame extension rails beneath the rear step bumper. The loops shall be rated for pulling only, not lifting.

TRAILER HITCH

A trailer hitch receiver that can be rated as either a Class III or Class V shall be installed

beneath the rear bumper directly to the chassis frame rail extensions. It shall be rated at not less than 10,000 lbs. gross trailer weight with a 500 lb. vertical load capacity. A universal weatherproof brake/stop/ tail light connection shall be installed flush on the rear body panel. The hitch installation shall have been tested using industry standard engineering practices. Copy of testing may be required upon request.

TRAILER HITCH - CLASS III

Provided with the hitch receiver assembly shall be a Class III hitch that provides a minimum of 13" of vertical adjustment. A chromed 2" ball shall be attached.

TRAILER BRAKE CONTROL SYSTEM

A Tenkonsha electrical trailer brake control shall be installed. The control mechanism shall be mounted under the dash to the right of the steering column. All control cables shall be routed inside the frame rails to the rear of the body terminating in a 7-way trailer connector receptacle next to the trailer hitch location.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

BODY & FRAME REQUIREMENTS

FRAME MODIFICATIONS

1. Requirements: To maximize the cubic foot displacement for total required storage capacity within all equipment compartments and lower overall body 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) if at least 2.8 times that of the original unaltered chassis.

2. Modification Documentation: The bid shall include documentation for strength characteristics of the specified frame modification to the above minimum stress requirements. Documentation shall be in the form of an Aires and 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. A written synopsis outlining, in laymans terminology, the frame modification procedures and resulting strength characteristics conducted by the manufacturer shall also be included. Due to long term durability requirements 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 Test Documentation included in bid? Yes___ No___

3. Frame Warranty Requirement: The pinch/drop frame modification shall be warranted in writing by the manufacturer for a period of not less than the OEM chassis manufacturers original warranty or 10 years, whichever is shorter. A copy of the warranty shall be included with the Proposal.

Is warranty included with the Proposal?: __Yes __No

4. Pinch/Drop Frame Construction: The upper pinch frame center structure shall be engineered 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.

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

The combination of upper pinch and lower drop is a minimal requirement to provide maximum load strength where off-road and rough road responses are required.

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" steel channel 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 gussetted 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.

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

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.

9. 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.

10. 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.

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.

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.

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.

2. Compartment Floor: All exterior compartment floors shall be constructed of a minimum .125" 5052-H32 alloy aluminum, except wheelhousing compartments, which shall be a minimum .190". 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.

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.

4. Corner Posts: All structural vertical corner posts shall be constructed of minimum 4" radius 6061-T6 alloy aluminum extrusions. 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.

5. Roof Rails: All structural horizontal roof rails shall be constructed of minimum 6" radius 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.

6. Corner Caps: Minimum 4" radius aluminum corner caps shall be integrally welded at all corners, forming an uniform joint between the vertical body posts and the horizontal roof rails. All seams shall be ground smooth for a finished appearance when painted.

7. Drip Rail: Full body length heavy-duty extruded 6061-T6 alloy aluminum drip molding shall be provided, a minimum of 3" 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.

8. Roof Structural Supports: The roof shall be supported by a minimum of five (5) hat-section shaped 1" x 3" 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 4" high 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.

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.

10. Roof Insulation: The entire roof shall be insulated with a minimum .75" styrofoam with a reflective foil barrier.

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 an 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).

12. Front & Rear Exterior Body Panels: The exterior panels on the front and rear of the body shall be constructed of minimum .125" 5052-H32 aluminum. 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.

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.

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 .080" and .125" 5052-H34 alloy aluminum sheets.

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 from within 10" off the floor 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.

4. Wall Finish: Interior of compartments shall be a smooth finish.

5. Interior Hand Grips: Stamped hand grips (with rolled edges) shall be provided in all compartments, except wheelwell compartments, to assist personnel pulling themselves to the upper reaches of the compartments. Protruding grab handles are not permitted.

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.

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.

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.

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.

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.

6. Door Track Rollers: Each door shall be provided with self-lubricating nylon rollers (two in each end of door slat.

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.

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.

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.

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.

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.

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:	218"
2. Maximum cab to axle dimension of chassis:	101"
3. Maximum length of apparatus:	108"
4. Minimum overall length of apparatus body, excluding rear step:	181"

5. Overall apparatus width: 96"

6. Maximum height of apparatus (loaded, including roof mounted options) 124"

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.

ROAD SIDE (LEFT)

No. 1,RS: Forward side compartment with minimum dimensions of:

52" wide x 73" high x 40" deep with painted, roll-up aluminum door.

EQUIPMENT LAYOUT AND MOUNTING

1. 600 lb. rollout tray on floor

2. Rollout/tilt down tray vertically adjustable

3. Adjustable shelf 500 lb. capacity

4. Electric rewind cord reel

No. 2,RS: Wheelhousing compartment with dimensions of:

74" wide x 48" high x transverse with painted, roll-up aluminum door.

EQUIPMENT LAYOUT AND MOUNTING

1. Three (3) individual transverse tunnels across top of compartment for following equipment (see separate specification for details):

-- one (1) stokes basket stretcher
-- two (2) folding tables
-- one (1) open

2. 1000 capacity rollout tray on floor

3. Adustable 1000 lb. capacity rollout tray above floor tray.

No. 3,RS: Rear of wheelhousing compartment with dimensions of:

42" wide x 73" high x 24" deep with painted, roll-up aluminum door.

EQUIPMENT LAYOUT AND MOUNTING

1. (2) adjustable shelves

CURB SIDE (RIGHT)

No. 1,CS: Forward side compartment with dimensions of:

52" wide x 73" high x 40" deep with painted, roll-up aluminum door.

EQUIPMENT LAYOUT AND MOUNTING

1. 600 lb. rollout tray on floor

2. Rollout/tilt down tray vertically adjustable

3. Adjustable shelf 500 lb. capacity

No. 2,CS: Wheelhousing compartment with dimensions of:

74" wide x 48" high x transverse with painted, roll-up aluminum door.
Bidders Proposal: ___"W x ___"H x ___"D

EQUIPMENT LAYOUT AND MOUNTING

1. Three (3) individual transverse tunnels across top of compartment for following equipment (see separate specification for details):
-- one (1) stokes basket stretcher
-- two (2) folding tables
-- one (1) open

2. (21) SCUBA/SCBA tubes

No. 3,CS: Rear of wheelhousing compartment with dimensions of:

42" wide x 73" high x 25" deep with painted, roll-up aluminum door.

EQUIPMENT LAYOUT AND MOUNTING

1. (3) adjustable shelves
2. (12) pony cylinder tubes

REAR OF BODY (Back):

No. 7,RR: Rear or back of body compartment with dimensions of:

40" wide x 73" high x 42" deep with painted, roll-up aluminum door.

EQUIPMENT LAYOUT AND MOUNTING

1. 600 lb. capacity rollout tray on floor
2. 600 lb. rollout tray vertically adjustable
3. (2) adjustable shelves 500 lb. capacity

RECESSED ROOF PLATFORM & STORAGE AREA

The body shall extend above the roll-up doors to form a minimum 87" wide x 222" long x 11.5" 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.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

OVERALL APPARATUS HEIGHT WARNING PLATE

A minimum 6" wide x 3" high red plate with white letters shall be prominently displayed on the center of the cab dash that displays the overall unloaded height at the highest point on the apparatus. It shall read "WARNING - *(clearance height at time of delivery)* CLEARANCE".

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.

ANTI-SLIP TREAD PLATE ROOF

The roof shall be covered with embossed, anti-slip patterned, bright aluminum tread plate to act as a safe walking zone.

REAR MUD FLAPS

A pair of heavy duty black rubber mud flaps shall be bolted to the rear wheelhousing behind the rear wheels.

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.

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 anti-slip embossed tread plate, forming a platform a minimum of 11" deep and minimum 90" wide.

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."

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

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 and right rear wheelhousing panels to facilitate access to equipment stored in the upper reaches of the compartment. There shall be one each forward of wheel opening and one each rear of wheel opening. Each step shall be flange mounted using a minimum of four attachment points to the body panel.

REAR WHEEL STEP BARS

There shall be an aluminum step bar installed across the left and 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 expanded metal 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.

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.

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.

SHELVING

All specified shelving shall be constructed of not less that 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. Nine (9) shelves shall be provided. The tray in the wheelhouse compartment shall have a 1000 lb. capacity.

SLIDE-OUT TRAYS - 600# CAPACITY

As specified in the compartment layout schedule, there shall be three (3) 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.

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.

SLIDE-OUT & TILT-DOWN TRAYS

As specified in the compartment layout schedule, there shall be three (3) combination slide-out and tilt-down trays with a minimum 500 lb. distributed weight capacity and 250 lb. at the extended and tilted position. The tray shall be capable of tilting downward a minimum of 30 degrees and extend outward 90% of the tray depth. They shall be attached to Unistrut adjustment hardware to permit universal positioning within the compartment. A latching device shall be provided that secures the tray in the closed or opened 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.

BASKET STRETCHER, BACKBOARD & LADDER STORAGE TUNNELS

Enclosed storage tunnels constructed of minimum 1/8" 5052-H32 aluminum shall be installed in the upper section of the transverse wheelhousing compartment measuring 74" wide x 9" high x 88" deep with three (3) separate sections or compartments that will accommodate the following: one (1) for Stokes basket stretcher (27" wide x 9" high); two (2) folding tables, and one (1) open

All the equipment shall be retrievable from either side of the apparatus. A single, hinged, fold-down retaining door with spring-loaded latch shall be provided over compartment openings to prevent the equipment from sliding into the roll-back exterior compartment doors.

SCBA STORAGE TUBES

Twelve (12) pony tank and SCBA tank PVC storage tubes for spare bottles 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.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

SCUBA STORAGE TUBES

Twenty-one (21) SCUBA tank pvc storage tubes for spare SCBA bottles shall be installed, as outlined in the compartment layout schedule. The tubes shall be 8" ID x 30" long to universally accommodate all sizes of tanks. 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.

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. Locking ladder cover to be provided.

ROOF TOP STORAGE COMPARTMENTS

Located on the right and left sides of the appartus roof of the apparatus roof shall be a storage compartments that measures 26" wide x 12" high. Length will be determined at the Pre-Construction Conference. The compartment will be constructed of .125" bright aluminum tread plate. The lid shall be an overlap type with closed cell neoprene gasketing around the circumference. A positive latching device shall secure the lid in the closed position, one latch on each end of the lid. The lid will be held in the open position by a gas filled hold-open device rated for the weight of the lid. Each corner of the bottom of the compartment will have a minimum 3/8" drain hole. The entire assembly will be spaced off the top of the body a minimum of 1" to allow proper drainage and prevent water from accumulating in the compartment.

SCBA SPARE BOTTLE WHEELHOUSE STORAGE TUBES

Located in the left rear wheelhousing shirts shall be storage tubes for spare SCBA bottles. The tubes shall be constructed of either minimum .125" 5052-H32 aluminum with continuously welded seams or seamless schedule 80 PVC tubing. The tubes shall be fully enclosed. On the face of the wheelhousing skirt shall be a Cast Products polished aluminum housing with a hinged and latching door. The tubes shall be pitched at a downward angle.

ELECTRIC CONTROLLED AWNINGS

A deployable awning shall be installed on the right and left sides of the body. The awnings 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 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 pewter and gray gradiant.

AWNING PERIMETER CURTAINS

The perimeter of the awning shall be provided with perimeter curtains 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.

EXTRA SET OF CURTAIN PERIMETER BUTTONS

A extra set of curtain attachment buttons will be installed on the opposite side of the apparatus body to permit use of the single set of perimeter curtains on both sides of the apparatus.

COMMAND BOX

A wood workstation with file drawers 36" wide x 40" deep shall be provided at the rear of the body on the rollout tray. Final layout to be determined at the Pre-Construction Conference.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

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 no 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 red.

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.

TOUCH-UP PAINT

One (1) quart of touch-up paint shall be provided for each color applied to the

apparatus.

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.

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.

A minimum 4" high white reflective Scotchlite stripe shall be installed on the full width of the front bumper extending around the end curvatures meeting minimum NFPA1901 requirements. Breaks are permitted on each side of bumper mounted equipment or holes.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

12VDC ELECTRICAL SYSTEM REQUIREMENTS

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.

B. WIRING REQUIREMENTS:

1. 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.

2. 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. All other wiring shall be not less than GPL. As specified, any required strobe lights shall be wired using shielded cable, as recommended by the light manufacturer.

3. Any required signal conductors shall be shielded twisted pairs rated by the system manufacturer to carry the multiplex command signals from the switch panel to the control modules.

4. The wiring shall be routed in protective nylon HTZL Type 6 300 degree F. Rated loom in all areas. 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.

5. Where wire passes through sheet metal, rubber grommets shall be used to protect both wiring and wire looms.

6. 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.

C. MULTIPLEXED ELECTRICAL MANAGEMENT SYSTEM:

1. General Overview Requirements:

The apparatus shall be equipped with a fully multiplexed electrical system, no exception. The system shall be compatible with the chassis supplied multiplexed electrical system and fully interfaced using the same diagnostics.

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 scaleable electrical harness utilizing Deutsche 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, perform and report diagnostics, 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:
-- Total load management
-- Load shedding capabilities (*will begin load shedding when voltage drops below selected level after a 2-minute period per output.)*
-- Load sequencing capabilities
-- "On-board" diagnostics readout
-- Error reporting
-- Full color graphics data display
-- Continuous system monitoring and reporting
-- Emergency warning light flasher
-- Door ajar warning system
-- Real time clock
-- Vehicle operational hours tracking

2. Message Capabilities:

The multiplex system shall have the capability to display diagnostics messages such as short or open circuits, ram or other memory system failures and input and output status. 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 (as

applicable).

3. Real-time Diagnostics:

The system shall provide instant message feed back based on an output failure (i.e: burned out bulb or electrical short). The error message shall remain displayed until such time as the "acknowledge" button is depressed. The output shall turn off whenever there is a short circuit or over current condition and shall not reactivate until 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 Owners Manual. The guide shall outline, in simplistic language, how to perform system diagnostics and troubleshooting and how to reset default circuits.

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.

The apparatus proposed will have the ability to operate in the electromagnetic environment typically found in fire ground operations. The contractor will be able to demonstrate the EMI and RFI testing has been done and meets SAE J551 requirements.

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.

E. CONSOLE CONTROLS & FUNCTIONS:

1. A combination switch and **color** visual display 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 measure not more than 10.25" wide by 7.75" high and be capable of installing in any area of the cab that is convenient to the driver and/or officer positions.

The full color display shall be visible in direct sunlight, but shall not be overpowering during night operations. Once the headlights are activated the screen shall automatically dim to 50% of its intensity so as not to interfere with night driving operations.

Additionally, the display screen will have, as a minimum, the following displays
-- System diagnostic controls and alpha/numeric readouts for displaying system defaults or failures
-- Compartment Open warning graphics - overhead color depiction of apparatus cab and body that graphically displays which doors are not secured. For safety purposes, the following minimum scenario shall be provided: When the apparatus is in the neutral (or parked) mode, the overhead view graphic display of the apparatus will depict which door(s) are open. Once the apparatus is placed into the drive mode a scrolling message shall appear across the top of the Vista display screen and the overhead view graphic display of the door(s) that are open will flash. A beeping sound will also be activated as a secondary warning to the driver of unsecured door(s).

2. The control panel shall have four switches on each side of the LCD display screen that performs the following minimum functions:

-- LEFT SIDE SWITCHES & LCD DISPLAY:
a. LEFT SC ENE LIGHTS *(activates all left 12VDC scene lights)*
b. RIGHT SCENE LIGHTS *(activates all right 12VDC scene lights)*
c. REAR SCENE LIGHTS *(activates all rear 12VDC scene lights)*
d. GENERATOR ACTIVATION (if applicable) *(activates PTO and engine fast idle to preset minimum RPM for proper operation of engine and PTO devices)*

-- RIGHT SIDE SWITCHES & LCD DISPLAY:
a. BACKUP CAMERA *(activates automatically in reverse mode)*
b. TRAFFIC ADVISOR (if applicable) *(activates second screen with individual switches functions for various traffic warning patterns)*
c. SPARE
d. SPARE

3. Switch functions shall be provided adjacent to each switch on the display screen. When activated, the nomenclature display button shall change colors to instantly identify that the circuit has been activated.

4. Lower panel switches below the color LCD monitor display as follows:
a. E-MASTER *(activates all pre-set emergency response warning lights)*
b. BLOCKING OVERRIDE *(deactivates all blocking lights in Zone A or reactivates lights that have shut down in the blocking mode for emergency discretionary purposes)*
c. HOME *(returns the currently displayed screen back to the "Home" screen location)*
d. SYSTEM INFO *(displays system diagnostic menus)*
e. SERVICE INFO (*displays chassis make, model and serial number; engine and transmission serial numbers; oil capacities; service interval recommendations; other information required for routine maintenance; body builders serial number, dealer and/or service contact info; and other pertinent information that may be deemed necessary.*
f. SPARE
g. HORN/SIREN *(overrides chassis horn button switch to activate designated warning device)*

F. 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.

G. 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 the VISTA control screen located adjacent to the driver position. The on-board 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 operators 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:

1. On-board self-diagnostic messages and status indicators.

2. Visual confirmation of communication of each Vehicle Power Module, Display Module, and ECU.

3. Automatic self-test on startup with provision for manual diagnostic checks.

4. Minimize use of control relays.

5. Provide control for NFPA 1901 mandated safety interlocks and indicators.

6. Utilize system integration to eliminate redundant wiring and components.

7. Improve control system reliability by reducing relay and connector contacts.

8. Advanced electrical system load management and sequencing system.

9. Imbedded service interval information.

10. Customized software programmed to reflect the vehicle's unique configuration.

11. Field re-programmable to accommodate changes to the vehicle operating parameters.

12. Fully documented hardware.

H. 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 the VISTA control screen. The service and maintenance program will include the following minimum features:

1. Easy to understand diagnostic procedures.

2. Automatic failure detection.

3. Appropriate warning regarding the location of welding-sensitive components.

4. System simulation and pinging of nodes for status verification.

I. BATTERY SYSTEM:

1. The battery enclosure and system shall be located conveniently to provide for easy service and replacement.

2. Battery cables shall be of sufficient size to carry the full load of apparatus and to start the vehicle using a minimum of 1/0 AWG stranded copper. The cable shall be shielded from exhaust and mufflers. Rubber grommets shall be provided where cable enters the battery box.

3. 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.

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 light located in the center of the Vista LCD display shall indicate the status of the batteries. It shall be activated anytime the battery switch is in the "ON" position to alert the operator of the status of the battery switch.

5. See Chassis specifications for battery requirements.

J. 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.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

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.

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.

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.

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.

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.

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:

1. Documentation of the electrical system performance test.

2. Written load analysis with the following information:

-- a. Nameplate rating of the alternator
-- b. The alternator rating under the conditions specified in NFPA 1901, section 13.3.2.
-- c. The minimum continuous load of each component that is specified per NFPA 1901, section 13.3.2.
-- d. Additional loads that, when added to the minimum continuous load, determine the total connected load.
-- e. Each individual intermittent load

DO NOT MOVE TRUCK MESSAGE DISPLAY

To prevent accidents or damage caused by unsecured appendages on the cab and body, the following messages shall be displayed on the cab mounted display screen that are displayed whenever the transmission is shifted out of the neutral position and one or more of the following is detected:

-- Street side cab doors are not secured
-- Street side body doors are not secured
-- Curb side cab doors are not secured
-- Curb side body doors are not secured
-- Rear door is not secure (if applicable)
-- Street side roof box lid not secured (if applicable)
-- Curb side roof box lid not secured (if applicable)
-- Light tower not stowed (if applicable)
-- Observation platform rails not stowed (if applicable)
-- Awning is not stowed (if applicable)

The above text messages are required in addition to the minimum flashing light and audible warnings required by NFPA 1901. Due to the number of flashing warning lights and audible alarms typically supplied within the confines of the cab, the text messages are considered critical to the safe operation of the apparatus, Thus no exceptions will be permitted to this requirement.

GRAPHICS DISPLAY

In addition to the text message and flashing lights to warn of non-secured or stowed equipment, an overhead graphic color display will be visible on the Vista monitor. Whenever a compartment door is not secured, yellow flashing indicators will depict which doors are not secured (cab, left side, right side and rear). If the roof compartment lids are not closed (if applicable), the roof compartment graphics will flash. If the light tower (if applicable) is not stowed, a graphic depicting the light tower raised will flash. If the awning (if applicable) is not stowed, a graphic depicting the awning extended will flash.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

CAB CONSOLE

A console shall be installed between the front cab seats that will accommodate radio control heads, siren control head, console panel, maps, note books and etc. The design shall not interfere with access to the engine service access cowling or chassis manufacturers dash mounted gauges, switches or other options. The console surface shall measure approximately 18" wide x 23" long.

A minimum 18" wide x 10" long x 10" deep storage compartment shall be provided at the back of the console. It shall have a hinged and latched door on top to conform to NFPA 1901, preventing stored books and objects from becoming projectiles should the vehicle become involved in an accident.

The VISTA control panel shall be flush mounted in the upper left corner easily accessible to the driver.

Mounted on the console shall be a flexshaft map light and two (2) recessed 12-VDC power point receptacles with rubber covers.

Ample space will be provided for subsequent installation by the end user of radios, monitors or other applicable equipment.

DOT CLEARANCE & LED MARKER LIGHTS

The apparatus body shall be equipped with upper side, front and rear LED (no exception) 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.

LED TAIL LIGHT ASSEMBLY

The rear tail light assemblies shall have three (3) individual Federal 4" lights for the left and right sides. The top lights shall be LED amber turn; center clear incandescent back up lights; and lower LED red stop/turn. The left and right light cluster assemblies shall be recessed into the body panel. Each light shall have a polished stainless steel trim ring. Connections for each light shall be made using watertight plug assemblies, no exception.

UPPER BODY AUXILARY LED STOP/TURN & EMERGENCY WARNING LIGHTS

Two (2) Federal 4" red LED auxiliary stop light shall be flush mounted on the left and right upper rear body. They shall be connected to the same circuit as the primary lower stop light using watertight connectors.

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.

AUXILIARY BRAKE LIGHT ACTIVATION

The rear brake lights shall be automatically activated whenever the auxiliary engine brake is engaged.

BRAKE LIGHT IMPULSE ALERT SIGNAL

Upon application of the brakes, the upper auxiliary LED brake lights will emit two rapid impulse flash sequences to warn vehicles behind the apparatus that braking actions have been initiated. This alert is required to gain the attention of any motorist following the apparatus and watching the emergency flashing light pattern that a new alert mode is being initiated.

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.

UPPER SIDE BODY 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.

UPPER REAR BODY 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.

In addition to the switch activation capability, the rear scene lights shall be automatically activated whenever the transmission is placed in the reverse mode of operation.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

ROPE TYPE COMPARTMENT LIGHTING

Rope type LED lighting shall be installed in each compartment. They shall be installed vertically on the left and right side wall. Connections shall be made using weatherproof "screw-on" plugs. The installation shall be installed in a manner that minimizes exposure to damage.

ROOF COMPARTMENT LIGHTS

There shall be a Weldon 8045-GH1 halogen compartment light surface mounted into each of the compartment access lids activated automatically whenever the door is raised. The activation switch shall be incorporated into the "Compartment Open" warning circuit.

A text message will appear on the cab VISTA control panel that read "Roof Box Lid Ajar" (for each respective compartment) if the lid is open and the transmission is placed into a forward or reverse mode of operation.

ROOF WORK ZONE LIGHTS

Along one side of the roof work zone shall be three (3) 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.

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:

-- Cab Doors Ajar
-- Roadside Body Door Ajar
-- Curbside Body Door Ajar
-- Rear Body Door Ajar

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.

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."

GROUND LIGHTS

Minimum 4" diameter shock mounted ground lights shall be installed. They shall be mounted in the following locations:
-- one (1) each forward of left & right rear wheels
-- one (1) each aft of left & right rear wheels
-- one (1) under rear step bumper

They shall be activated in the following scenarios:
1. When any body compartment door is opened
2. Manually from respective scene light switches
3. When the apparatus is shifted to the reverse mode
4. Left and right sides activated by respective turn signal

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:

UPPER ZONE A WARNING LIGHTS

A NFPA compliant Whelen model FN60QLED, 60" long light bar will be installed on the forward section of the cab roof. It will be an all LED configuration consisting of: two (2) front corner red Linear12's front; red Linear8 on the right side end cap; red Linear8 on the left side end cap; and four (4) forward facing Linear8's (two red and two white). All outer lens will be clear.

LOWER ZONE A FRONT CAB WARNING LIGHTS

Two (2) Whelen 60R02SSR red Super-LED red warning lights with chromed flange shall be provided at the front of the cab. They shall be steady burning.

The forward and side facing lights on the hood will be mounted in a polished aluminum housing that contours to the hood and fenders.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

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.

LOWER ZONE B & D INTERSECTION WARNING LIGHTS

A Whelen 60R02SSR red Super-LED warning light shall be mounted in the left and right side of the cab fenders.

LOWER ZONE B & D SIDE BODY WARNING LIGHTS

A Whelen 60F000RR with 6EFLANGE red halogen warning light shall be mounted in the lower left and right apparatus body crash rails; one forward and one aft (total of 4).

LOWER ZONE C REAR BODY WARNING LIGHTS

A Whelen 60R02SSR red Super-LED warning light shall be mounted on the lower left and rear body.

UPPER ZONE B & D SIDE BODY WARNING LIGHTS

A Whelen 90RR5SSR red Super-LED warning light shall be mounted on the right and left side of the upper apparatus body, one at the rear body corner and one at the front body corner.

UPPER ZONE C REAR BODY WARNING LIGHTS

Two (2) each Whelen 70R040RR red Linear8 Super-LED warning lights shall be mounted in the upper left and right rear body (total of 4).

SIREN, UNITROL ELECTRONIC

An Unitrol model UTM4 electronic siren shall be mounted in cab control console convenient to the driver and officer. A noise-canceling mike shall be provided for the PA system.

SIREN BUMPER SPEAKER

Mounted under the left side of the front bumper shall be a Whelen UnderPro SA31101D siren speaker.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

COMMUNICATIONS/HEADSETS/COMPUTER ALLOWANCE

An amount not to exceed $31,000 allowance for all communications/vehicle headset systems, vehicle locator system, and computer shall be provided.

Long Beach F.D. to designate the vendor who will receive the allowance.

BACK-UP ALARM

A back-up alarm rated at not less than 102 DBA shall be installed under the rear of the apparatus body that meets minimums requirements of NFPA 1901. It shall be automatically activated whenever the transmission is in the reverse mode of operation.

REAR VISION CAMERA SYSTEM

A SafetyVision high resolution black and white rear vision camera shall be installed and integrated to the dash mounted Vista LCD monitor. It shall automatically engage whenever the apparatus is placed in the reverse mode of operation and manually by an individual activation switch on the VISTA control panel.

The camera shall be mounted in a weather-resistant housing to protect the connection from water and other forces. The camera shall feature a solid-state imager, electronic iris, wide angle lens, built-in heater and waterproof connector. The housing shall resist up to 60 G's of shock and vibration resistance to 6.8 G's. It shall be subjected to salt spray testing to handle road conditions. The viewing area shall not be less than 118 degrees horizontal and 93 degrees vertical.

RUBBER COVERED BACKING BUZZER

A backing buzzer with (2) rubber covered buttons shall be installed at the rear, 1 each side above the taillights.

CAB 12VDC POWER POINT RECEPTACLES

Located in the rear cab shall be two (2) 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. Exact location to be determined at the Pre-Construction Conference.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

240/120VAC ELECTRICAL SYSTEM REQUIREMENTS

1. General Requirements: The complete wiring and electrical installation shall conform to the current National Electrical Code (NEMA) 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:

2. Wiring: All AC electrical primary wiring rated at 20 amps and higher shall be fine stranded copper type THNN. THNN 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.

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.

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.

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.

6. Load Balance: To provide proper loading and efficient generator operation, the 120 volt wiring shall be split to permit a balanced load condition.

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.

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.

9. Wiring Methods: Fixed wiring system will be limited to the following:

-- Metallic or nonmetallic X-flex, LiquidTite or equal flexible conduit rated at not less than 194 degrees F.

-- Type SOW or Type SEO cord with a WA suffix, rated at 600-volts at not less than 194 degrees F.

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:

-- Separated by a minimum of twelve (12) inches, or properly shielded from exhaust piping.

-- Separated from fuel lines by a minimum of six (6) inches.

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.

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.

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 receptacle 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.

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.

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 *(not applicable to portable generators)*.

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.

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 take-off 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.

2. Generator Minimum Specifications:

Onan fire and emergency service series with rating of not less than 25KW at 1800 RPM

Voltage shall be both 240VAC and 120VAC single phase.

3. Generator Mounting: The generator shall be supported on a heavily reinforced steel frame. The steel superstructure support frame shall be designed to withstand the weight and torque load of the generator under worst-case scenarios.

4. Power Take-off: A Chelsea transmission power take-off 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 set-up that will disengage the PTO at 1600 rpm's and automatically re-engage 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.

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.

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.

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.

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:

-- digital voltmeter
-- two digital ammeters
-- one (1) digital frequency meter
-- one (1) digital hourmeter
-- one (1) PTO engagement indicator light

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.

The test shall be conducted as follows:
--1. Isolate the power source from the panel board and disconnect any solid state low voltage components.
-- 2. Connect one lead of the dielectric tester to all the hot and neutral busses tied together.
-- 3. Connect the other lead to the fire apparatus frame or body.

-- 4. Close any switches and circuit breakers in the circuits.
-- 5. Apply the dielectric voltage for 1 minute in accordance with the testing equipment manufacturer's instructions.

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.

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 down stream of the power source will be "listed" (where applicable) in accordance with manufacturers 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 thee 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.

Location to be determined at the Pre-Construction Conference.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

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 workstation.

EXTERIOR DUPLEX OUTLET

A 20 amp (5-20), 120VAC duplex outlet mounted in a weatherproof exterior housing with spring-loaded covers and wired with 12/3 THNN wire shall be installed in a location to be determined at the Pre-Construction Conference. It shall be protected with a GFI circuit breaker. A metallic tag with raised letters reading 120VAC shall be installed above the outlet.

120VAC TWIST-LOCK OUTLETS

Two (2) 20-amp, 120VAC twist-lock outlet (NEMA L5-20R), wired with 12/3 THNN wire shall be installed on the rear body for the portable lights. Each outlet shall be provided with weatherproof cover. A metallic tag with raised letters reading 120VAC shall be installed above the outlet.

OUTLET, 120VAC STRIPS

A 120VAC, 15 amp strip outlet with a minimum of six (6) receptacles, shall be located at the rear work station. The circuit shall be GFI protected and have a surge protection device integral to the outlet box.

ELECTRIC REWIND CORD REEL WITH GROUND CONTINUITY MONITOR

A Hannay model ECR1616-17-18 electric rewind cord reel shall be installed, as described in the compartment layout schedule. The cord reel shall be designed to accommodate not less than 200 feet of 10/3 cable.

The cord reel shall have the following features:

-- Side disc shall have rolled edges and concentric reinforcing ribs.

-- Bearing shall support the axle at each end of the reel to provide smooth rotation and eliminate weight on the swivel joint.

-- The reel axle shall be full length of the reel.

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; and (e) Total cable length.

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.

The reel shall be equipped with 200 feet of 10/3 SO yellow safety cord. A single 20-amp, 120VAC twist-lock outlet (NEMA L5-20R) 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 20-amp breaker. The power rewind cable spool area shall be visible to the operator during the rewind operation.

A label will be provided in a readily visible location adjacent to any permanently connected reel. It will indicate the following:
-- current rating
-- current type
-- phase
-- voltage
-- total cable length

240VAC REMOTE POWER DISTRIBTION BOX

An Extenda-Lite model EJB-PP remote power distribution box 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. The 240VAC input circuit shall be split into two separate 120VAC circuits to provide maximum amperage at the end of the 200 ft. run. Each circuit shall two (2) L5-20R, 120VAC twist-lock receptacles for a total of four (4) in each box. 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 flanged electrical inlet (NEMA L14-30F1) shall be recessed into the end of the cast aluminum power distribution box so that an extension cord can be plugged in to supply power to the four (4) receptacles.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

750W TRI-POD TELESCOPING LIGHTS WITH GROUND CONTINUITY MONITOR

Two (2) Havis-Shields MagnaFire 3000 telescoping flood light shall be installed on the rear body. The light heads shall be model KR-36 with 120 VAC quartz halogen lamp rated at 750 watts. Each lamp head shall be mounted on a model KR836TM=ON/OFF removable tri-pod 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.

UPPER BODY FLOOD LIGHTS

Kwik-Raze model KR-1939 MagnaFire 3000 flood lights will 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, 240 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.

The will be a total of (2) installed as follows:

-- one (1) on the upper left side of the body centered
-- one (1) on the upper right side of the body centered

MULTI-DIRECTIONAL LIGHT TOWER

1. A Will-Burt NightScan elevated light system shall be installed on the forward section of the apparatus body roof.

2. It shall extend 15 feet above the top of the body and rotate 360 degrees to illuminate the areas full circle of the apparatus.

3. There shall be six (6) 900 watt (total 5,400 watts), 240VAC MagnaFire IR high intensity quartz flood lights installed.

4. The remote control platform shall have the capability of tilting up and down the left and right light head banks simultaneously or left and right light head banks individually. This feature permits providing a "light field" in two different directions simultaneously from the single light tower or all six light heads in the same direction.

5. A remote control shall be provided that permits full operational modes of the tower from the ground position. It shall feature an automatic nesting capability.

6. Overall nested dimensions shall be 44"W x 90"L x 12"H.

7. The tower shall have an automatic nesting mode built into the circuit that automatically rotates the light heads back to the proper nesting position and lowers the tower back into the cradled position whenever the operator activates the lowering control switch.

8. A large red flashing light shall be installed on both the cab console and the tower remote plug location to warn the operator and the driver that the tower is in the raised position. It shall not cease flashing until such time as the tower is in the "nested" position.

9. To prevent the vehicle from being driven into power lines or other low hanging obstructions, there shall be a circuit incorporated into the electronic transmission that prevents the transmission (when the tower is out of the "nested" position) from shifting into either the forward or reverse mode of operation.

10. A 12VDC spot light shall be mounted on top of the light tower assembly that is aimed upward to illuminate any potential hazards above the light tower position. It will be automatically activated anytime the light tower is out of the "nested" position.

11. A text message will scroll across the bottom of the Vista display screen in the cab that reads "Tower Up" whenever the tower is not nested.

LONG BEACH FIRE DEPARTMENT
DIVE SUPPORT UNIT

MISCELLANEOUS EQUIPMENT REQUIREMENTS

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 dealers telephone numbers and contact persons names shall be supplied within the binder.

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.

PRE-CONSTRUCTION CONFERENCE

A Pre-Construction Conference between the appointed representatives of the purchaser and Placer Fire Equipment shall be held not later than 60 days after notification at the fire departments headquarters. Placer Fire Equipment shall present a set of final engineering construction drawings and line item production shop order complying with the specifications outlined herein.

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. Expenses for travel for one Long Beach F.D. Dive Team member will be included in the

contract price and include airfare; hotel accommodations; rental car (as applicable); and meals while at the factory. 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.

APPENDIX "A"

BOE-400-DP (FRONT) REV 1. (10-01)

APPLICATION FOR USE TAX DIRECT PAYMENT PERMIT

STATE OF CALIFORNIA
BOARD OF EQUALIZATION

Please Type or Print Clearly. Read instructions on reverse before completing this form.

SECTION I – BUSINESS INFORMATION

NAME OF BUSINESS OR GOVERNMENTAL ENTITY	SALES/USE TAX PERMIT NUMBER
BUSINESS ADDRESS (street)	CONSUMER USE TAX ACCOUNT NUMBER
CITY, STATE, & ZIP CODE	If applicant is applying for either a sales/use tax permit or a consumer use tax account in addition to a use tax direct payment permit check here ☐
MAILING ADDRESS (street address or po box if different from business address)	NAME UNDER WHICH BUSINESS IS TO BE TRANSACTED IF DIFFERENT THAN ABOVE
CITY, STATE, & ZIP CODE	

SECTION II – MULTIPLE BUSINESS LOCATIONS

LIST BELOW THE BUSINESS AND MAILING ADDRESSES OF ALL LOCATIONS WHERE PROPERTY PURCHASED UNDER A USE TAX DIRECT PAYMENT CERTIFICATE WILL BE USED. IF ADDITIONAL SPACE IS NEEDED, ATTACH A SEPARATE SHEET

1. BUSINESS ADDRESS	4. BUSINESS ADDRESS
MAILING ADDRESS	MAILING ADDRESS
2. BUSINESS ADDRESS	5. BUSINESS ADDRESS
MAILING ADDRESS	MAILING ADDRESS
3. BUSINESS ADDRESS	6. BUSINESS ADDRESS
MAILING ADDRESS	MAILING ADDRESS

SECTION III – CERTIFICATION STATEMENT

I hereby certify that I qualify for a Use Tax Direct Payment Permit for the following reason: *(Please check one of the following)*

☐ I have purchased or leased for my own use tangible personal property subject to use tax at a cost of five hundred thousand dollars ($500,000) or more in the aggregate, during the calendar year immediately preceding this application for the permit. I have attached a "Statement of Cash Flows" or other comparable financial statements acceptable to the Board for the calendar year immediately preceding the date of application and a separate statement attesting that the qualifying purchases were purchases that were subject to use tax.

☐ I am a county, city, city and county, or redevelopment agency.

I also agree to self-assess and pay directly to the Board of Equalization any use tax liability incurred pursuant to my use of a Use Tax Direct Payment Permit.

The above statements are hereby certified to be correct to the knowledge and belief of the undersigned, who is duly authorized to sign this application.

SIGNATURE	TITLE
NAME (Typed or printed)	DATE

(See reverse side for general information and filing instructions)

BOE-400-DP (BACK) REV. 1 (10-01)

USE TAX DIRECT PAYMENT PERMIT
(General Information and Filing Instructions)

Revenue and Taxation Code Section 7051.3 authorizes the State Board of Equalization to issue a "Use Tax Direct Payment Permit" to qualified applicants. This permit allows purchasers and lessees of tangible personal property (other than lessees of motor vehicles the lease of which is subject to the terms of Section 7205.1 of the Sales and Use Tax Law) to self-assess and pay use taxes directly to the Board instead of to the vendor or lessor from whom the property is purchased or leased.

Permit holders will be provided with a use tax direct payment exemption certificate which they can issue to retailers and lessors when they purchase tangible personal property subject to use tax or make qualified leases of tangible personal property. Vendors who timely take the certificate in good faith from a permit holder are relieved of the duty to collect use taxes on the sales for which the certificate was issued. Permit holders who acquire property under a certificate must self-assess and report the use taxes directly to the Board on their tax returns, and allocate the local taxes to the county, city, city and county, or redevelopment agency in which the property is first used. Permit holders who fail to properly pay any use taxes that are due on property for which a certificate was given are subject to interest and penalties assessments in addition to their tax liability.

To qualify for a use tax direct payment permit, an applicant must meet the following conditions:

(1) The applicant must agree to self-assess and pay directly to the Board any use tax which is due on property for which a use tax direct payment exemption certificate was given; and

(2) The applicant must certify to the Board either of the following:

(A) The applicant has purchased or leased for its own use tangible personal property subject to use tax which cost five hundred thousand dollars ($500,000) or more in the aggregate, during the calendar year immediately preceding the application for the permit; or

(B) The applicant is a county, city, city and county, or redevelopment agency.

Persons wishing to obtain a use tax direct payment permit must be pre-qualified and either hold a California seller's permit or a consumer use tax account.

Persons other than governmental entities who currently hold either a California seller's permit or a consumer use tax account must complete the application for a use tax direct payment permit, sign the certification statement attesting that they qualify for a permit under conditions of Part (2)(A) above, and submit a "Statement of Cash Flows" or other comparable financial statements acceptable to the board for the calendar year immediately preceding the date of application which discloses total purchases of property and equipment for own use and a separate statement under company letterhead certifying that five hundred thousand dollars ($500,000) or more of such purchases were subject to use tax.

Persons other than governmental entities who are not required to hold a seller's permit and who do not currently hold a consumer use tax account must obtain a consumer use tax account and then complete the application for a use tax direct payment permit, sign the certification statement attesting that they qualify for a permit under the conditions of Part (2)(A) above and submit a "Statement of Cash Flows" or other comparable financial statements acceptable to the board for the calendar year immediately preceding the date of application which discloses total purchases of property and equipment for own use and a separate statement under company letterhead certifying that five hundred thousand dollars ($500,000) or more of such purchases were subject to use tax.

Governmental entities who currently hold either a California seller's permit or a consumer use tax account must complete the application for a use tax direct payment permit, sign the certification statement attesting that they qualify for a permit under the conditions of Part (2)(B) above, and submit an additional statement to that effect under official letterhead and signed by an authorized governmental representative.

Governmental entities who do not hold a California seller's permit or a consumer use tax account must obtain a consumer use tax account and then complete the application for a use tax direct payment permit, sign the certification statement attesting that they qualify for a permit under the conditions of Part (2)(B) above, and submit an additional statement to that effect under official letterhead and signed by an authorized governmental representative.

The completed use tax direct payment application, certification statement, and qualifying documentation should be returned to the address shown below. Upon determination that the applicant qualifies, a use tax direct payment permit and exemption certificate will be mailed to the applicant.

If you would like additional information regarding the use tax direct payment permit or need assistance in completing this application, you can call (916) 324-2883, or write to the Board of Equalization, Public Information and Administration Section, MIC-44, PO Box 942879, Sacramento, CA 94279-0044.

Use Tax Direct Payment Exemption Certificate

I hereby certify that I hold use tax direct payment permit No. _____ issued pursuant to California Sales and Use Tax Law Section 7051.3 and that I am authorized to report and pay directly to the State the applicable use tax with respect to the property described herein which I shall purchase from:

_____
(Name of Vendor)

_____
(Address of Vendor)

In the event that I fail to timely report and pay the applicable tax to the State, I understand and agree that in addition to the tax liability, I will be liable for applicable interest and the amount due may be subject to penalties.

Description of property to be purchased:

_____

_____

_____

Purchaser: _____ Date certificate given: _____

Signature and Title of Purchaser or Authorized Agent: _____

IMPORTANT NOTICE TO VENDORS

This exemption certificate when timely taken in good faith from a person who holds a use tax direct payment permit relieves a vendor from the requirement to collect and remit USE TAX on sales or leases of tangible personal property (other than leases of motor vehicles subject to the terms of Section 7205.1 of the Sales and Use Tax Law) to the person who issued the certificate. It does NOT relieve a vendor of any SALES TAX obligations. Generally, this certificate should be accepted only by out-of-state vendors or by lessors of tangible personal property other than motor vehicle lessors. Sellers can claim a deduction on their sales and use tax returns for any sales made under this certificate.

Vendors must retain a completed copy of this certificate in their files for a period of not less than four years to substantiate the exempt status of sales made under its authority.

This Exemption Certificate has been approved by the California State Board of Equalization.

Approved By: _____ Date: _____
(Deputy Director, Sales and Use Tax Department)

Questions regarding this form should be directed to 800 400-7115, or write to the Board of Equalization, Audit Evaluation and Planning Section, MIC 40, P.O. Box 942879, Sacramento, Ca 94279-0040.

THIS FORM MAY BE REPRODUCED

BOE-324-A REV. 9 (8-97)

NOTICE TO INDIVIDUALS REGARDING INFORMATION FURNISHED TO THE BOARD OF EQUALIZATION

The Information Practices Act of 1977 and the Federal Privacy Act requires this agency to provide the following notice to individuals who are asked by the State Board of Equalization (Board) to supply information, including the disclosure of the individual's social security account number.

Individuals applying for permits, certificates, or licenses, or filing *tax returns, statements, or other forms prescribed by this agency*, are required to include their social security numbers for proper identification. [See Title 42 United States Code §405(c)(2)(C)(i)]. It is mandatory to furnish all the appropriate information requested by applications for registration, applications for permits or licenses, tax returns and other related data. Failure to provide all of the required information requested by an application for a permit or license could result in your not being issued a permit or license. In addition, the law provides penalties for failure to file a return, failure to furnish specific information required, failure to supply information required by law or regulations, or for furnishing fraudulent information.

Provisions contained in the following laws require persons meeting certain requirements to file applications for registration, applications for permits or licenses, and tax returns or reports in such form as prescribed by the State Board of Equalization: Alcoholic Beverage Tax, Sections[1] 32001-32556; Childhood Lead Poisoning Prevention Fee, Sections 43001-43651, Health & Safety Code, Sections 105275-105310; Cigarette and Tobacco Products Tax, Sections 30001-30481; Diesel Fuel Tax, Sections 60001-60709; Emergency Telephone Users Surcharge, Sections 41001-41176; Energy Resources Surcharge, Sections 40001-40216; Hazardous Substances Tax, Sections 43001-43651; Integrated Waste Management Fee, Sections 45001-45984; International Fuel Tax Agreement, Sections 9401-9433; Motor Vehicle Fuel License Tax, Sections 7301-8405; Occupational Lead Poisoning Prevention Fee, Sections 43001-43651, Health & Safety Code, Sections 105175-105197; Oil Spill Response, Prevention, and Administration Fees, Sections 46001-46751, Government Code, Sections 8670.1-8670.53; Publicly Owned Property, Sections 1840-1841; Sales and Use Tax, Sections 6001-7279.6; State Assessed Property, Sections 721-868, 4876-4880, 5011-5014; Tax on Insurers, Sections 12001-13170; Timber Yield Tax, Sections 38101-38908; Tire Recycling Fee, Sections 55001-55381, Public Resources Code, Sections 42860-42895; Underground Storage Tank Maintenance Fee, Sections 50101-50161, Health & Safety Code, Sections 25280-25299.96; Use Fuel Tax, Sections 8601-9355.

The principal purpose for which the requested information will be used is to administer the laws identified in the preceding paragraph. This includes the determination and collection of the correct amount of tax. Information you furnish to the Board may be used for the purpose of collecting any outstanding tax liability.

As authorized by law, information requested by an application for a permit or license could be disclosed to other agencies, including, but not limited to, the proper officials of the following: 1) United States governmental agencies: U.S. Attorney's Office; Bureau of Alcohol, Tobacco and Firearms; Depts. of Agriculture, Defense, Justice; Federal Bureau of Investigation; General Accounting Office; Internal Revenue Service; the Interstate Commerce Commission; 2) State of California governmental agencies and officials: Air Resources Board; Dept. of Alcoholic Beverage Control; Auctioneer Commission; Employment Development Department; Energy Commission; Exposition and Fairs; Food & Agriculture; Board of Forestry; Forest Products Commission; Franchise Tax Board; Dept. of Health Services; Highway Patrol; Dept. of Housing & Community Development; California Parent Locator Service; 3) State agencies outside of California for tax enforcement purposes; and 4) city attorneys and city prosecutors; county district attorneys, sheriff departments.

As an individual, you have the right to access personal information about you in records maintained by the State Board of Equalization. Please contact your local Board office listed in the white pages of your telephone directory for assistance. If the local Board office is unable to provide the information sought, you may also contact the Disclosure Office in Sacramento by telephone at (916) 445-2918. The Board officials responsible for maintaining this information, who can be contacted by telephone at (916) 445-6464, are: **Sales and Use Tax**, Deputy Director, Sales and Use Tax Department, 450 N Street, MIC:43, Sacramento, CA 95814; **Excise Taxes, Fuel Taxes and Environmental Fees**, Deputy Director, Special Taxes Department, 450 N Street, MIC:31, Sacramento, CA 95814; **Property Taxes**, Deputy Director, Property Taxes Department, 450 N Street, MIC:63, Sacramento, CA 95814.

[1] All references are to the California Revenue and Taxation Code unless otherwise indicated.

DISPLAY CONSPICUOUSLY AT PLACE OF BUSINESS

CALIFORNIA STATE BOARD OF EQUALIZATION

USE TAX DIRECT PAYMENT PERMIT

ACCOUNT NUMBER

DRAFT

THIS PERMIT DOES NOT AUTHORIZE THE HOLDER TO ENGAGE IN ANY BUSINESS CONTRARY TO LAWS REGULATING THAT BUSINESS OR TO POSSESS OR OPERATE ANY ILLEGAL DEVICE.

IS HEREBY AUTHORIZED PURSUANT TO SALES AND USE TAX LAW SECTION 7051.3 TO SELF-ASSESS AND PAY USE TAX DIRECTLY TO THE STATE OF CALIFORNIA

THIS PERMIT IS NOT A SELLER'S PERMIT TO ENGAGE IN SALES OF TANGIBLE PERSONAL PROPERTY

THIS PERMIT IS VALID UNTIL REVOKED OR CANCELED BUT IS NOT TRANSFERABLE. IF YOU SELL YOUR BUSINESS, OR DROP OUT OF A PARTNERSHIP, NOTIFY US OR YOU COULD BE RESPONSIBLE FOR SALES AND USE TAXES OWED BY THE NEW OPERATOR OF THE BUSINESS.

BOE-442-DPLZ (1-98)

NOTICE TO INDIVIDUALS REGARDING INFORMATION FURNISHED TO THE BOARD OF EQUALIZATION

The Information Practices Act of 1977 and the Federal Privacy Act requires this agency to provide the following notice to individuals who are asked by the State Board of Equalization (Board) to supply information, including the disclosure of the individual's social security account number.

Individuals applying for permits, certificates, or licenses; or filing tax returns, statements, or other forms prescribed by this agency, are required to include their social security numbers for proper identification. (See Title 42 United States Code, Section 405(c)(2)(C)(i)). It is mandatory to furnish all the appropriate information requested by applications for registration, applications for permits or licenses, tax returns and other related data. Failure to provide all of the required information requested by an application for a permit or license could result in your not being issued a permit or license. In addition, the law provides penalties for failure to file a return, failure to furnish specific information required, failure to supply information required by law or regulations, or for furnishing fraudulent information.

Provisions contained in the following laws require persons meeting certain requirements to file applications for registration, applications for permits or licenses, and tax returns or reports in such form as prescribed by the State Board of Equalization: Alcoholic Beverage Tax, Sections* 32001-32556, Childhood Lead Poisoning Prevention Fee, Sections 43001-43651, Health & Safety Code, Sections 105275-105310; Cigarette and Tobacco Products Tax, Sections 30001-30481; Diesel Fuel Tax, Sections 60001-60709; Emergency Telephone Users Surcharge, Sections 41001-41176; Energy Resources Surcharge, Sections 40001-40216; Hazardous Substances Tax, Sections 43001-43651; Integrated Waste Management Fee, Sections 45001-45984; International Fuel Tax Agreement, Sections 9401-9433; Motor Vehicle Fuel License Tax, Sections 7301-8405; Occupational Lead Poisoning Prevention Fee, Sections 43081-43651, Health & Safety Code, Sections 105175-105197; Oil Spill Response, Prevention, and Administration Fees, Sections 46001-46751, Government Code, Sections 8670.1-8670.53; Publicly Owned Property, Sections 1840-1841; Sales and Use Tax, Sections 6001-7279.6; State Assessed Property, Sections 721-868, 4876-4880, 5011-5014; Tax on Insurers, Sections 12001-13170; Timber Yield Tax, Sections 38101-38908; Tire Recycling Fee, Sections 55001-55381, Public Resources Code, Sections 42860-42895; Underground Storage Tank Maintenance Fee, Sections 50101-50161, Health & Safety Code, Sections 25280-25299.96; Use Fuel Tax, Sections 8601-9355.

The principal purpose for which the requested information will be used is to administer the laws identified in the preceding paragraph. The ... determination and collection of the correct amount of tax. Information you furnish to the Board may be used for the purpose of collecting ... tax liability.

As authorized by law, information requested by an application for a permit or license could be disclosed to other agencies, including, but not limited to, the proper officials of the following: 1) United States governmental agencies: U.S. Attorney's Office; Bureau of Alcohol, Tobacco and Firearms; Depts. of Agriculture, Defense, Justice; Federal Bureau of Investigation; General Accounting Office; Internal Revenue Service; the Interstate Commerce Commission; 2) State of California governmental agencies and officials: Air Resources Board; Dept. of Alcoholic Beverage Control; Auctioneer Commission; Employment Development Department; Energy Commission; Exposition and Fairs; Food & Agriculture; Board of Forestry; Forest Products Commission; Franchise Tax Board; Dept. of Health Services; Highway Patrol; Dept. of Housing & Community Development; California Parent Locator Service; 3) State agencies outside of California for tax enforcement purposes; and 4) city attorneys and city prosecutors; county district attorneys, sheriff departments.

As an individual, you have the right to access personal information about you in records maintained by the State Board of Equalization. Please contact your local Board office listed in the white pages of your telephone directory for assistance. If the local Board office is unable to provide the information sought, you may also contact the Disclosure Office in Sacramento by telephone at (916) 445-2918. The Board officials responsible for maintaining this information, who can be contacted by telephone at (916) 445-6464, are: **Sales and Use Tax**, Deputy Director, Sales and Use Tax Department, 450 N Street, MIC:43, Sacramento, CA 95814; **Excise Taxes, Fuel Taxes and Environmental Fees**,Deputy Director, Special Taxes Department, 450 N Street, MIC:31, Sacramento, CA 95814;**Property Taxes**, Deputy Director, Property Taxes Department, 450 N Street, MIC:63, Sacramento, CA 95814.

*All references are to the California Revenue and Taxation Code unless otherwise indicated