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**ADVANCED CONTAINMENT SYSTEMS, INC.**

**GENERAL SPECIFICATION  
CITY OF CHICAGO FIRE DEPARTMENT  
30' X 8' MASS DECONTAMINATION TRUCK**

**PRODUCTION BUILD ORDER—REVISED 2-24-06**

**1. GENERAL INFORMATION AND DIMENSIONS:**

- 1.1 Length of body – 30'- 0" (360")
- 1.2 Ceiling height – decon area – 6'- 11" (83")
- 1.3 Ceiling height – storage & mechanical area – 5'-9" (69")
- 1.4 Overall length – body & chassis – approximately 41'-2" (494")
- 1.5 Width of body – 8'-0" (96")
- 1.6 Overall width of body with accessories – approximately 9'-0" (108")
- 1.7 Overall height – not to exceed 11'-5" OAH (unloaded)
- 1.8 Ground to underside of body – front – 18" (approx)
- 1.9 Ground to underside of body – rear – 22" (approx)
- 1.10 Body CA – 225"
- 1.11 Body AF – 135"

## 2. CHASSIS:

- 2.1 2006 Freightliner M2-106 MD conventional chassis with wheel base and cab to axle dimensions for proper weight and handling considerations for 30' body installed.
- 2.2 GVWR capacity: 35000 lbs
- 2.3 Wheelbase: The wheelbase is to be 299"
- 2.4 Cab to Axle: The cab to axle is to be 233"  
( 6" loss for dual vertical exhaust )  
Usable CA—225"
- 2.5 Engine CAT C7 250 HP @ 2200 RPM 660 lbs./ft. torque @ 1440 RPM
- 2.6 Engine Equipment:
- 2004 EPA / CARB emission certified
  - Leece – Neville # 4949PA, 12V, 270 amp alternator
  - Batteries, (3) Alliance #7T31, group 31, 12 V, 2100 CCA, threaded stud
  - Engine mounted oil check & fill
  - One piece valve cover
  - Side of hood air intake with firewall mounted Donaldson air cleaner
  - BW 13.2 CFM Series 550 single cylinder air compressor
  - Teflon compressor discharge line
  - Electronic engine integral shutdown protection system
  - No retarder
  - Stationary cab mounted dual vertical exhaust. (required when equipped with dual vertical tanks ,Cat engine, and minimal CA loss) (exhaust extends 6" behind cab)
  - 11' – 6" (138" + 0 / - 6") exhaust system height.
  - Chrome upper stacks
  - Vertical curved tail pipes RH & LH sides (dual exhaust).
  - Aluminum muffler / tail pipe shields
  - Horton drivemaster on/off fan drive
  - Automatic control w/o dash switch
  - Fuel / water separator
  - Full flow oil filter
  - 1000 sq. in. radiator
  - Gates Blue Stripe coolant hoses
  - Constant tension hose clamps for coolant hoses
  - Antifreeze to –34 degrees F, Ethylene Glycol pre-charged SCA heavy duty coolant
  - Iron flywheel housing
  - Air intake warmer
  - Delco 12V 38 MT Starter

- 2.7 Transmission: Allison 3000 EVS\* automatic. 5 speed (with PTO provision) w/push button dash mounted electronic shift control. (\*Emergency Vehicle Series)
- WTEC calibration – 5 speed EVS (package 119)
  - Magnetic plugs, engine drain, transmission drain, rear axle fill & drain
  - Transmission oil check and fill with electronic oil level check
  - Water to oil transmission cooler-frame mounted
- 2.8 Front Axle and Suspension:
- AF-12.0-3 12,000 # FF1, 71.5 KPI / 3.74 Drop Single front axle
  - Meritor 15 x 4 Q + cam front brakes
  - Non-asbestos front brake lining
  - Conmet cast iron front brake drums
  - Chicago Rawhide scotseal front oil seals
  - Vented front hub caps - oil
  - Standard spindle nuts for all axles
  - Automatic front slack adjusters (Meritor)
  - TRW # THP – 60 power steering
  - 12,000 # taper leaf front suspension
  - Shock absorbers
- 2.9 Rear Axle and Suspension:
- # ARS – 23.0- 4 ('R' series) single rear axle, 23000 lb cap
  - 6.14 axle ratio
  - Meritor 16.5 x 7 Q + spider cam rear brakes
  - Automatic rear slack adjusters (Meritor)
  - Non asbestos rear brake lining (Fire & Emergency Severe Service)
  - Conmet cast iron rear brake drums
  - Chicago Rawhide rear oil seals
  - Haldex drive axle spring parking chambers
  - Airliner 23000# air rear suspension
  - Single air rear suspension leveling valve
  - Shock absorbers
- 2.10 Brake System Equipment:
- Air brake package
  - Wabco 4S/4M ABS w/o traction control enhancement
  - Reinforced nylon, fabric braid & wire braid chassis air lines
  - Meritor WABCO System Saver 1200 heated air dryer w/pressure control valve
  - Steel air brake reservoirs
  - Pull cables on all air tanks
- 2.11 Electrical Chassis / Cab:
- Upgraded chassis multiplexing unit
  - Upgraded bulkhead multiplexing unit

#### 2.12 Frame:

- 7/16" x 3 9/16" x 11 1/8" steel frame, 120,000 psi
- 130" rear frame overhang
- Standard rear most crossmember
- Standard suspension crossmember

#### 2.13 Chassis Equipment:

- Three (3) – piece 14" chromed steel bumper. No wing cutouts for siren.
- Bumper mtg for single license plate
- Front tow hooks – frame mounted
- Clear frame rails / no protrusions outboard both rails, BOC to rear suspension
- Grade 8 threaded hex – headed frame fasteners

#### 2.14 Fuel Tanks and Equipment:

- 50 gallon rectangular aluminum fuel tank – RH
- 50 gallon rectangular aluminum fuel tank – LH
- Fuel tanks forward step type under cab-no protrusion behind cab.
- Alliance fuel / water separator with heated bowl
- Equiflo inboard fuel system
- Reinforced nylon fuel hose

#### 2.15 Front Tires / Wheels:

- Michelin XZE --- 11R 22.5 14 ply
- Accuride 22.5 x 8.25 10 – hub pilot steel disc rear wheels
- Painted red wheels & rims to match cab

#### 2.16 Rear Drive Tires / Wheels :

- Michelin XDE (M/S)--- 11R 22.5 14 ply
- Accuride 22.5 x 8.25 10-hub pilot steel disc rear wheels
- Painted red wheels & rims
- Rear tire & wheel assemblies equipped with stainless steel tire valve extensions for ease of tire inflation & pressure check. Supplied by ACSI.

#### 2.17 Cab Exterior:

- 106" BBC flat roof aluminum conventional cab
- Air cab mounts
- Fiberglass hood
- Dual electric horns, high / low note
- LED aerodynamic marker lights
- Standard front turn signal lamps
- Chromed plastic grille, hood mounted
- All locks keyed the same
- Integral head light / marker assembly
- Door mounted mirrors
- 102" equipment width
- 63" x 14" tinted rear window
- Tinted windshield
- 8 liter windshield washer reservoir w/o fluid level indicator

- Dual bright heated west coast mirrors
- LH/RH 8” convex mirrors, bright finish, mtd under primary mirrors
- Tinted door - glass LH & RH with tinted non-operating wing windows
- Manual door window regulators

#### 2.18 Cab Interior:

- Opal gray vinyl interior
- Molded plastic door panels
- Gray vinyl mats with insulation
- Dash mounted ash trays & lighter
- Forward roof mounted console with upper storage compartments w/o netting
- Between seat storage W/writing surface.
- (2) cup holders, LH & RH dash
- Heater, defroster, & air conditioner
- Main HVAC controls with recirculation switch
- Standard heater plumbing
- Sanden compact air conditioner compressor
- Binary control, R-134A
- Cab insulation
- Solid-state circuit protection and fuses
- Dome lite w/3-way switch activated by left hand door
- Manual door locks
- (1) 12V power supply, in dash
- Bostrom Talladega 910 high-back air-suspension driver seat
- 1-man high back passenger seat, non-suspension
- LH/RH integral door panel arm rests
- Vinyl w/cloth insert, driver’s seat
- Vinyl w/cloth insert, passenger seat
- 3 point driver & passenger seat (seatbelts w/fixed ‘D’-ring retractor) w/seat belt retr. 2 point (center)
- Adjustable tilt and telescoping steering column
- 450MM (18”) LK four-spoke charcoal steering wheel
- Driver/passenger interior sun visors

#### 2.19 Instrument Panel & Controls:

- Black gauge bezels
- Gray instrument panel-driver
- Low air pressure light & buzzer
- Primary & secondary air pressure gauges—2”
- Intake mounted air restriction indicator without graduations
- Cruise control – elec eng, w/switches in LH switch panel
- Key operated ign switch & integral start position; 4 position off/run/start/acc
- Odo/trip/hour/diagnostic/voltage display 1x7 char, 26 wrng lamps, data linked ICU3
- Diagnostic interface connector, 9 pin, SAE J1587/1708/1939, located below dash
- Electric fuel gauge—2”

- Programmable RPM control-elect engine
- Ignition switch controlled engine stop
- Electrical engine coolant temp gauge
- Low level engine coolant indicator light
- High temperature engine coolant temperature indicator light
- Transmission oil temperature gauge- 2"
- Engine & trip hour meters integral within driver display
- Electric engine oil pressure gauge
- Digital voltage display
- F/L XTA-2000 AM/FM/WB radio by Delco
- (2) radio speakers (cab only)
- Multi-band AM/FM/WB/CB antenna system dual mirror mounted
- Electronic MPH speedometer w/secondary KPH scale, w/o odometer
- Electronic tachometer 3000 RPM
- Digital voltage display integral with driver display
- Single electric windshield wipers with 2 speed motor w/delay
- Marker light switch integral w/headlight switch
- One valve parking brake system w/ warning indicator
- Self cancel turn signal switch w/dimmer, wash/wiper & hazard in handle
- Integral electronic turn signal flasher

#### 2.20 Cab Paint Color:

- Cab Color: Two color custom: Imron N0001HN black top.  
Imron N2225HN Red on bottom.
- Chassis: Black high solids polyurethane

### 3. CHASSIS ACCESSORIES:

3.1 Mud flaps, plain, installed behind rear wheels.

3.2 Body mounting system to be according to chassis manufacturer's guidelines and consisting of u-bolts and shear plates to comply with FMVSS regulations. Cushion strip between body and chassis to be ½" thick UHMW. Install a crossmember between chassis rails at extreme rear of frame to provide additional frame and body support when vehicle is towed from the rear. Incorporate a 12" structural channel rear body tie system to serve as 6" frame extension and body shear plate. Install a channel tie member low between upright channels to incorporate rear step mounting system.

3.3 One (1) hand held Optronics #KB - 4001spotlight to be provided with a 400,000 Candlepower lamp. This shall have an Optronics Blue Eye beam bulb. It is to be hard wired into the vehicle's 12v DC system (for anti-theft reasons) and be stowed in a storage holder in the cab that is accessible to both the driver and passenger. Hot tap spotlight under dash. Leave light loose on cab floor. Location of storage bracket to be determined at final inspection.

3.4 One (1) Cole-Hersee 300 amp battery switch. Switch to be mounted on the left side of the driver's console. The pull switch is to have a green pilot indicator light.

3.5 **DELETE** the 300 amp ammeter.

#### **4. BODY STRUCTURE:**

4.1 All steel frame construction.

4.2 Floor system designed to eliminate wheel boxes

4.3 2 x 2 x 16ga galvanized steel tubing wall studs (16" OC)

4.4 2 x 2 x 16ga galvanized steel roof rafters (16" OC)

4.5 10 gauge carbon steel floor

4.6 5" – 10.0# steel I-Beam sub-frame main rails, one-piece, full length of body – no splices

4.7 Floor joist system, 4" high, installed over sub frame rails and comprised of 4" x 2" x 11 ga rectangular tubing (16" OC) and at least six (6) 4"-5.4# structural channel cross members full body width located at strategic positions in the floor system.. These cross members are to be gusseted to the sub-frame main rails with ¼" thick 5" x 5" triangular gussets.

**4.8** Rubber floor coating sprayed onto steel floor, and covered a minimum of 4" up the walls to provide a non-slip, durable, seamless, chemical resistant, waterproof floor. Color: **GRAY**

**4.9** Exterior siding - aluminum, smooth, .090" mill finish. Aluminum sheets to be 48" wide and full body side height for a smooth butt joint fit. Sheets are attached to studs with (3M) VHB double sided tape. No rivets in the exterior panels.

4.10 Seamless Fiberglass Reinforced Plastic (FRP) .060" thick, laminated to 12 ga galvanized sheets on interior walls and ceiling; with corner joints vinyl trimmed and caulked with a high quality silicone sealant to provide a waterproof, airtight interior.

4.11 Roof structure "stair-stepped" downward at front portion to allow air conditioners and boiler vent stacks to be installed on top of roof, but not to exceed the maximum overall height of 11'-5".

4.12 Heavy duty extruded aluminum top rail installed around perimeter of roof.

4.13 Heavy aluminum transition section integrated into top rail at "stair-stepped" area of roof. Transition section continuous welded into top rail extrusions to provide rigidity and waterproofing of joint structure at roof transition.

- 4.14 Aluminum roof, .040" thick, one piece seamless, riveted to the top rail around the perimeter of the roof to keep all penetrations outside the body and eliminate the chance for leaks.
- 4.15 R12 rigid foam insulation installed in all walls and ceiling.
- 4.16 R19 foam insulation installed in floor.
- 4.17 Belly pan, 20ga galvanized steel covering underside of floor joists.
- 4.18 Water heater compartment lined with 12 ga galvanized steel.
- 4.19 Wall between water heater compartment and storage compartment to include a sound attenuation material to prevent noise from equipment located in front compartment from entering main area.
- 4.20 Four (4) heavy duty, aluminum framed entry/exit doors with fabricated galvanized steel panel inner cores, aluminum exterior skins, FRP interior skins, stainless steel continuous hinges, full perimeter neoprene bulb seal and stainless cylindrical lever type lock sets with separate dead bolts with interior thumb latches. All entry/exit door locks keyed alike. Doors are solid panel – no windows. Hydraulic hold-open door closers to restrain doors and to close automatically. Custom built, low profile, aluminum drip rails installed over each door. Side doors to be 32" wide x 90" tall. Rear doors to be 32" wide x 78" tall. The doors will be labeled with 4" white letters as follows: The left and right rear doors will read **ENTRANCE**. The curb and street side doors will read **EXIT**.
- 4.21 Grab rail system installed on interior of all entry/exit doors to assist patient ingress and egress. Grab rails are constructed of 1-1/4" dia. extruded aluminum tubing with ribbed rubber inserts that provide a positive grip even when wet. Tubing is mounted into chrome finished stanchions to provide strength and durability.
- 4.22 Sixteen (16) compartment access doors to enclose the clothes chutes, boiler area, upper storage area, the underbody storage boxes, and pump compartments. All doors fitted with polished stainless steel paddle handle slam latches keyed alike. Latches on tall vertical doors, and long horizontal doors to be 2-point slam action. Tall vertical doors to have handles located low enough for access when standing on ground. **All doors hinged on stainless steel continuous hinge.**
- 4.23 Rear step bumper, 6" structural channel, 24" deep and full width of body with 3/16" smooth step plate and riser. Step bumper attached directly to chassis and body. Enclosed step box 12" deep and 10" high x 96" wide attached to top of bumper plate and positioned for easy step access to rear door. Step box to have end opening doors for storage of long tools. All step surfaces coated with non-slip safety grip.
- 4.24 Rear steps – one set for each rear door. Heavy duty steel fold down type, 2-step assembly, includes an aluminum handrail for steps.

- 4.25 Side door step wells for each side entry/exit door. Steps are incorporated into body floor and wall system. Steps to be 10” high, 10” deep, full width of door opening. Step wells to consist of three (3) steps of same height and step depth. All step surfaces coated with rubber to match floor.
- 4.26 Side doorstep – heavy duty fabricated 12ga steel – telescopic, 1-step. Step assembly slides transversally across body. Slide tubes attached to body understructure after body is mounted on chassis. Do not attach to chassis. Step surface coated with non-slip safety grit. Retainer bar to hold step in both transport and service positions. Step height to be 10” below first step in step well.
- 4.27 Grab rail system on body at exit doors to assist patient egress. Grab rail is constructed of 1-1/4” dia. extruded aluminum tubing with ribbed rubber inserts that provide a positive grip, even when wet. Tubing is mounted into chrome finished stanchions to provide strength and durability. located at each side entry/exit door. Rails fold alongside body for transporting.
- 4.28 Lower body side skirting to extend below floor to provide frontals to underbody storage boxes, tank storage areas, etc., below floor line. Bottom of skirting to be 18” above ground ahead of rear wheels and 22” above ground behind rear wheels.
- 4.29 Underbody storage boxes constructed of 12ga galvaneal steel hull. Installed on sides of body below floor line. All boxes to be 24” deep, Boxes ahead of rear axle will be 26” high and boxes behind rear axle will be 22” high. All boxes will be constructed with “sweep out” design lower facings for easy cleaning.
- 4.29.1 The body is to be equipped with ten (10) underbody storage compartments.
- 4.29.2 Two (2) compartments, one (1) installed on each side of body behind the gray water tanks. These compartments are to enclose the gray water discharge pumps. Compartments will be sized to fit the pumps and associated plumbing.
- 4.29.3 Four (4) compartments will be installed on the street side ahead of the wheels. These compartments to be as follows:  
 \*Two (2) compartments to be a minimum of 40” long.  
 \* One (1) compartment to be a minimum of 28” long.  
 \*One (1) compartment to be a minimum of 22” long.  
 \*All compartments to be a minimum of 26” high x 24” deep.  
 \*One of the compartments is designed to contain truck system batteries, and deep cycle 12 V DC batteries. Interior of this compartment is coated with corrosion acid resistant coating (CARC).
- 4.29.4 Four (4) compartments will be installed on the curb side ahead of the wheels. These compartments to be as follows:  
 \*Two (2) compartments to be a minimum of 40” long.  
 \*One (1) compartment to be a minimum of 28” long.  
 \*One (1) compartment to be a minimum of 22” long.  
 \*All compartments to be a minimum of 26” high x 24” deep.

- 4.30 Floor of all underbody boxes to be coated with same rubber floor coating as body floor, sprayed on, Color: **GRAY**
- 4.31 Polished stainless steel roll crown fenders installed around rear wheel openings on the body.
- 4.32 Spring loaded door holders to retain all vertical compartment doors in open position.
- 4.33 All underbody compartment doors that are horizontally hinged are to be top hinged (raise-up) doors. Gas props are installed on all top hinged doors to retain doors in open position. Doors to raise as much as possible to minimize protrusion from side of body when in the open position.
- 4.34 All underbody compartments to have shielded drain holes in compartment bottoms to prevent water buildup. Shields to prevent drafting of dust into compartments when traveling.
- 4.35 A heavy-duty aluminum rain shield is installed above all doors.
- 4.36 Solid roof deck of galvanized steel laid over roof rafters prior to aluminum roof installation for additional roof support of snow load, etc.
- 4.37 Install heavy duty 1/8" thick aluminum full circular inner fender liners in body.
- 4.38 **DELETE** the two (2) rear tow hooks, chassis mounted, installed at rear of body.
- 4.39 Clearance is to be provided around the rear doors to allow connection devices on ACSI portable shelter privacy boots to be installed. Shelters are not part of this order. They will be acquired in the future.
- 4.40 Install grab rail system on exterior of body at rear of both front vertical compartment doors on each side of body (total of 4 grab rails). Grab rails to be at least 26" long and constructed of 1-1/4" dia. extruded aluminum tubing mounted in chrome finished stanchions. Attach grab rails to 4" x 2" tubing uprights to the rear of each door.

## **5. BODY INTERIOR:**

### **5.1 Decon Compartments**

- 5.1.1 Body includes two (2) longitudinal decon compartments; one (1) for men and one (1) for women, separated by a full height heavy duty divider curtain consisting of a vinyl material that will extend the full length of the decon area. The curtain will be suspended from the ceiling with a heavy-duty aluminum track and secured to the floor with footman loops and cinch straps. The side curtains will be secured to the walls with footman loops and cinch straps.

- 5.1.2 Each decon compartment consists of a contaminated area (dirty room), a decon solution application area, a rinse area and a clean (dressing) area.
- 5.1.3 The rear of the unit consists of two contaminated areas (F7S & F7C) which includes stainless steel clothes chutes, flow through brushes for performing gross decon, and hand-held shower wands for rinsing. Ball valves are included to isolate control of the water in the gross decon areas from the shower area. Each area of water control to contain two (2) valves (1-fresh and 1-solution). Valves for brushes and wands area located in the dirty area. Valves for solution and rinse are located in the clean room ahead of the spray systems. Stainless steel quick disconnects are installed on the service lines in the dirty area. Two (2) car wash type flow through brushes with a 6' stainless steel metal flex hose with stainless steel quick disconnect fittings are included for this area. Two (2) high quality shower wands with 6' stainless steel metal flex hoses with quick disconnects are also included. Quick disconnect fittings are to be interchangeable with QD fittings on exterior booms and exterior QD outlets. The stainless steel clothes chutes are designed to empty to the outside of the vehicle and dump through the enclosed chutes into bulk hazardous contaminant storage containers.
- 5.1.4 The area ahead of the contaminated area is the decon solution application area (F6S & F6C) and consists of a vertical manifold that has three shower nozzles @ 1.0 GPM each, privacy curtains and stainless steel trough drains. Area will also have 1 shower head nozzle @ 1.0 GPM in the center of the ceiling spraying straight down.
- 5.1.5 The area ahead of the decon solution application area is the rinse area (F5S & F5C) and consists of a vertical manifold that has 3 shower nozzles @ 1.0 GPM each, privacy curtains, and stainless steel trough drains. Area will also have 1 shower head nozzle @ 1.0 GPM in the center of the ceiling spraying straight down.
- 5.1.6 The fourth area which is in front of the rinse area is the clean area (F4S & F4C), for drying off and dressing into clean clothing before leaving the site.
- 5.1.7 A 24" long fold down aluminum bench will be provided in each clean area.
- 5.1.8 A full height "pony wall" extending from the outer walls the depth of the step recesses separates the clean area from the identification area. A vinyl curtain attached to the "pony wall" provides privacy at the exit to this room.
- 5.1.9 Floor drain system consists of stainless steel drain troughs with stainless steel grating removable for easy cleaning in each of the decon rooms.

- 5.1.10 Additional drains are installed in each dirty room, clean room, and the identification area. Drains are capable of flowing 150% of flow capacity of each compartment discharge.

## 5.2 Identification Area

- 5.2.1 This area is ahead of the decon area of the body and is used as a multi-purpose area to gather information from the personnel that have gone through the decon process before they leave the site. This area is to be used to evaluate personnel, making sure that they were fully decontaminated.
- 5.2.2 This area also serves as the exit vestibule from the unit.
- 5.2.3 A grab rail system is installed on the “pony walls” to assist patient ingress and egress. Grab rails are constructed same as identified in section 4.21.
- 5.2.4 A removable step cover is supplied for each “pony wall” to cover the exit step wells when the unit is not being used for decontamination purposes. Covers prevent personnel from accidentally stepping into step wells and are capable of supporting 500 lbs each. Step covers stored on pony walls when not in use.
- 5.2.5 Two (2) aluminum storage cabinets, 24” deep, extending from floor to a height as high as practical, are installed across width of body at front of identification area. Streetside cabinet is 48” wide with four (4) shelves having 14” clearance between each, for tote bins to fit into them. Curbside cabinet is 42” wide with two (2) shelves in lower area, writing desk above, and control panel in upper area. Lower shelves to have 14” clearance between each shelf for tote bins to fit into them. Cargo nets cover fronts of both cabinets to retain tote bins in place. (See 18.3 for bin size). Both cabinets to be same overall height.
- 5.2.6 One (1) slide out desk, 24” deep, located 36” above floor line, is mounted below fixed shelf in curbside storage cabinet. Desk is mounted on full extension ledge type drawer slides with lock-in and lock-out features.
- 5.2.7 Area across body above cabinets is used for ducting air conditioning and heating from areas ahead of identification area.
- 5.2.8 “Stair-stepped” area of roof is positioned so that none of the effective walking surface of the identification area is affected by the step down of the ceiling.
- 5.2.9 Remote controls to the heating and air conditioning is located in the identification area.
- 5.2.10 All AC electric functions are controlled by the load center located in the identification area.

### **5.3 Storage Compartment**

- 5.3.1 Storage compartment, 48” inside length x 69” high X full width, located ahead of identification area. Compartment access is through vertical doors located on each side of body. Spring loaded door holders retain doors in open position. Mount door holders at top of doors—these doors only.
- 5.3.2 Air duct at ceiling line serves to transition air conditioning and heated air into main body area.
- 5.3.3 A static ventilator is installed in the roof of compartment to exchange air in the compartment with outside fresh air.
- 5.3.4 Interior of compartment lined with 12 gauge galvanized steel and all seams are caulked with a high grade silicone sealant.

### **5.4 Mechanical Room**

- 5.4.1 Located at extreme front of body. Approximately 42” long x 69” high x full width.
- 5.4.2 This room encloses the water heaters and water management system
- 5.4.3 Access to this compartment is through vertical doors located on each side of body.
- 5.4.4 Both compartment doors are louvered to allow boilers to obtain fresh air.
- 5.4.5 Entire interior of compartment lined with 12ga galvanized steel for fire protection. Seams are caulked with silicone sealant.
- 5.4.6 Spring loaded door holders retain doors in open position. Install door holders at lower area of doors.

### **5.5 Rehab Benches (not for use with decon operations)**

- 5.5.1 Four (4) aluminum folding benches with brackets for rehab operations, mounted and transported in main decon area.
- 5.5.2 Each bench is approx 5’ long and is fitted between the clothes chutes in the dirty room and the clean room entrance curtain.
- 5.5.3 Padded, vinyl, cushioned seats and back rests are attached to benches, but are easily removed for cleaning or when benches are folded up.

- 5.5.4 Benches are designed for universal mounting (any bench will fit any location) and to be easily removed, when necessary, to use the unit for patient decon operations.

## 6. PLUMBING:

- 6.1 Fresh hot water requirements approximately 44GPM or 2640 GPH.
- 6.2 Fresh water inlet requirements – one (1) –1-1/2” fire hose with CFD female threads max pressure required – 125 PSI. Inlet to be located at the driver’s side front of body.
- 6.3 On board concentrated decon solution – 5 gallon container.
- 6.4 Total BTUH requirement for water heater (boiler) – 1,013,952 BTUH **absorbed**
- 6.5 Three (3) diesel fired tankless boiler units to supply hot water, continuous water flow, 1,013,952 BTUs absorbed, will be installed in the forward compartment on the body. Boilers will be fueled from truck’s on board fuel tanks.
- 6.6 Fuel pump (12 VDC) installed in line to provide fuel delivery to boilers.
- 6.7 One (1) Davco, Diesel Pro 233, heated fuel line filter system is installed in the fuel line between the pump and the equipment. Heater to drain through the compartment floor to the ground.
- 6.8 One (1) electronic water temperature controller with digital temperature readout will be installed to provide constant 80 to 85 degree-tempered water throughout the unit. A desired temperature will be programmed into the system and all shower ports will provide the desired tempered water. Controller to be model CPC 3 channel.
- 6.9 A water temperature controller will be installed to provide constant tempered water throughout the unit. Includes a programmable controller with digital readout to set the required temperature.
- 6.10 Pressure regulators are included to regulate the water leaving the boilers to insure proper pressure so that the prescribed water flow is maintained.
- 6.11 Gray water tanks located under the body. Two (2) 100 gallon polyethylene tank, one (1) each side of chassis, with 1-1/2” discharge ball valves and 2” cam lock fittings and caps, on each tank. Tanks have gravity discharge with quick dump valves set up for vacuum truck tank evacuation if desired.

- 6.12 Discharge pumps (2), one for each tank to enhance the flow of water from holding tanks. Pumps are located in underbody compartments each side of body behind rear axles. Pumps are high pressure centrifugal vertical mounted  $\frac{3}{4}$  HP (230 VAC) having bronze impellers, cast iron cases, and stainless steel shafts. Each pump is capable of producing 15 gpm @ 34psi discharge. Pump discharge is equipped with cam lock fittings to fit 1-1/2" discharge hose. Float and control switches allow pumps to be operated manual or automatic. Pumps to be Myers #CT07B with  $\frac{3}{4}$  HP vertical shaft motors.
- 6.13 Discharge hoses (2), 1-1/2" x 20' long each, complete with cam lock fittings both ends to fit pump discharge.
- 6.14 One (1) adapter to adapt 2" cam lock to 1-1/2" fire hose is furnished.
- 6.15 Water inlet installed at front of unit on driver's side. Inlet fitting to be 1-1/2" CFT female inlet fitting Chicago fire hose connection. **CFD to specify class of thread.**
- 6.15.1 A flow gauge is installed in the inlet line to regulate the water supply from the pumper truck. Flow gauge to be mounted in a location visible from outside of body.
- 6.15.2 A restrictor is installed in the inlet line to prevent over pressure to the system.
- 6.16 System for concentrated decon solutions with desired percentage of dilution metered into shower system. Concentrate is pumped out of 5-gallon containers, and an adjustable metering distribution system injects the solution into the distribution heads. The decon solution metering pump is located in the front mechanical room on the curbside of the body. System is driven by water volume, not water pressure. System is non-electric. Mechanical room must have room for storage of two additional 5-gallon containers of solution. System is accessed from curbside of body. Mount metering pump as low as possible in compartment curb side so that solution percentage settings can be made by personnel when standing on ground. Pickup line to be 15' long in order to access solution buckets when sitting on ground.
- 6.17 Plumbing supply lines are high density; cross-linked polyethylene tubing with brass swaged lock fittings. All drain lines are SCH 40 PVC pipe.
- 6.18 Entire plumbing system is designed with low point drains for water drainage for cold weather freeze protection.
- 6.19 All exterior plumbing and holding tanks will be heat traced and insulated.
- 6.19.1 Terminate heat trace wiring in a sealed underbody electrical enclosure and power through a GFCI breaker located in mechanical room.
- 6.20 An ethylene glycol anti-freeze injection system is installed to provide additional freeze protection of plumbing system after drain down of lines.

- 6.21 Quick disconnect fittings with control valves are located on each exterior rear corner of body. Each side of body to have two (2) valves and two (2) QD fittings. One fitting is for solution and the other fitting is for fresh water.
- 6.22 Four (4) high grade severe service supply hoses, 12' long with quick disconnect (QD) fittings on ends to fit QD fittings on outside wall of body, spray heads on exterior booms, and fittings on wands and brushes described below.
- 6.23 Two (2) car wash type flow through brushes with quick disconnect (QD) fittings to fit supply hoses described above.
- 6.24 Two (2) gooseneck shower wands with quick disconnect (QD) fittings to fit supply hoses described above.
- 6.25 Holding clips located on rear of body to hold brushes and wands when connected to unit but not being hand held in service.
- 6.26 One (1) blow down adapter to fit 1 ½" inlet fitting with CFD thread, and adapted for Schrader air chuck. Adapter is used when air is applied to blow down all water lines.
  - 6.26.1 Air is supplied from truck air system's main tank.
  - 6.26.2 A 3/8" air hose shall be supplied with QD fitting installed in truck's air system, and a Schrader air chuck for blow down adapter. QD fitting to be piped into truck's air supply tank at a convenient location for hose access.

## **7. MASS CASUALTY DECONTAMINATION STATIONS:**

- 7.1 Fresh water requirement – 16 GPM or 960 GPH (to operate all exterior functions.)
- 7.2 An exterior decon station will be installed on each side of the body.
- 7.3 Each decon station will consist of two (2) stainless steel shower booms that swing out from the body to distribute decon solution and rinse water.
- 7.4 Each boom is equipped with three (3) nozzles attached with QD fittings for easy interchangeability with other decon accessories.
- 7.5 The rear vertical booms will be plumbed to distribute decon solution.
- 7.6 The front vertical booms will be plumbed to distribute rinse water.
- 7.7 The adjustable metering system for concentrated decon solution supplying the interior decon stations will also meter solution into the solution booms.

- 7.8 Control valves will be mounted on both sides of the body to operate each boom. Valves will be located near each boom and recessed inside body skirting to prevent damage during transit.
- 7.9 Water supply to exterior booms is provided by the boiler units described in Section 6. Constant water temperature is maintained by same electronic controller that controls interior water delivery.
- 7.10 Two (2) '8 x 20' awnings with heavy duty extruded aluminum hardware will be installed on both street side and curbside of body. Awnings to be **WHITE** in color.
- 7.11 Privacy curtains will be installed on three sides of each awning. Each curtain assembly to be constructed in 3 pieces (1 piece full length side curtain, 1 piece full width each end of curtain. Each piece of curtain assembly is independently secured to awning frame so that end curtains can be removed while side curtains remain erected. Velcro flaps on end curtains will attach onto side curtain to maximize privacy. Velcro straps to retain flaps in open position. Curtains are constructed of same vinyl material as interior divider curtain. Awning curtains to be **WHITE** in color.
- 7.11.1 The awning curtains are to be equipped with water-fillable anchors, full length, integral to the curtains.
- 7.12 Two (2) collapsible berm assemblies to fit the exterior decon areas will be included.
- 7.13 Two (2) electrical powered sump pumps (115 V AC) are included for discharging effluent from the berms. Pumps to be Wacker #PS2-750. Discharge connections to be 1-1/2" CFD female fire hose thread. Electrical plug to be 3-prong twist lock to fit NEMA L5-20 receptacle.
- 7.14 Two (2) Patient Roller Systems are included for non-ambulatory operations. Each system consists of two (2) Portaveyor conveyors. One (1) conveyor of each system is 8' long, and one (1) is 12' long; to provide a 20' long conveyor for each system. Each conveyor in each system consists of a pair of heavy duty "A" frame stands, a foldable 8' or 12' spanning aluminum support beam, and rollers. Units store in suitcase size packages with positive latches. Deployed dimensions are 96" and 144" long, 21" wide, and 32.5" high. Stored dimensions are 33" long, 21" wide, and 10" high. One (1) Patient Roller System (2 Portaveyours) is to store in 1 underbody compartment on each side of body.

## 8. HVAC SYSTEMS:

- 8.1 Two (2) roof mounted A/C units with heat strips are included and installed in the “step-down” area of roof above storage compartment. A transition duct at ceiling of compartment directs the air from the A/C units into identification and decon areas above storage cabinets. Two louvered grilles cover the discharge openings into the identification area. Each A/C unit produces 13,500 BTUs of cooling and 5,600 BTUs of heat. Units are controlled by thermostats located in the identification area.
- 8.2 One (1) heating system specially designed for decontamination units is included to provide additional heat during cold seasons. Unit is a diesel-fired heater system which produces 43700 BTU's of continuous (46100 BTU Boost) heat from the two (2) combined air heaters (D5LC / D8LC); and has 12 VDC driven air movers. Heating system is mounted above boilers in the mechanical room and is ducted into the identification area between the A/C unit ducts. A louvered grille covers the discharge opening into the identification area. Heater unit is controlled by thermostats located in the identification area.
- 8.3 One (1) all aluminum HEPA filtered 700 CFM negative pressure air unit will be mounted on the rear wall of the body. Filter change is from the inside of the trailer. Air filtration is through a carbon filter. Air discharge is through rear wall of body. A vinyl padded cover to serve as a head protector is installed on the neg air unit.
- 8.4 Twelve (12) complete sets of filters including the HEPA filter are supplied for the negative air system, and shipped with the truck unit.

## 9. 120/240 VOLT AC ELECTRICAL SYSTEM:

- 9.1 The body electrical system is powered by an ONAN model Protec #30YDCR621 PTO driven 30KW, single phase, 120/240V, 60Hz generator system producing specified power at 1800 RPM.
- 9.2 The generator is powered by a truck transmission mounted Chelsea “hot shift” power take-off (PTO) with pressure lube and 12V overspeed control. Power take-off output torque to be approximately 300 ft-lbs. at approximately 140% of engine speed. An illuminated 12 volt rocker switch PTO control with indicator light without neutral interlock connection is mounted in the cab. **PTO to be mounted on right side of transmission.**
- 9.3 Generator to be mounted to truck chassis utilizing a heavy duty mounting bracket to accept the generator and not allow vibration when mounted. Attachment of mounting bracket to chassis is by bolting using grade 8 bolts only. Generator to be mounted at factory recommended angulation to allow oscillating action of ‘u’-joints but not impose undue stress on generator shaft bearings. Generator is installed within the chassis frame rails. A splash shield is installed around the generator housing to protect it from road splash.

- 9.4 Drive line between the PTO and Generator to be carefully installed to allow oscillating action for lubrication of 'u'-joints. Splined slip joints with tubular drive shaft and heavy duty universal joints rated for at least the PTO output is installed. A shearpin hub is installed on the PTO output shaft to connect to the splined slip shaft on the driveline. Splined slip joints allow for necessary movement between components.
- 9.5 Generator system is equipped with a Fire Research FROG-5 (FRA105-A00) generator governor and engine control system, which is mounted on the line voltage circuit breaker panel. The FROG governor system must be compatible with the vehicle's engine.
- 9.6 The governor system automatically energizes when the power take-off is engaged and immediately increases the engine speed to generator frequency demand. The system automatically controls the speed of the engine so that the generator output is a constant 60Hz regardless of electrical load demand.
- 9.7 The FROG will have four LED readouts to monitor the generator output performance and display the following:
- 1.) Frequency output in Hz
  - 2.) Amperage draw line 1
  - 3.) Amperage draw line 2
  - 4.) Voltage output, alternating current
  - 5.) Run time hour meter
  - 6.) Safety features include PTO disengage & engine over speed protection.
- 9.8 All AC electrical functions are controlled by one (1) 125 amp load center with main circuit breaker and up to 24 single pole circuit breakers, each of which is properly sized to suit the specific applications. Load center is located in the Identification area. The face of the circuit breaker panel is permanently labeled with the circuit name or function of each individual breaker.
- 9.9 An automatic transfer system (ATS) provides switching to utilize the PTO generator power or the shore line power to energize the load center.
- 9.10 One (1) shore line power cord, 50' long, is furnished and permanently wired to the transfer system. Shore line extends from transfer switch into 2<sup>nd</sup> underbody storage compartment on curb side of body. Shore line is permanently stored in this compartment. Shore line size to accommodate full load of main breaker.
- 9.11 One (1) grounding rod, 6' long, spiraled, auger type, Hi-Line #G3370 with #T600-0466 ground clamp and 30' of heavy duty #2 copper ground wire is included. The ground wire is fastened to the ground connection of the load center. The grounding rod is stored in a tube and easily accessible on the body. A 'J' hook installed next to the tube stores the cable in a neat coil.
- 9.12 Eleven (11) wet location type, 2-bulb, 2 ft, 40 watt fluorescent light fixtures are included (1 in each dirty room, 1 in each solution area, 1 in each final rinse area, 2 in front storage area and one in water management/boiler area). One (1) 2-bulb, 4ft, 40-watt light fixture will be installed in the identification area.

- 9.13 Six (6) GFI protected grounded duplex receptacles with weatherproof spring loaded covers are installed on the exterior sides of the body. One (1) at each front and rear corner of the body and one (1) each side ahead of the exit doors/ Receptacles must be NEMA L5-20, 120 volt, 20 amp, 3-prong twist lock configuration.
- 9.14 Two (2) GFI protected grounded straight blade 120 v duplex wall receptacles are to be installed in the identification area.
- 9.15 The specified line voltage power unit is to be installed in strict compliance with NFPA 1901 guidelines, and all associated components and equipment is installed to comply with NFPA 70 and applicable standards of the National Electrical Code (NEC). Electrical systems equipment and material used in the unit are properly installed in accordance with the manufacturer's instructions, and only in the manner for which they are listed.
- 9.16 Two (2) Fire Research #FC530, 1000 watt, 230v side mount, bottom raised, halogen aluminum housing, extend-a-pole lights, with mounting brackets; installed one (1) each side between the two (2) front vertical compartment doors on the body. Lights to be operated from the ground and to be controlled on separate switches.
- 9.17 Four (4) emergency exit lights, with backup battery power. An emergency light is installed above each entry/exit door.
- 9.18 The entire AC electrical system must have a "Amperage Load Analysis" completed on the unit prior to delivery. A copy of the analysis must be supplied with the apparatus at the time of delivery.
- 9.19 Grounding will be in accordance with NEC 250-6 "Portable & Vehicle Mounted Generators". Stranded or braided copper conductors will be used for grounding, or bonding.
- 9.20 All conduit is to be non-metallic liquid tight flexible conduit.
- 9.21 All conductors in the power assembly is to be THHW or THHN stranded conductors enclosed in the liquid tight conduit.
- 9.22 All portable cords to be Type SO or SEO cord with a rating for 600 volts.
- 9.23 Electrical cord or conduit will not be attached to chassis suspension components, water or fuel lines, air or air brake lines, hydraulic lines, exhaust system components, or low voltage wiring.
- 9.24 All wiring components to be separated from fuel lines by a minimum of 6" distance, and separated from exhaust components by a minimum of 12".
- 9.25 Electrical cord or conduit is to be supported within 6" of any junction box and at a minimum of every 24" of continuous run. All supports will be of a design that does not cut or abrade the conduit or cable; and will be mechanically fastened to the unit.

- 9.26 All receptacles will be marked with the type of line voltage (120-volts, or 240-volts) and the current rating in amps.
- 9.27 The wiring and associated equipment will be tested. The wiring and permanently connected devices will be subjected to a dielectric voltage withstand test of 900 volts for 1 minute. The test will be conducted between the live parts and the neutral conductor; and between the live parts and the vehicle frame with any switches in the circuit closed. The test will be conducted **AFTER ALL BODY WORK HAS BEEN COMPLETED**.
- 9.28 Two (2) Tele- Lite extend-a pole bottom raise lights & 500 watt 110v single lamp heads **with guards**. Install lights at rear of body each side as far outboard as possible. Align outside of light heads with outside of body.

## 10. 12V DC ELECTRICAL SYSTEM:

- 10.1 Three (3) 12 volt, Group 31 batteries are furnished with chassis to provide electrical power for chassis equipment only.
- 10.2 Two (2) 12V DC deep cycle batteries (Trojan SCS 225: 225 minutes at 25 amps), installed in underbody box, are supplied to provide the power for the scene lights, heater motors., etc. Interior of compartment to be coated with corrosion and acid resistant paint.
- 10.3 One (1) Kussmaul Auto Charge 4000 battery charger with bar graph charging indicator is to be installed in body. Dual high output system produces 40 amps. Connect charger output to charge truck batteries on one system and auxiliary batteries on other system. Battery charger is connected to 120V electrical system on board in order to provide charging current to batteries when generator is operating or shore power is connected. CFD to specify exact location of charger before installation.
- 10.4 One (1) Kussmaul 20 amp Super Auto Eject system is installed in body wall adjacent to battery compartment, provides power to battery charger to maintain batteries when unit is not connected to shore power or generator is not operating. Provide a current sensing relay to protect systems from back feed when auto eject is connected. Locate on street side of body.
- 10.4.1 Auto eject power system also supplies power to interior fluorescent lights to provide the convenience of accessing the body interior without connecting main shore line or starting generator.
- 10.5 ACSI New Generation non-metallic control panel/enclosure located in identification area. Panel functions to include switches for pole lights, switches for scene lights, liquid level monitor for all on board water tanks, FROG monitor, and battery charging bar graph indicator for deep cycle batteries.

- 10.6 Scene Light Package consisting of seven (7) Weldon #7800 series (15 & 26 degree tilt-down, dual-optic light pattern). Lights to be #7812-0000-33 bezel mount, 50 Watt halogen, with polished chrome trim flange. Lights are mounted three (3) on each side of body below awning line. Two (2) each side positioned for lighting spray booms, and one (1) each side ahead of awnings and positioned for lighting areas ahead of and around side exit doors. One (1) light is mounted in rear of body between entrance doors. Lights are powered by deep cycle batteries and controlled by three (3) switches located on control panel in identification area. All scene light switches to be lighted rocker type.
- 10.7 One (1) Tank Monitoring System installed to monitor water levels in both gray water tanks.
- 10.8 Two (2) step well lights, installed 1 each step well, for lighting step area. Lights to be Weldon #8025-9100-30 clear lens. Connect lights to truck running light system.
- 10.9 Compartment lights, surface mounted, located at ceiling of underbody compartments. Lights to be Weldon #9185-80351. Lights to be controlled by a door jamb switch mounted in corner of door facing. Lights are connected to truck electrical system.
- 10.10 Door ajar indicator system (magnetic contactor type) with flashing red indicator lights installed in truck cab in clear visibility of driver. One indicator light for underbody compartment doors and another indicator light for upper compartment and entry/exit doors.
- 10.11 Rear body tail lights to be vertically mounted between the rear doors and the outside of the body. Lights to meet FMVSS lighting requirements. Lighting to be Weldon tricluster 2050 series in bright-plated aluminum housings. Units to be #2050-2000-00 (red/amber/clear) with wiring out bottom.
- 10.12 Clearance, marker, and ID lights installed in roof rail. Five (5) red lights across rear. Five (5) yellow lights across front. Two (2) red lights on sides at rear. Two (2) yellow lights on sides at front. Two (2) yellow lights on sides at mid-point. All lights to be Truck Lite # LED 35 series.
- 10.13 Clearance and marker lights installed on sides at lower body area. Two (2) red lights at rear. Two (2) mid-mounted marker/turn indicator yellow lights mounted on sides at mid-point. Mid-turn lights to be Truck Lite 22 series. All other lights to be Truck Lite #LED 21 series.
- 10.14 Reflectors, Class A, Reflex type, are installed on rear and sides of body to meet FMVSS108 regulations.
- 10.15 License plate light and bracket is installed on the left side rear of the vehicle towards street side center and wired to turn on with the headlights. Light to be Truck Lite # LED 15 series.
- 10.16 All body lighting branch wire to terminate in a Truck Lite 50 series junction box and terminal plate. Box located for easy access underside of body.

10.17 Install two (2) “Brite-Tex” ( Pierce #63-4610) clearance lights on sides at extreme rear of bumper—one each side—in easy view of driver to mark the extreme rear outboard corners of the unit. Lights furnished by customer. ACSI to install and connect to the marker light circuit.

10.18 One (1) intercom system with talk and listen modes. System will be Atkinson Dynamics Model AD-26 series (12 V DC supply voltage). System will consist of one (1) # AD 26 unit installed in the identification area on curb side of wall below load center (to serve as the master), and three (3) # AD 26 A units mounted outside. One (1) each side ahead of the forward exit doors; and one (1) mounted outside between the rear entrance doors. Mount rear speaker low enough to operate from ground. Recess side speakers into side walls of body using brite tread aluminum tread plate. Recessed boxes to have sloped bottoms for water drainage.

Each unit features speaker, on/off volume control, talk/listen switch, and “call” tone switch. Operating principle of system is:

- When one talks, all intercoms will hear.
- To talk to other stations, press talk / listen switch, and speak into the speaker.
- Release talk switch to listen.

## **11. EMERGENCY WARNING SYSTEM:**

11.1 A FEDERAL #SS2000-LMS Load Management System w/ #SS2000-RLY Relay Board has been **DELETED**.

11.2 The emergency warning light system is activated by one (1) heavy duty pull switch located on the cab dash above the mirror switch. The rocker switch must have an internal indicating light to show when the switch is energized. The electrical system components and wiring must be readily accessible for checking and maintenance.

11.3 One mode must signal to drivers and pedestrians that the apparatus is responding to an emergency, and is calling for the right-of-way. The other mode must signal that the apparatus is stopped, and is blocking the right-of-way.

11.4 There is a switch that senses the position of the parking brake. When the master warning system is closed, and the parking brake is released; the warning devices signaling the call for right-of-way must be energized. When the master warning system switch is closed, and the parking brake is on; the warning devices signaling blockage of the right-of-way are energized. Install a Federal relay with pull switch to shut off white lights when parked. Wire this switch into the emergency light system. Mount the switch in the dash near the emergency light activation switch.

11.5 The Optical Warning Device System must comply with NFPA 1901.

- 11.6 Two (2) Code 3 LED RED Model 45 series perimeter lights with chrome bezel (45BZR), will be installed in the truck's grill, one each side.
- 11.7 Two (2) Code 3 LED RED Model 45 series perimeter lights with chrome bezel (45BZR), will be mounted on the cab front fenders. One light each side. Mount on hood at rear of tilt portion, if possible. If not, mount on an angle at extreme forward area of hood.
- 11.8 One (1) Code 3 LED Model 2158 CFD emergency light bar (58" long) will be installed on the cab roof. Lighting pattern according to Chicago Fire Dept specifications. Mounting kit for LED X light bar when mounted on Freightliner M2 cab. Mount as far forward on cab as possible.
- 11.9 Four (4) Code 3 LED RED Model 85 series perimeter lights with chrome bezel (85BZR), will be installed, two each side on the upper side of the body. Locate one each side aligned with rear scene lights, and as close to rear of body as possible. Locate one each side aligned with the scene lights, but as near center of body length as possible.
- 11.10 Four (4) Code 3 LED RED Model 65 series perimeter lights with chrome bezel (65BZR), will be installed, two each side as high and as close to the front of the body as possible.
- 11.11 Four (4) Code 3 LED RED Model 45 series perimeter lights with chrome bezel (45BZR), will be mounted at the lower body sides, two each per side, one at mid-point and one at rear.
- 11.12 Four (4) Code 3 LED Model 65 series perimeter lights will be mounted at the upper rear of the body, above the doors and as close to the outside of the body as possible. Top of lights can not extend above roof line of body. Two (2) lights on street side, and two (2) on the curb side.
- 11.13 Two (2) Code 3 RED LED Model 45 Series perimeter lights with chrome bezel (45BZR), will be mounted below the rear door sill. One each side on the rear of the body below the doors and as close to outside of body as possible.
- 11.14 The lighting system will be installed with the proper Code 3 Flasher and wiring systems as required.
- 11.15 One (1) Federal Signal Model #EQ2B 12 volt siren system with additional siren features such as yelp, air horn, PA, and radio broadcast. Siren system to be properly wired with heavy copper cable for a minimum voltage drop. Surface mount the control head on dash in flat area below PTO control panel (where PTO operation instructions are located). Relocate PTO instructions. Surface mount control head—no recess. Mount amplifier on back wall of cab behind seat.
- 11.16 One (1) Federal #BP200-EF Siren Speaker with 200 watt driver, mounted and concealed. Installed in center of front bumper cutout, centered in chassis, wired to the electronic siren.

- 11.17 One (1) Federal Signal Model #260 Automatic Self-Adjusting Electronic Back Up Alarm producing 87 – 112 dB will be installed at the rear of the chassis between the frame rails. It will operate whenever reverse gear is selected.
- 11.18 The exterior housing of lamps, electronic devices, and fixtures will be corrosion resistant and waterproofed. Electrical fixtures attached to the sides of the apparatus below the 75” level will be near flush mounted. Fixtures will not protrude more than 2”.
- 11.19 The entire system will have a “Amperage Load Analysis” completed on the apparatus prior to delivery. A copy of the analysis will be supplied with the apparatus at the time of delivery.
- 11.20 At the time of delivery, a detailed electrical schematic will be furnished. It will be supplied on a full size print for easy review.
- 11.21 All electrical equipment installed will conform to the latest Federal Standards as outlined in NFPA 1901, Chapter 9.
- 11.22 All electrical wiring installed will be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for which the circuit is protected.
- 11.23 Voltage drops in all wiring from the power source to the using device will not exceed 10 percent. The use of star washers for circuit ground connections will not be done. The wire will be highly resistant to grease, oil, acids, brake fluid and abrasion.
- 11.24 All circuits will be equipped with properly rated, low voltage over current protective devices. These devices will be located such that they are readily accessible, and will be protected against heat, mechanical damage, and water spray. The circuit protection will be circuit breakers. All devices used will conform to SAE J553, SAE J2077, SAE J554, and/or SAE J1888. All wire used in these circuits will meet or exceed SAE J1127, SAE J1128, or SAE J1560.
- 11.25 All wire will be individually color-coded and will be labeled on the insulation. All wiring installed in conjunction with the body will be run in plastic protective automotive loom. Loom will be held in place with rubber coated brackets fastened in place with stainless steel screws.
- 11.26 The loom, where possible, will run below the body floor from the front to the rear. All looms passing through any flange or flat surfaces will be properly grommeted.
- 11.27 All wire connections will be protected with marine “soft seal”. All terminal points will be protected with a hard rubber shield. All wire harnesses associated with the body will be easily accessible and replaceable. All wires will be protected by automatic circuit breakers which must be reset.
- 11.28 The switches for all the electrical equipment covered in this section will be mounted on a switch panel in the cab.

- 11.29 A coil of wire is to be provided behind each appliance designed to be removed for maintenance to allow the appliance to be pulled away from the mounting area for inspection and service work.
- 11.30 Install one (1) pair of threaded hot taps (+ & -) on mounting plate below siren control head on dash. Taps to be RED and BLACK binding post style, for quick connections to provide a 12v DC power source for auxiliary equipment.

## **12. BREATHING AIR SYSTEM:**

- 12.1 One (1) four (4) man Air Respirator System complete for use throughout the truck will be furnished and installed. The system includes all necessary items to equip four (4) firefighters utilizing the system at one time. The system is capable of adapting the current CFD mask systems (MSA Premaire). The system will include a complete ten (10) minute escape bottle kit for each firefighter (total 4). The system will also be furnished with four (4) full masks, harnesses, hoses, and all other components necessary for immediate safe use. Chicago local MSA supplier is AIR 1. Contact Dave Fry (847 / 289-9000) to determine exact list of part numbers required to interface with existing CFD equipment. CFD Senior Automotive Equipment Analyst to approve all part numbers prior to ordering.
- 12.2 One (1) 2 cylinder 4500 psi cascade breathing air assembly with steel cylinders will be installed horizontally in the lower portion of the storage compartment (F2). An enclosure houses the bottles and protects them from other articles in the compartment. Enclosure to be as small as practical to minimize space. Bottle mounting system will be designed so that both bottles will be accessed from curb side of truck. Mounting system will facilitate easy installation and removal of the bottles. Bottles are mounted as far forward in compartment as possible—yet able to be easily removed from the body. Assembly includes, DOT approved air bottles, air control panel with regulator & 4-outlet manifold assembly, low pressure warning device, relief valve, and connecting whips with check valves. A metal protective cover located over the bottles protects the bottles and components from damage. Locate the control panel and fill port on the curb side, mounted low, and forward in the compartment. Locate the two (2) quick disconnects at the control panel for connection of the loose breathing air hoses both on curb side of body.
- 12.3 Four (4) 3/8" breathing air hoses, 50 ft long each, is included to supply the breathing air from the cascade system to the four (4) respirator systems. Two (2) of the hoses are coiled loose, and connected to the manifold assembly by quick disconnects. Two (2) of the hoses are installed on powered hose reels. All breathing air hose connections will be compatible with existing CFD breathing systems. Install both quick disconnects at control panel.

- 12.4 Two (2) Hannay #FL1514-17-18 powered hose reels designed for breathing air hose are installed in the upper portion of storage compartment (F2). Reels are mounted as high as practical with hose under slung for payout through each compartment door. Reels are powered by 12 V DC system on board the body. Install push button control switches for reels inside the body at ends of bottle compartment, forward, each side. Recess switches as necessary to protect push buttons from damage.
- 12.5 A 4 way roller assembly is installed on each reel to prevent hose damage when payout or rewind of hose is at an angle.

### **13. HYDRAULIC LEVELING SYSTEM:**

- 13.1 Vehicle to have a hydraulic leveling system consisting of four (4) hydraulic leveling jacks (two in the front and two in the rear) of proper capacity to handle GVW of vehicle.
- 13.2 Leveling System to be Quadra Mfg. Inc. #QE2AM-30 and includes four (4) 17000# cap jacks.
- 13.3 The hydraulic leveling system is designed as a leveling system only. It is not intended to be a jack to raise entire vehicle off the ground.
- 13.4 Each jack has a large diameter shoe for maximum surface area on soft surfaces.
- 13.5 Each jack is powered from a 12VDC motor/pump assembly which includes hydraulic oil reservoir tank, control valve manifold, and solenoid valves.
- 13.6 The system is controlled by a solid state touch pad located above the driver in the recessed pocket of the cab interior. The control box is to be centrally located in the body.
- 13.7 Touch control pad features “auto level” functions which automatically levels the unit in both planes.
- 13.8 Four (4) outrigger pads, 16” x 16”, manufactured of ½” (minimum) aluminum, with lifting handles, for placing under leveling jacks to provide increased load bearing area on soft surfaces.
- 13.9 Outrigger storage brackets, located underside of compartments near leveling system jacks to store outrigger pads when not in use.
- 13.10 Indicator system on jacks to indicate when the jacks are not fully retracted . System to be wired to a red flashing light located in the cab within good visibility of the driver. Light to be a Truck Lite #35 LED.

#### 14. PAINT SPECIFICATIONS – BODY:

- 14.1 Paint color scheme of body to match truck cab. Upper portion to be **Imron N0001HN Black**; and the lower portion to be **Imron N2225HN Red**. Colors to be an exact match to the truck cab. Break line on the body, according to CFD instructions, is to be at the top of the front compartment doors. Black area to be same height all 4 sides of body. Paint roof of body **Red**. Leave upper roof rail anodized aluminum mill finish.
- 14.2 Entire paint job to be Imron 6000 series, sealed with clear coat.
- 14.3 Entire underside of body and chassis is to be painted gloss BLACK polyurethane after all components are installed.
- 14.4 All exposed metal surfaces on the body will be thoroughly cleaned and prepared for painting. Surfaces that will not be painted will include chrome plating, polished stainless steel, anodized aluminum, and bright aluminum tread plate.
- 14.5 All exposed open joints, interior of boxes, etc. are to be caulked with Sika Flex #221 gray automotive sealant.
- 14.6 Imperfections on the exterior metal surface will be removed or filled, and then sanded smooth for a smooth appearance. All seams will be sealed before painting.
- 14.7 Surfaces are chemically cleaned to remove all dirt, oil, grease, and metal oxides to ensure the subsequent coatings bond well.
- 14.8 A self-etching variprime system of 0.5 mil dry is to be applied to all aluminum components after cleaning and prior to any other coatings being applied.
- 14.9 A minimum of two (2) mil dry of two component urethane primer / surfacer will be hand applied to the metal surfaces to provide a strong corrosion protective base coat and to smooth out the surface. This primer is to be a high solids, low VOC paint.
- 14.10 The primer / surfacer coat is lightly sanded to an ultra smooth finish.
- 14.11 A two (2) component sealer primer coat is applied over the sanded primer to again build toward the final smooth finish.
- 14.12 Two (2) coats of automotive grade, two component acrylic urethane paint is applied. The urethane top coat contains a clear coat resin that creates the high gloss and depth of image.

## 15. DECALS AND LETTERING:

- 15.1 A 6" white stripe of 3M brand Scotch lite series #981 Diamond grade pressure sensitive reflective sheeting is to be applied to the right side, left side, and rear of the entire vehicle. Exact break line to be approved by CFD.
- 15.2 CFD to supply all graphics for cab and body. ACSI to contract graphics installation. ACSI to provide a detailed drawing of body showing all allowable free space to permit CFD to design graphics package.

## 16. MISCELLANEOUS:

- 16.1 Labeling: All control switches, faucets, valves, function indicators, etc., to be labeled with engraved vinyl signs riveted in place.
- 16.2 Bubble levels on all four (4) corners.
- 16.3 One (1) hose reducer fitting, 1-1/2" CST x 3/4" GHT for connecting garden hose to 1-1/2" main water inlet when high pressure is not required , as in a misting application.
- 16.4 Two (2) complete sets of service manuals are furnished upon delivery of the unit. A set of manuals includes one "operator's manual", one "parts manual", one "service manual", one "mounted equipment manual", and one complete wiring schematic diagram.

## 17. RADIOS AND RELATED EQUIPMENT:

- 17.1 Radio installation has been **DELETED**.
- 17.2 Radio antenna for Chicago Fire Department radio will be furnished by the city for installation by ACSI. Mount the antenna on roof of cab. Route the antenna cable into console between seats.

## 18. ADDITIONAL SUPPORT SUPPLIES:

18.1 Twelve (12) 5-gallon containers of decontamination solution. (Content of solution to be determined by CFD at final inspection).

18.2 One thousand (1000) patient decontamination kits.

Eight hundred (800) kits to be Deluxe kits, ADULT SIZE (#90979).

Two hundred (200) kits to be Deluxe kits, CHILD SIZE (#90981).

Kit measurements are 18" long, 12" wide, and 4" thick.

18.3 Sixteen (16) storage totes, to store new decontamination kits, designed to fit in storage cabinets at front of Identification Area. Outside dimensions of totes to be 21-1/2" long, 15" wide, and 12-1/2" high. Totes to have folding lids attached, and molded-in handle grips, for easy lifting and carrying. Totes to be gray color (#39120).

Twelve (12) totes fit in streetside cabinet; and four (4) totes fit in curbside cabinet.

## 19. WARRANTIES:

19.1 Engine: 4 years

19.2 Transmission: 4 years

19.3 Chassis / Frame: 5 years

19.4 Corrosion: 5 years

19.5 Complete Unit: 2 years

19.6 Other: 1 year

**SECTIONS AFFECTED BY REVISION 1:**

2.13  
4.22  
4.36  
5.5.1—5.5.6  
6.8  
10.17  
11.15  
11.16  
12.1  
12.2  
14.1

**SECTIONS AFFECTED BY REVISION 2:**

1.10  
1.11  
2.4  
2.6  
2.14  
4.31  
4.33  
9.2

**SECTIONS AFFECTED BY REVISION 3:**

3.2

3.3

3.4

3.5

4.38

4.40

5.2.5

5.2.6

5.3.1

6.16

7.13

9.10

9.11

9.13

9.16

9.28

10.3

10.4

10.17

10.18

11.1

11.2

11.4

11.7

11.8

11.12

11.15

11.30

12.2

12.3

12.4

13.6

14.1

15.2

17.1

17.2

18.2

18.3