Lumpkin County Emergency Services
Air, Rehab, and Light Trailer Specifications

The purpose of the specification is to establish **"Minimum Standards and Guidelines"** for a quality system that is both safe and functional.

These specifications describe a mobile air, rehab, and light trailer that is capable of filling all types of SCBA cylinders in the field as well as supplying respirator air for hazmat clean up, air tools, remote filling of high pressure cylinders and to provide area lighting and electrical power as needed. The system will be designed and built for both short and long term needs, such as: training, mutual aid, hazmat clean up, water rescue, disaster areas, and rehab functions for all types of incidents.

The system shall be comprised of the following major components.

- **A) 8 1/2x20x7 Highway rated tandem axle heavy duty trailer**
- **B) 6000-psi 13-cfm diesel drive compressor system**
- **C) 6000-psi DOT rated air storage system**
- **D) Two position Class 2 containment style fill station (Fill station must be NFPA 1901 compliant)**
- **E) Electronic carbon monoxide (CO) monitor**
- **F) (2) 12-volt rewind hose reels and dual function air control panel**
- **G) 7KW tongue mounted generator with cover**
- **H) (2) 12-foot stand-alone extendable LED area scene lights with extension cords**
- **I) Base and overhead cabinets with work area permanently and professionally built into the trailers interior**
- **J) Toilet/restroom with sink and holding tanks**
- **K) Air Conditioning in front area with SCBA refilling and restroom**
- **L) Approved drawings and specs**

Section A: Trailer

Shall be an 8 1/2'x20'x7' totally enclosed trailer with dual drop 10,000 lb. axles, (5000 lbs. each) LED lighting, electric brakes on each axle and designed for this specific application. The exterior metal will be .030 thickness and painted Red in color. The trailer shall be a major brand for readily available localized service (one of a kind custom fabrication) will not be acceptable.

Trailer shall be equipped with

- Complete highway rated LED lighting package with 7 way vehicle connector plug
- Electric brakes on both axles
- 2 5/16 ball hitch
- Deluxe white vinyl interior walls and ceiling for better illumination, slip resistant 1/8 inch ATP floor in rear area of trailer and vinyl or RTP flooring in air conditioned area of trailer.
- Dual LED interior lighting for 12-volt and 110 volt lights, minimum of 4 electrical outlets 110 Volt
- 10,000 pound GVW load rating
- Two side mounted pop up flow through windows with gas spring assisted lifting and supports
- Curbside walk in door with lock and fold down step
- 15000 BTU Air condition with heat strips in the front section of the trailer
- Partition wall with door to separate the operator from the compressor noise and open end of the trailer
- Rear Ramp Door
- Custom built permanently mounted storage base and overhead cabinets in the front section of the trailer. Plus a lighted work area with 110 volt power outlets
- Restroom with toilet and sink in front area of trailer with fresh and black water holding tanks
- Extended triple tube tongue to hold generator with enclosure
- Name brand heavy duty radial tires with aluminum six lug rims with fenders and trim package to include stone guard
- All built on a heavy duty chassis and frame. The frame shall be painted to reduce corrosion

Section B: Compressor Bauer H13-D (or equivalent)

The compressor shall be rated for 13-cfm and capable of continuous duty at 6000-psi. All components shall be mounted on a heavy duty powder coated steel frame. The compressor and diesel engine shall be mounted in a horizontal design and mounted in the rear of the trailer with flow through ventilation.

The system shall be supplied on a steel frame designed for both the static and dynamic loads of the system and of sufficient size to adequately accommodate all of the system's components. The arrangement of components on the frame shall permit unrestricted cooling air flow to the compressor and prime mover, and provide access for operation, inspection and maintenance.

These units shall have the compressor and engine arranged in a horizontal design.

The system shall be designed for operation in ambient temperatures ranging between 40°F and 115°F.

And be properly ventilated by means of a flow thru system with remote exhaust and intake piping

All piping and tubing shall be properly supported and protected to prevent damage from vibration during shipment, operation, or maintenance. Piping and tubing shall be installed in a neat and orderly arrangement, adapting to the contours of the system. All instrument tubing shall be 300 series stainless steel.

Compressor Bauer H13D (or equivalent)

The compressor shall be an air-cooled, oil lubricated, four stage, three cylinder, single acting, reciprocating compressor rated for continuous duty at the maximum working pressure without the need for auxiliary fans or cool-down cycles. The crankcase shall be cast of a high strength, aluminum alloy. The crankshaft shall be of a single piece forged steel construction and supported in the crankcase by three long-life roller bearings. The connecting rods shall be of single piece design and constructed of a high strength aluminum alloy. Each connecting rod shall incorporate a roller bearing at the crank end and a needle bearing at the pin end. The pistons shall be constructed of heavy duty aluminum alloy. Piston rings on the second and third stage are of cast iron; first and fourth stage rings shall be of a high strength polyamide. The final stage shall incorporate a free floating, heavy duty aluminum alloy piston which is driven by a guide piston and third stage discharge pressure. The cylinders shall be of cast iron construction with deep cooling fins on the external surface for optimum heat dissipation. The cylinders shall be arranged in a "W" configuration with each cylinder located directly in the cooling fan's blast. The cylinders shall be removable from the crankcase. The compressor's flywheel shall be of an aluminum alloy. A multi-wing, high velocity cooling fan shall be integral to the flywheel.

A stainless steel inter-stage cooler shall be provided after each stage of compression and an after cooler shall be provided after the final stage of compression. The cooler assemblies shall be individually detachable from the compressor, located directly in the cooling fan's blast and made of stainless steel. The after cooler shall be designed to cool the discharge air to within 18°F of ambient temperature. A cool-down cycle shall not be required prior to stopping the compressor.

A separator shall be supplied after each stage of compression excluding the first stage and a coalescing separator shall be supplied after the final stage of compression. An automatic condensate drain (ACD) system shall be supplied for all of the separators. Adjustable drain timers shall be factory preset to drain the separators approximately every fifteen minutes for approximately six seconds. The ACD system shall unload the compressor on shutdown for unloaded restart. An exhaust muffler shall be supplied. The condensate reservoir shall have a high liquid level indication system to provide system shutdown and to alert the operator that the condensate reservoir is at capacity. Manually operated valves shall be supplied to override the automatic operation of the ACD system for test and maintenance purposes.

The compressor shall be lubricated by a low pressure lubrication system incorporating a gear driven low pressure oil pump, easily replaceable oil filtration element, and oil pressure regulator. A sight glass shall be provided to check the oil level. The oil drain for the compressor shall be piped to the outside of the frame.

The compressor shall be equipped with an inlet filter with replaceable particulate element and piped to the outside of the trailer, weather protection shall be provided.

Prime Mover and V-Belt Drive

The engine driven unit shall be supplied with electric start, centrifugal clutch and speed control solenoid. An enclosure shall be supplied to the supplied battery.

The unit shall be supplied with a water cooled 16 HP diesel engine.

The compressor and prime mover shall be mounted on a common base that is vibration isolated from the system's main frame. Power from the prime mover shall be transmitted to the compressor by a v-belt drive. The Engine driven unit shall be supplied with a sliding base to facilitate tightening the drive belts manually. The v-belt drive shall be suitably guarded. Rotation arrows shall be affixed in a conspicuous place on the compressor. An exhaust system shall be provided and installed under the trailer and piped to the front end and away from the compressor inlet.

Electrical Control and Instrument Panel

The engine control center shall include a PLC controller. The electrical panel shall be built in compliance to UL's Industrial Control Panel Custom Builders Program and shall be affixed with a U.L. label.

The PLC compressor control system consists of a programmable logic controller for the monitoring, protection and control of standard compressor systems.

Standard features include:

- A NEMA 4 enclosure
- On / off selector switch
- Emergency stop
- Final air pressure shutdown
- Warning and alarm indicator lights
- Built in overtime timer set at 5 hours - optional times available
- Final separator counter warning and alarm functions
- Full support of SECURUS warning and alarm functions
- Full support of CO monitor alarm functions (optional)
- UL listed panel

A non-resettable hour meter shall be supplied to record the number of compressor operating hours. The hour meter shall be installed in the instrument panel.

The compressor oil pressure shall be monitored by a pressure switch and pressure gauge. The compressor shall shut down and a fault light illuminate should the compressor's oil pressure drop below the factory preset value during operation. The oil pressure switch shall be by-passed during start-up to permit the oil pump to achieve the normal operating pressure.

A temperature switch shall be supplied on the discharge line of the final stage of compression. The compressor shall shutdown and a fault light illuminate should the final stage discharge temperature exceed the tamper-proof set point during operation.

For ease of system diagnosis and maintenance, the low oil pressure and high pressure air shutdown switches shall be equipped with DIN type connectors. Additionally, all of the wiring shall be encapsulated within a split corrugated type loom. Each wire end connection shall be machine crimped and numbered.

All instrument panel mounted pressure gauges shall be 2 ½" diameters and be liquid filled.

Purification System

The purification system shall be designed to process **67,000 cubic foot** of high pressure air to a quality that meets or exceeds the requirements of CGA Pamphlet G-7, Compressed Air for Human Respiration, ANSI/CGA G-7.1, and Commodity Specification for Air, Grade E, and all other recognized standards for breathing air. Purification shall be achieved by mechanical separation of condensed oil and water droplets, absorption of vaporous water by a desiccant, absorption of oil vapor and elimination of noxious odors by activated carbon and conversion of carbon monoxide to acceptable levels of carbon dioxide by catalyst.

The high pressure purification chambers shall have a working pressure of 6000 PSIG. The purification system shall utilize replaceable cartridges. The purification system shall be designed so that the replacement of the cartridges can be accomplished without disconnecting system piping. The design of the chambers shall preclude the possibility of operating the system without cartridges installed or with improperly installed cartridges. A bleed valve shall be provided to vent the purification system to facilitate replacing the cartridges. A pressure maintaining valve and a check valve shall be supplied downstream of the purification system to increase the efficiency of the purification system by maintaining a positive back pressure. A check valve shall be supplied between the coalescing separator on the compressor's discharge line and the purification system to maintain the positive pressure in the purification system when the compressor shuts down.

The purification system shall include Bauer's patented Securus Electronic Moisture Monitor System. A sensor shall be located in the Securus cartridge for direct monitoring of moisture level. A display module shall be supplied to indicate the status of the Securus cartridge. The moisture monitoring system shall warn the operator, in advance, of the impending saturation of the Securus cartridge. The system shall shut down automatically should the operator fail to change the Securus cartridge within the warning period. The system shall not be capable of restarting until the saturated cartridge is replaced with a new one.

The moisture monitoring system shall be of a fail-safe design. Should the electrical contact between the display module and sensor be disconnected, an immediate fault shutdown shall be affected. For absolute safety and highest quality breathing air, no manual override shall be supplied for the moisture monitor.

Documentation

A documentation package shall be supplied with the system. The documentation package shall include, at a minimum, an operation manual, recommended spare parts list, warranty information and a start-up/warranty registration form.

The Operator's Instruction and Maintenance Manual for the system shall be as detailed as possible, outlining all operation and maintenance instructions. The manual shall include detailed illustrated drawings for the compressor block and all system components along with a complete parts listing for all illustrated components. Warnings and safety precautions shall be identified clearly in the manual.

Section C: BAS Mod CS6-4 Cascade/Storage System (or equivalent)

There shall be four new UN/ISO rated 6000-psi cascade cylinders with a capacity of 510 cubic foot, each mounted in the rear area of the trailer. The cylinders shall be securely mounted with a double set of heavy duty wall brackets in a vertical configuration. Each cylinder will be clearly marked with a vinyl label stating the cylinders working pressure type of gas and time of visual inspection.

Each cylinder will have a CGA 702 valve and (NFPA 1901) compliant valve protection device. Each cylinder shall be plumbed directly to the containment style fill station using stainless steel tubing and fittings. Each cylinder will be new and have a current hydro date.

Section D: Filling Station

Two position containment style fill station model CFS5.5-2Sx4x4 (or equivalent)

The fill station shall be built and tested to conform to (NFPA 1901)

The fill station shall be mounted so as to direct expanding air away from the operator in the unlikely event of a cylinder failure.

The fill station shall be built and tested to conform to NFPA 1901, 2015 Edition.

The fill station shall be designed for stationary applications. The fill station shall be constructed of formed plate steel and shall be fully enclosed.

The fill station shall be warranted free from defects in material and workmanship for a period of eighteen months from date of shipment or twelve months from date of start-up, whichever expires first.

Containment Fill Station

The front-loading, two position; containment fill station shall totally enclose the SCBA or SCUBA (SCUBA cylinders not to exceed 31" length) cylinders during the refilling process.

The fill station's outer enclosure and door assemblies shall be constructed of formed ¼ inch thick plate steel. Venting shall be provided in the bottom of the fill station to allow the rapidly expanding air from a ruptured cylinder to escape from the fill station. The fill station shall be ergonomically designed for maximum operator convenience and safety for refilling cylinders. The fill station door and cylinder holder assembly shall tilt out towards the operator 45 degrees, providing unobstructed access to the cylinder holder to load and unload the cylinders. A handle and heavy-duty gas spring shall be incorporated into the design of the fill station to assist the operator in opening and closing the fill station door. It shall take no more than approximately eighteen pounds of effort to open or close the fill station door thereby eliminating operator fatigue.

Each cylinder holder shall be lined to prevent scuffing the outer surface of the SCBA cylinders. For complete operator protection, the fill station shall include a safety interlock system that will prevent refilling SCBA cylinders unless the fill station door is closed and secured in the locked position. The automatic interlock will require no actuation of secondary latching mechanism on the outside of the fill station.

Two fill hoses shall be located within the fill station. Each fill hose shall be equipped with a bleed valve and SCBA fill adapter of choice. Fill hose retainers shall be provided to anchor the fill hoses when not in use.

Control Panel

The fill control panel shall be installed on the front of the fill station. The control panel shall be factory piped and designed to fill two SCBA or SCUBA cylinders either independently or simultaneously.

The control panel shall include the following standard features:
- Inlet pressure gauge
- Adjustable pressure regulator
- Regulated pressure gauge
- Two (2) fill control valves
- Two (2) fill pressure gauges
- One (1) relief valve for regulated fill pressure
- Four (4) Cascade control valves
- Four (4) Cascade Control Gauges
- One (1) auxiliary refill port with 6000 psi quick connect adapter and valve

All piping and tubing shall be properly supported and protected to prevent damage from vibration during shipment, operation or maintenance. Piping and tubing shall be installed in a neat and orderly arrangement, adapting to the contours of the station. All instrument tubing shall be 300 series stainless steel.

All control panel mounted pressure gauges shall be 2 ½" diameter and be liquid filled. All panel-mounted components shall be labeled with a nameplate.

The fill station shall be provided on its own freestanding base and shall not exceed the following approximate dimensions: 58" high, 30" wide, and 22" deep. Weight with base and control panel shall not exceed 750 lbs.

Section E: Electronic Digital Readout (CO) Carbon Monoxide Monitor Model BAS813 or equivalent

The monitor shall be powered by 12-volt DC and be mounted in the rear of the trailer with the compressor and shall only be on when the compressor is operating.

1. The monitor shall be designed to monitor breathing air for Carbon Monoxide. It shall have a range of 0-50 ppm and be rated for 6000-psi inlet pressure.
2. The unit shall be powered by 12 volts DC
3. The unit shall incorporate an electric-chemical sensor that puts out a digitized signal that is displayed on a ½" four digit LCD display. (An analog signal is not acceptable, as these are prone to drifting.)
4. The electronics shall be enclosed in a NEMA-4 dust and drip tight enclosure.
5. An audible alarm shall be standard. It shall have a sound level of 95 decibels.
6. The unit shall be equipped with two alarm levels, preset but field adjustable. There shall be a red light to indicate each alarm level. Each alarm level will have terminals that may be connected to shut down the compressor and to operate a remote alarm light or audible alarm.
7. The monitor shall be mounted on a black, permanently marked control panel. This panel shall be capable of accepting inlet pressures of 6000-psi and regulating and controlling this to the pressure and flow required by the monitor.
8. The supplied calibration gas will have a rigid mounted inlet connection that will allow the user to choose to leave the gas installed or to remove this gas to prevent unauthorized use. No tools required.
9. No tools shall be required to calibrate the monitor with the exception of removing the cover. The calibration shall be done with an automated procedure, requiring only the flow of calibration gas and the pushing of a button.
10. A shut off valve shall be supplied so that the monitor can be removed from the system without interrupting service in the event of needed repairs or failure.
11. A complete bound operator's manual shall be provided.

Section F: Hose reels, hose and air control panel

The system shall include two (2) 12-volt rewind Hannay 1500 series hose reels and air control panel. All equipment shall be mounted in the rear of the trailer facing out of the rear ramp door.

One reel shall be rated for 6000-psi and will be outfitted with 100' of 6000 psi hose, valve and your choice of: a CGA fill adaptor for filling to 5500 psi or 6000-psi quick connect for remote filling up to 6000-psi.

The other reel shall be rated for 300-psi and include 100 foot of 300-psi hose. A standard low pressure quick connect shall be provided to be used for air tools, respirator, air bags etc.

Each reel will be supplied with breathing air from the 6000-psi storage system

Each reel will have its own separate adjustable regulator located in a custom air control panel between the two reels. Each side of the air control panel shall have its own regulator, regulated outlet, pressure gauge, valve and 12-volt rewind switch and one common inlet pressure gauge

Each hose reel will be equipped with a roller type hose guide and safety ball stop.

Section G: Generator Model XG7000E or equivalent

The system shall include a minimum 7000 watt continuous 8750 surge gasoline driven generator to operate interior and exterior lighting. It will also supply minimum of 4 110-volt power outlets located in the trailer.

The generator shall be tongue mounted and include a lift up 1/8 inch aluminum diamond plate box cover with latches.

The generator must include a large capacity gas tank, high temperature and low oil shut off switch, electric start engine, and fuel shut off valve. A power cord must be supplied to run from the generator to a power port on the trailer that will supply the entire trailer with electricity.

Section H: Extendable Area Lights

There shall be two (2) LED extendable tripod scene lights, the two lights shall be mounted on the inside rear compartment of the trailer and secured with professional mounting brackets with quick releases.

The lights shall be light weight and easy to mount or dismount from the trailers.

The lights shall be easy to set up and be adjustable to 12 feet high and for directional lighting needs.

Each light shall include an extra long extension cord that will be stored in the walk in area of the trailer

Electrical supply outlets shall be located on both ends of the trailer to power the lights.

Section I: Cabinets and storage

The system shall include cabinets and storage. Base cabinets, overhead cabinets and two full length cabinets shall be provided along with a lighted aluminum work bench area. The work bench area shall also include 110-volt power outlets.

The cabinets will be built using aluminum construction for the frame, walls, and the doors. The cabinet system is built with metal framing, trigger latches, full length metal hinges and wooden shelves.

The entire system will be permanently attached to the trailer framing and floor.

There will also be a storage rack or cabinet that will securely hold a minimum of 14 spare Scott 45 minute SCBA cylinders mounted in the rear section of the trailer.

Section J: Restroom area

The restroom area will consist of a fully functioning full size RV style toilet and sink in the front area of the trailer. It will also consist of both fresh and black water holding tanks.

Section K: Air condition

15,000 BTU RV style air condition with Heat strips will be provided to heat and cool the front area of the trailer

Section L: Drawings and Specs

Drawings with measurements and specs must be provided for approval

SUPPLIER REQUIREMENTS:

The supplier of the system shall professionally install and test all equipment prior to delivery of the unit. They shall also perform and provide a detailed inspection sheet signed by quality control personnel.

The supplier of this system must have been a regular dealer in the brand proposed/provided for at least five years, and must supply a listing of several similar and recent products with this bid. They must stock all parts and materials at all times, and be capable of providing factory trained technicians to service the unit

Warranty: (2 YEAR)

A Factory warranty of at least two full years is to be provided on workmanship, equipment and labor at no cost to the buyer. After the 2 year warranty is over, all factory equipment warranties will take effect.

All warranty work is to be preformed within a reasonable time frame. Unless otherwise arranged all warranty work shall be performed at the supplier's facilities without cost to the buyer. The buyer shall pay all delivery charges or pay travel for repairs, all On-Site time and parts will be covered by the supplier.

Delivery and Terms

The successful bidder shall agree to furnish the completed trailer within **90** calendar days after receipt of the order. Unless otherwise arranged, The Mobile Air, rehab, and light trailer may be picked up at the Suppliers facility where the supplier will provide the buyer with a comprehensive training and instruction program. All documentation, warranty, and informational paper work will be provided at this time.

Additional Information

See floor plan rough drawing for preferred trailer lay out.