

City of Mt. Pleasant, Michigan

CONTRACT DOCUMENTS

For

2017 Breathing Air Compressor System Replacement



KATHLEEN L. LING

Mayor

Nancy Ridley

City Manager

Prepared By:
Mt Pleasant Fire department

Rick Beltinck

Fire Chief

November 2017

City of Mt. Pleasant, Michigan
TABLE OF CONTENTS

2017 Breathing Air Compressor System Replacement

Bidding Information

Notice to Bidders

Instructions to Bidders

Contract Documents

Proposal

Specifications



THE CITY OF MT. PLEASANT, MICHIGAN

CITY HALL

320 W. Broadway • 48858-2447
(989) 779-5300
(989) 773-4691 fax

PUBLIC SAFETY

804 E. High • 48858-3595
(989) 779-5100
(989) 773-4020 fax

PUBLIC WORKS

1303 N. Franklin • 48858-4682
(989) 779-5400
(989) 772-6250 fax

NOTICE TO BIDDERS

2017 Breathing Air Compressor System Replacement

The City of Mt. Pleasant, Michigan, is requesting sealed bids at the Office of the City Clerk, City Hall, 320 West Broadway Street, Mt. Pleasant, Michigan 48858, until 1:30 p.m. (local time), on Tuesday, December 19, 2017, at which time and place the bids will be publicly opened and read. All bids shall be submitted in a sealed envelope, plainly marked "**2017 Breathing Air Compressor Replacement – December 19, 2017**". Bidders must include manufacturer's specifications and the City's specifications sheets, indicating ability to comply, with the bid proposal.

Proposals are solicited on a lump sum basis, for the following:

Fire Department Breathing Air Compressor System.

To view and download complete Plans and Specifications at no charge, visit the City of Mt. Pleasant website at www.mt-pleasant.org and navigate to the Bids and Quotes page. Questions must be submitted by e-mail to rbeltin@mt-pleasant.org by December 15, 2017.

The City of Mt. Pleasant reserves the right to accept or reject any or all bids, to waive any irregularities in the bids, and to select the bid considered most advantageous to the city.

Rick Beltinck
Fire Chief
(989) 779-5152

Jeremy Howard
City Clerk

Website: www.mt-pleasant.org
Michigan Relay Center for Speech & Hearing Impaired: 1-800-649-3777

City of Mt. Pleasant, Michigan
INSTRUCTIONS TO BIDDERS
FOR MATERIALS

1. **Proposals**

Proposals must be made upon the forms provided, therefore, with the Bid amount both written and shown in figures, and all other data required submitted.

The Proposal, bound together with all Proposal Documents, must be enclosed in a sealed envelope marked as specified in the Notice to Bidders for such Bid and clearly indicating the name and address of the Bidder and must be received by the City Clerk, City Hall, 320 West Broadway Street, Mt. Pleasant, Michigan 48858, no later than the time and date specified in the Notice to Bidders. At such specified time, Proposals shall be publicly opened and read aloud.

2. **Basis of Proposals**

Proposals are solicited on the basis of unit price(s) and/or lump sum(s), as specified on the Proposal form.

The City of Mt. Pleasant, (also referred to as "Owner"), reserves the right to accept any Bid, to reject any or all Bids, and to waive any irregularities in the Bids, and to select the Bid considered most advantageous to the city.

3. **Comparison of Bids**

In comparing Bids, consideration shall be given to the time proposed for completion of the Contract, qualifications of Bidder, price differentials, alternate Proposals for the alternate items listed in the Proposal (if applicable), and any other pertinent factors. **The City of Mt. Pleasant grants a preference to businesses located within the Mt. Pleasant City Limits. The preference given is a differential above the low bid if the low bid is not from a City of Mt. Pleasant bidder. The differential allowed is 3% of the total for bids between \$5,000 and \$9,999 and 2% of the total for bids over \$10,000. The maximum credit allowed is \$1500.00.** The Owner reserves the right to make an award to the Bidder whose Proposal is deemed to be in the best interest of the Owner.

4. **Time**

Time is of the essence in the performance of the Contract, and each Bidder, by submitting a Proposal, certifies his/her acceptance of the time allowed by the Contract for the completion of the work specified.

5. **Indemnification**

The Contractor shall save and hold harmless the city and its employees from and against all claims, damages, losses, or expenses, including attorney's fees, arising out of or resulting from the performance of the work; provided that any such claim, damage, loss or expense is caused in whole or in part by any negligent or willful act of omission of the

contractor, subcontractor, employee, or anyone under their direction. The Contractor shall at his/her own expense, defend any and all such actions and shall pay all attorney's fees, costs, and expenses pertaining thereto.

6. **Insurance and Bonds**

The successful Bidder will be required to execute (2) Bonds, in the form attached hereto, with Surety acceptable to the Owner and insurance, as follows:

- a. Bond in the amount of 100% of the Estimated Contract Price running to the City of Mt. Pleasant, Michigan, to insure the completion of the entire work, according to the statutes of the State of Michigan in effect at that time.
- b. Bond in the amount of 100% of the Estimated Contract Price running to the People of the State of Michigan for the protection of Subcontractors and Labor and Material Men, according to the statutes of the State of Michigan in effect at that time.
- c. Insurance in the amounts required by City Ordinance as specified in the Section 1 - General Construction Specifications, attached hereto.

The successful bidder shall be required to furnish for each set of executed Contract Documents, and conformed copies thereof, an original conformed Performance Bond, Labor and Materials Bond, and Insurance Certificates using the attached forms. Any other bond forms are not permissible.

7. **Permits and Local Codes**

The Contractor shall obtain, at his/her expense, all other required local construction permits and shall comply with local building code and inspection requirements.

8. **Bidder Responsibility For Conditions of Work and Site**

The Bidder, or his/her representative, shall make personal investigation of the site of work and of existing structures and shall determine to his/her own satisfaction the conditions to be encountered, the nature of the ground, the difficulties involved in making connections to existing structures and pipes, and any and all other factors affecting the work proposed under the Contract.

The Bidder to whom the Contract is awarded shall not be entitled to any additional compensation by reason of conditions being different from those anticipated or by reason of his/her failure to fully acquaint himself/herself with the conditions at the site affecting the work of the Contract.

9. Changes in Work

If any change is required to be made in the work of the Contract, a payment adjustment therefore shall be determined as agreed upon in writing by the contractor and owner.

10. Interpretation of Documents

If any Bidder is in doubt as to the true meaning of any part of the Plans, Specifications or any Contract Document, he/she may submit to the Owner a written request for an interpretation thereof.

Any interpretation made in response to such query shall be made only by Addendum, duly issued, and a copy of such Addendum shall be mailed or duly delivered to each prospective Bidder. The Owner shall not be responsible for any other explanation or interpretation of the Contract Documents.

11. Execution of Bid Proposal

A Bid Proposal which is not signed by the individual making it should have attached thereto a Power of Attorney evidencing authority to sign the Bid Proposal in the name of the person for whom it is signed.

A Bid Proposal, which is signed by a partnership, shall be signed by all of the partners or by an Attorney-in-Fact. If signed by an Attorney-in-Fact, there should be attached to the Bid, a Power of Attorney evidencing authority to sign the Bid Proposal in the name of the partnership and such Power of Attorney shall be signed by all partners of the partnership.

A Bid Proposal, which is signed for a corporation should have the correct corporate name thereof and the signature of the President, or other authorized officer(s) of the corporation, manually written below the corporate name and on the line indicating "By: _____." If such Bid Proposal is manually signed by an officer other than the president of the corporation, a certified copy of the Resolution of the Board of Directors evidencing the authority of such officer(s) to sign the Bid Proposal should be attached thereto. Such Bid Proposal should also bear the attested signature of the Secretary of the corporation and an impression of the corporate seal.

12. Delivery

The successful Bidder shall deliver equipment and/or materials as specified to the City of Mt. Pleasant, Department of Public Safety, 804 E High Street, Mt. Pleasant, Michigan, 48858, or as specified in the proposal. The proposal amount should include delivery F.O.B. Mt. Pleasant. All equipment, literature, manuals, warranty papers, and any other items listed in the specifications of the equipment or materials, must be delivered before payment in accordance with this contract.

"Fire Department Breathing Air Compressor System"

PROPOSAL

TO: Office of the City Clerk
City Hall
320 West Broadway St.
Mt. Pleasant, MI 48858

BID DATE: December 19, 2017
TIME: 1:30 p.m.

In accordance with the specifications and other bid requirements heretofore provided, the undersigned agrees to provide the below listed bid items at the price(s) set forth below. This is a firm bid and not subject to withdrawal or change for a period of sixty (60) days.

<u>BID ITEM</u>	<u>QTY</u>	<u>UNIT</u>	<u>TOTAL</u>
Fire Department Breathing Air Compressor System.			
		TOTAL	\$ _____ (figures)

(Written) _____ and ____/100 Dollars.

Estimated delivery date to City of Mt. Pleasant: _____

Respectfully Submitted,

COMPANY: _____ DATE _____

ADDRESS : _____

CITY _____ STATE _____ ZIP+4 _____

TELEPHONE _____ FAX _____

AUTHORIZED SIGNATURE _____

PRINT OR TYPE NAME & TITLE _____

EMAIL _____

City of Mt. Pleasant Michigan
"Breathing Air Compressor System Replacement"
SPECIFICATIONS

The City of Mt. Pleasant Department of Public Safety is requesting sealed bids for the replacement of one breathing air compressor. This request outlines the specifications for this project. Included in this bid will be the installation of all materials, equipment and labor as specified, all processing/applicable fees, shipping and delivery to Mt. Pleasant, Michigan. It will be the obligation of the bidder to state specifically any bid requirement that is not met by its proposal. Questions regarding these specifications may be directed to Rick Beltinck, Fire Chief, via email to rbeltin@mt-pleasant.org

Breathing Air Compressor:

- **All in one compressor fill station, air storage unit, and remote fill hose connection.**
- **6000 PSI, 13 SCFM, 10 hp. 3 Phase 230 VAC.**
- **Carbon monoxide / moisture monitor system.**
- **Compressor low oil and high temperature safety shutdowns.**
- **Inlet filter maintenance indicator.**
- **4 bank cascade storage system, with 4 6000 PSI ISO bottles.**
- **NFPA 1901 compliant three position containment fill station.**
- **Fill station capable of filling 2216, 3000, & 4500 PSI SCBA & SCUBA cylinders.**
- **50 foot of remote fill hose with connections capable of filling 2216 – 6000 PSI.**
- **Fully enclosed cabinet for quiet operation.**
- **Optional Integrated spring rewind hose reel with 75 foot of hose and fittings.**
- **Bid must include all shipping, removal of existing and installation of new breathing air compressor systems.**
- **Trade in estimate of Fire Departments existing breathing air compressor system. (MAKO model AC05-E3 3 stage 5000 psi compressor, two position open fill station, four 4500 PSI bottles and one spring rewind hose reel with 40 foot of 5000 PSI hose).**

Breathing air Compressor System Requirements

Specification for a breathing air station to refill self-contained breathing apparatus (SCBA) cylinders with purified air that meets or exceeds the requirements of CGA Pamphlet G-7, Compressed Air for Human Respiration, the requirements of ANSI/CGA G-7.1, Commodity Specification for Air, Grade E, and all other recognized standards for respirable air. The breathing air station shall be comprised, in part, of a high pressure compressor and purification system, storage system, cascade fill control panel and containment fill station. The station shall be designed for a maximum working pressure of 6,000 PSIG. All equipment shall be new and of current design and manufacture. Used or refurbished equipment is unacceptable. Specifications are subject to change without notice. The compressor systems manufacture shall have in place a Quality Management System which complies with the requirements of ISO 9001:2008 for the following scope of registration. The Design, Manufacture, Inspection, Test and Service of Air and Gas Compressors Nitrogen Generators and Associated Spare Parts for Commercial and Military Applications

ALL-IN-ONE COMPRESSOR SYSTEM
6000 PSI SERVICE 13CFM, 10 hp. 3 Phase 230 VAC.

The breathing air station shall be supplied on a steel base frame of welded construction. The frame shall be designed for both the static and dynamic loads of the system and of sufficient size to adequately accommodate all of the station's components.

The compressor, purification system, fill station and all tubing shall be incorporated into an appliance-like enclosure complete with sound attenuation. The enclosure panels shall be equipped with a slam-action latches and lift-off hinges making it simple to facilitate inspection and maintenance. The enclosure and base frame shall be finished with a baked on polyester powder coat paint for the ultimate in durability, corrosion resistance, and long life.

The station shall be designed for against-the-wall installation, operation and maintenance and single-point operator control from the front of the station. The design of the station shall permit unrestricted cooling air flow to the compressor and motor when installed against a wall and will not require auxiliary fans to keep the compressor block cool. The compressor shall be designed to cool itself from the compressor flywheel. All system instrumentation, controls and access to the containment fill station shall be located at the front of the station. The depth of the fill station portion of the unit must be adjustable thereby allowing the unit to fit through a standard 36" doorway. The station shall be designed for continuous duty operation indoors with room temperatures ranging between 40°F and 115°F. Installation shall not require a special foundation however; the purchaser will provide the installation site that is a solid and level foundation that can support the weight of the station, the availability of a qualified source of air for the intake of the compressor and adequate ventilation.

Compressor

The compressor shall be an air-cooled, oil lubricated, four stage, three cylinder, reciprocating compressor. Each cylinder shall be located directly in the cooling fan's blast. The cylinders shall be removable from the crankcase. The compressor's flywheel shall be of cast iron construction. A multi-wing, high velocity cooling fan shall be integral to the flywheel.

An intercooler shall be provided after each stage of compression and an aftercooler shall be provided after the final stage of compression. The coolers shall be individually detachable from the compressor, located directly in the cooling fan's blast and made of a stainless steel. The aftercooler 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 the second and third stages of compression, and a coalescing separator shall be supplied at the discharge of the compressor. An automatic condensate drain (A.C.D.) system shall be supplied for all of the separators. The drain solenoid shall be controlled by the PLC and factory preset to drain the separators approximately every fifteen minutes for approximately six seconds. The A.C.D. system shall unload the compressor on shutdown for unloaded restart. An exhaust muffler and condensate reservoir 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. The operator shall be alerted that the reservoir is at capacity via an audible alarm and a scrolling text display message on the panel mounted operator / compressor interface. Manually operated valves shall be supplied to override the automatic operation of the A.C.D. system for test and maintenance purposes.

The compressor shall be lubricated by a combination splash /mist and low pressure lubrication system. The final stage of compression shall be lubricated by a pressurized

lubrication circuit. The other stages and the driving gear shall be splash/mist lubricated. The low-pressure lubrication circuit shall include a positive displacement oil pump, gear driven by the crankshaft, a non-adjustable oil pressure regulator, and a full-flow oil filter with replaceable element. A highly visible sight glass shall be included 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.

Electrical Control & Instrumentation

The compressor control panel (CCP) shall include an across-the-line magnetic motor starter, fused transformer and PLC controller. The CCP shall be built in accordance with UL 508A, the standard for Industrial Control Panels and shall be affixed with a UL label.

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

Standard features of the CCP shall include:

- A NEMA type 4 electrical enclosure
- UL electrical panel
- Human Machine Interface (HMI) with Multi-Color Touch Screen Display incorporating vivid TFT (Thin Film Transistor) Technology and NOT limited by touch cells (Optional mounting configurations available-up to 25 ft. remote)
- Emergency Stop Palm Button
- Home screen customizable with distributor contact information
- Real Time Clock (time and date)
- Compressor on / off
- Digital Display of Compressor Final Pressure
- Digital Display of Compressor Oil Pressure
- Digital Display of current Compressor Run Time
- Digital Display of Final Separator Cycle Count
- Compressor High Temperature Shutdown and Alarm
- Full support of the Automatic Condensate Drain system (interval and duration set points adjustable thru the HMI - password protected)
- Digital Display of time to next ACD Cycle
- Condensate Drain Reservoir full alarm
- Full support of CO monitor alarm functions
- Full support of purification system moisture monitor warning and alarm functions
- Maintenance Timer (selectable between real time or compressor run time) to give Digital Display of all needed Preventative Maintenance Evolutions
- Motor overload alarm
- Non-resettable hour meter
- Recoverable Run History (last 5 run periods)
- Recoverable Alarm History (last 5 fault shutdowns)
- Operator choice of display in BAR or PSI

The compressor oil pressure shall be monitored by a pressure transmitter and digitally displayed on HMI. The compressor shall shut down and a fault will be indicated on the HMI should the compressor's oil pressure drop below the factory preset value during operation. The oil pressure transmitter shall be by-passed during start-up to permit the oil pump to achieve the normal operating pressure.

The low oil pressure and final air pressure transmitters shall be equipped with sealed electrical connectors. The analog pressure sensors for oil pressure and final pressure shall have adjustable set point and dead-band thru the HMI (password protected).

A temperature switch shall be supplied on the head of the final stage of compression. The compressor shall shutdown and a fault will be indicated on the HMI should the final stage temperature exceed the tamper-proof set point during operation. Fault shut downs shall not affect the ability to fill SCBA cylinders from the storage system as long as there is sufficient pressure in the storage to fill them.

Purification System

The purification system shall purify 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.

The purification system will process 67,000 cubic feet of air. Purification shall be achieved by mechanical separation of condensed oil and water droplets, adsorption of vaporous water by a desiccant, adsorption of oil vapor and elimination of noxious odors by activated carbon and conversion of carbon monoxide to respirable levels of carbon dioxide by catalyst. The purification chambers and compressor block must be produced by the same manufacture to insure optimum performance of the system.

The high pressure purification chamber shall have a working pressure of 6000 PSIG. The purification system shall utilize a replaceable cartridge. The purification system shall be designed so that the replacement of the cartridge can be accomplished without disconnecting system piping.

The design of the chamber shall preclude the possibility of operating the system without the cartridge installed or with an improperly installed cartridge. A bleed valve shall be provided to vent the purification system to facilitate replacing the cartridge. 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 a Secures Electronic Moisture Monitor System. A sensor shall be located in the purifier cartridge for direct monitoring of moisture levels. The Touch Screen Display shall indicate the status of the cartridge. The system shall warn the operator, in advance, of the impending expiration of the cartridge via a scrolling text display message on the panel mounted operator / compressor interface. The compressor shall shut down automatically and the operator notified via audible alarm and scrolling text display message on the panel mounted operator / compressor interface should the operator fail to change the cartridge within the warning period. The compressor shall not be capable of restarting until the used 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 shut down shall be affected. For absolute safety and highest quality breathing air, no manual override shall be supplied for the moisture monitor.

Cascade Fill Control / Instrument Panel

A steel instrument panel affixed with a non-glare Lexan[®] overlay shall be installed on the front of the station. The overlay shall contain an embedded airflow schematic. The cascade fill control / instrument panel shall be hinged for easy maintenance and accessibility.

The cascade control panel shall be factory piped for four storage banks and designed to fill three SCBA cylinders either independently or simultaneously. The control panel shall include, at a minimum, a manual control valve and pressure gauge for each storage bank,

an adjustable regulator for SCBA cylinder fill pressure complete with a pressure gauge for inlet and regulated pressure and a relief valve to protect the SCBA cylinders from overfilling, a manual control valve and pressure gauge for each fill position, a manual direction valve to allow the operator to select SCBA filling from either air storage or the compressor, provisions for factory or field modification to allow a different fill pressure at each fill position. The cascade system shall allow the simultaneous tasks of filling one storage bank while drawing down another during the SCBA fill process. Strategically placed tees and check valves preclude the need for individual "To" and "From" valves. Systems requiring individual "To" and "From" valves shall not be deemed acceptable, as they require more efforts to operate.

All control panel mounted pressure gauges shall have a 2 ½" diameter and be liquid filled. A fluorescent light shall be factory installed above the panel to provide a glare-free illumination of the control panel. An on/off switch shall be integrated into the operator / compressor interface for the light.

Air Storage

The air storage system shall include four ISO Cylinders. The cylinders shall have a capacity of 509 cu ft. at 6000 PSIG.

The front-loading, three position; containment fill station shall totally enclose the SCBA or SCUBA cylinders during the refilling process and be tested to current 2016, 1901 NFPA standards.

The fill station's outer enclosure and door assemblies shall 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, providing unobstructed access to the cylinder holder to load and unload the cylinders. It shall take no more than approximately eighteen pounds of force to open or close the fill station door thereby eliminating operator fatigue.

Each cylinder holder shall consist of a thick walled polymer tube which will surround and cradle the SCBA cylinder during the filling process. This type design shall eliminate the need for SCBA cylinder scuff protection and will allow for concussive flexure in the event of a ruptured cylinder thus maximizing operator protection. Designs that do not cradle the cylinder or allow unsupported pressurized cylinders to hang outside the fill enclosure shall be deemed unacceptable as they expose the operator to greater risk of accidental mishandling of a pressurized cylinder during the disconnection process. 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 three 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.

An Independent Third Party Certificate MUST be available upon request confirming the Fill Station was successfully tested utilizing SCBA's DESIGNED and RATED for the 75 minute SCBA at 5500 psi per NFPA 2016 standards .

Testing and Preparation for Shipment

The breathing air station shall be tested by the manufacturer prior to shipment. A manufacturer's nameplate shall be placed on the interior of the electric panel. The nameplate shall include, at a minimum, manufacturer's name, model number, serial number, compressor block number, and date of manufacture. Voltage, phase / frequency, and amperage are located on another label inside the electrical panel. The station shall be suitably prepared for motor freight transport. The station shall be bolted to a wooden pallet, wrapped in sheet plastic, and fully protected by a wooden crate. The compressor intake and similar openings shall be suitably covered. Component parts, loose parts or associated spare parts shall be packaged separately and shipped on the same pallet if feasible.

Documentation

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

The Operator's Instruction and Maintenance Manual for the breathing air station 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.

Available Accessories

The following shall be offered by the manufacturer as accessories to the breathing air station:

- Leveling feet and securing brackets **(no charge)**
- Remote Fill with bulkhead fitting, regulator, pressure gauge, line valve, quick connect coupling and 50 ft. of high pressure 6000 psi hose **(no charge)**
- Optional Cabinet enclosed integrated spring rewind hose reel with 75 ft. of high-pressure 6000 psi hose remote fill with regulator, pressure gauge, line valve.

ADDITIONAL BID SPECIFICATIONS

Warranty: The manufacturer's warranty for the equipment shall be submitted in writing with the bid. The warranty shall provide for the replacement of all defective parts during the warranty period. Such replacement shall be performed at no cost to the City.

Mandatory Pre Bid Conference: A pre bid conference will be held at 1:00 p.m. on December 13th to review the scope and specifications of the project with potential bidders. If bidders are unable to attend the pre bid meeting in order to bid the project. They must arrange a meeting with Fire Chief Rick Beltinck to review the project.