

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and Divisions 00 and 01, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Lubricated, reciprocating air compressors.
 - 2. Oil-free, reciprocating air compressors.
 - 3. Oilless, reciprocating air compressors.
 - 4. Oil-free, rotary-screw air compressors.
 - 5. Oil-flooded, rotary-screw air compressors.
 - 6. Oil-free, rotary, sliding-vane air compressors.
 - 7. Oil-sealed, rotary, sliding-vane air compressors.
 - 8. Inlet-air filters.
 - 9. Air-cooled, compressed-air aftercoolers.
 - 10. Water-cooled, compressed-air aftercoolers.
 - 11. Refrigerant compressed-air dryers.
 - 12. Desiccant compressed-air dryers.
 - 13. Computer interface cabinet.

1.3 DEFINITIONS

- A. Actual Air: Air delivered from air compressors. Flow rate is delivered compressed air measured in acfm.
- B. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control, signaling power-limited circuits.
- C. Standard Air: Free air at 68 deg F and 1 atmosphere (29.92 in. Hg) before compression or expansion and measured in scfm.

1.4 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design compressed-air equipment mounting, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Seismic Performance: Compressed-air equipment shall withstand the effects of earthquake motions determined according to [SEI/ASCE 7] <Insert requirement>.
 - 1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified [and the unit will be fully operational after the seismic event]."

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

1. Wiring Diagrams: For power, signal, and control wiring.
- B. Delegated-Design Submittal: For compressed-air equipment mounting indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 1. Detail fabrication and assembly of supports.
 2. Design Calculations: Calculate requirements for selecting vibration isolators [and seismic restraints] and for designing vibration isolation bases.
- C. Seismic Qualification Certificates: For compressed-air equipment, accessories, and components, from manufacturers.
 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- D. Operation and Maintenance Data: For compressed-air equipment to include in emergency, operation, and maintenance manuals.

1.6 CODES AND STANDARDS

- A. Codes and Standards shall be the current version adopted by the Authority Having Jurisdiction.

1.7 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. ASME Compliance: Fabricate and label receivers to comply with ASME Boiler and Pressure Vessel Code.

1.8 PROJECT CONDITIONS

- A. Interruption of Existing Compressed-Air Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
 1. Notify [Architect] [Construction Manager] [Owner] no fewer than [two] <Insert number> days in advance of proposed interruption of compressed-air service.
 2. Do not proceed with interruption of compressed-air service without [Architect's] [Construction Manager's] [Owner's] written permission.

1.9 COORDINATION

- A. Coordinate sizes and locations of concrete housekeeping pads with actual equipment provided.

1.10 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Air-Compressor, Inlet-Air-Filter Elements: Equal to <Insert number> percent of amount installed, but no fewer than <Insert number> units.
 - 2. Belts: [One] [Two] <Insert number> for each belt-driven compressor.

PART 2 – PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PACKAGED AIR COMPRESSORS AND RECEIVERS

- A. General Description: Factory-assembled, -wired, -piped, and -tested; electric-motor-driven; air-cooled; continuous-duty air compressors and receivers that deliver air of quality equal to intake air.
- B. Control Panels: Automatic control station with load control and protection functions. Comply with NEMA ICS 2 and UL 508.
 - 1. Enclosure: NEMA ICS 6, Type 12 control panel unless otherwise indicated.
 - 2. Motor Controllers: Full-voltage, combination magnetic type with undervoltage release feature and motor-circuit-protector-type disconnecting means and short-circuit protective device.
 - 3. Control Voltage: 120-V ac or less, using integral control power transformer.
 - 4. Motor Overload Protection: Overload relay in each phase.
 - 5. Starting Devices: Hand-off-automatic selector switch in cover of control panel, plus pilot device for automatic control.
 - 6. Automatic control switches to [alternate lead-lag compressors for duplex] [sequence lead-lag compressors for multiplex] air compressors.
 - 7. Instrumentation: Include discharge-air pressure gage, air-filter maintenance indicator, hour meter, compressor discharge-air and coolant temperature gages, and control transformer.
 - 8. Alarm Signal Device: For connection to alarm system to indicate when backup air compressor is operating.
- C. Short Circuit Current Rating: Provide compressor control panel with short circuit current rating as indicated. Short Circuit Current Rating shall be included on the equipment nameplate. See Division 23 Section "Mechanical Materials and Methods" for further requirements.
- D. Receivers: Steel tank constructed according to ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.
 - 1. Pressure Rating: At least as high as highest discharge pressure of connected compressors, and bearing appropriate code symbols.
 - 2. Interior Finish: Corrosion-resistant coating.
 - 3. Accessories: Include safety valve, pressure gage, drain, and pressure-reducing valve.
- E. Mounting Frame: Fabricate mounting and attachment to pressure vessel with reinforcement strong enough to resist packaged equipment movement during a seismic event when base is anchored to building structure.

2.2 LUBRICATED, RECIPROCATING AIR COMPRESSORS

- A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide [product indicated on Drawings] <Insert manufacturer's name; product name or designation> or comparable product by one of the following:
1. Atlas Copco.
 2. CompAir, Ltd.
 3. Curtis-Toledo.
 4. Gardner Denver, Inc.
 5. General Air Products, Inc.
 6. Ingersoll-Rand; Air Solutions Group.
 7. Kaeser Compressors, Inc.
 8. Powerex, Inc.
 9. Quincy Compressor; an EnPro Industries company.
 10. Saylor-Beall Manufacturing Company.
 11. Or Approved Equal.
- C. Compressor(s): Lubricated, reciprocating-piston type with lubricated compression chamber and crankcase.
1. Submerged gear-type oil pump.
 2. Oil filter.
 3. Combined high discharge-air temperature and low lubrication-oil pressure switch.
 4. Belt guard totally enclosing pulleys and belts.
- D. Capacities and Characteristics:
1. Air Compressor(s): [One] [Two] [Three] <Insert number>; [single] [single or two] [two] stage.
 - a. Intercooler between stages of two-stage units.
 2. Standard-Air Capacity of Each Air Compressor: <Insert scfm> free air.
 3. Actual-Air Capacity of Each Air Compressor: <Insert acfm> delivered.
 4. Discharge-Air Pressure: [100 psig] [125 psig] [175 psig] <Insert value>.
 5. Intake-Air Temperature: <Insert deg F>.
 6. Discharge-Air Temperature: <Insert deg F>.
 7. Mounting: [Freestanding] [Tank mounted].
 8. Motor (Each Air Compressor):
 - a. Horsepower: <Insert value>.
 - b. Speed: [1750] [3400] <Insert speed> rpm.
 9. Unit Electrical Characteristics:
 - a. Volts: [120] [208] [240] <Insert value>.
 - b. Phase(s): [Single] [Three].
 - c. Hertz: [60] <Insert value> Hz.
 - d. Full-Load Amperes: <Insert value>.
 - e. Minimum Circuit Ampacity: <Insert value>.

- f. Maximum Overcurrent Protection: <Insert amperage>.
- 10. Receiver: ASME construction steel tank.
 - a. Arrangement: [Horizontal] [Vertical].
 - b. Capacity: <Insert gal.>.
 - c. Interior Finish: [Epoxy] [Epoxy or galvanized] [Galvanized] <Insert coating> coating.
 - d. Pressure Rating: [100 psig] [125 psig] [150 psig] [200 psig] [250 psig] <Insert value> minimum.
 - e. Pressure Regulator Setting: <Insert psig>.
 - f. Pressure Relief Valve Setting: <Insert psig>.
 - g. Drain: [Automatic] [Manual] valve.

2.3 OIL-FREE, RECIPROCATING AIR COMPRESSORS

- A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide [product indicated on Drawings] <Insert manufacturer's name; product name or designation> or comparable product by one of the following:
 - 1. Gast Manufacturing Inc.
 - 2. Ingersoll-Rand; Air Solutions Group.
 - 3. Quincy Compressor; an EnPro Industries company.
 - 4. Or Approved Equal.
- C. Compressor(s): Oil-free, reciprocating-piston type with nonlubricated compression chamber, lubricated crankcase, and of construction that prohibits oil from entering compression chamber.
 - 1. Submerged gear-type oil pump.
 - 2. Oil filter.
 - 3. Combined high discharge-air temperature and low lubrication-oil pressure switch.
 - 4. Belt guard totally enclosing pulleys and belts.
- D. Capacities and Characteristics:
 - 1. Air Compressor(s): [One] [Two] [Three] <Insert number>; single stage.
 - 2. Standard-Air Capacity of Each Air Compressor: <Insert scfm> free air.
 - 3. Actual-Air Capacity of Each Air Compressor: <Insert acfm> delivered.
 - 4. Discharge-Air Pressure: [100 psig] [125 psig] [175 psig] <Insert value>.
 - 5. Intake-Air Temperature: <Insert deg F>.
 - 6. Discharge-Air Temperature: <Insert deg F>.
 - 7. Mounting: [Freestanding] [Tank mounted].
 - 8. Motor (Each Air Compressor):
 - a. Horsepower: <Insert value>.
 - b. Speed: [1750] [3400] <Insert speed> rpm.
 - 9. Unit Electrical Characteristics:

- a. Volts: <Insert value>.
- b. Phase(s): [Single] [Three].
- c. Hertz: [60] <Insert value> Hz.
- d. Full-Load Amperes: <Insert value>.
- e. Minimum Circuit Ampacity: <Insert value>.
- f. Maximum Overcurrent Protection: <Insert amperage>.

10. Receiver: ASME construction steel tank.

- a. Arrangement: [Horizontal] [Vertical].
- b. Capacity: <Insert gal.>.
- c. Interior Finish: [Epoxy] [Epoxy or galvanized] [Galvanized] <Insert coating> coating.
- d. Pressure Rating: [100 psig] [125 psig] [150 psig] [200 psig] [250 psig] <Insert value> minimum.
- e. Pressure Regulator Setting: <Insert psig>.
- f. Pressure Relief Valve Setting: <Insert psig>.
- g. Drain: [Automatic] [Manual] valve.

2.4 OILLESS, RECIPROCATING AIR COMPRESSORS

- A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide [product indicated on Drawings] <Insert manufacturer's name; product name or designation> or comparable product by one of the following:
 1. Curtis-Toledo.
 2. Gast Manufacturing Inc.
 3. General Air Products, Inc.
 4. Ingersoll-Rand; Air Solutions Group.
 5. JUN-AIR USA, Inc.
 6. Kaeser Compressors, Inc.
 7. Powerex, Inc.
 8. Quincy Compressor; an EnPro Industries company.
 9. Rietschle Thomas Sheboygan, Inc.
 10. Squire-Cogswell/Aeros Instruments, Inc.
 11. Or Approved Equal.
- C. Compressor(s): Oilless (nonlubricated), reciprocating-piston type, with sealed oil-free bearings, that will deliver air of quality equal to intake air.
 1. High discharge-air temperature switch.
 2. Belt guard totally enclosing pulleys and belts.
- D. Capacities and Characteristics:
 1. Air Compressor(s): [One] [Two] [Three] <Insert number>; [single] [single or two] [two] stage.
 - a. Intercooler between stages of two-stage units.

2. Standard-Air Capacity of Each Air Compressor: <Insert scfm> free air.
3. Actual-Air Capacity of Each Air Compressor: <Insert acfm> delivered.
4. Discharge-Air Pressure: [100 psig] [125 psig] [175 psig] <Insert value>.
5. Intake-Air Temperature: <Insert deg F>.
6. Discharge-Air Temperature: <Insert deg F>.
7. Mounting: [Freestanding] [Tank mounted].
8. Motor (Each Air Compressor):
 - a. Horsepower: <Insert value>.
 - b. Speed: [1750] [3400] <Insert speed> rpm.
9. Unit Electrical Characteristics:
 - a. Volts: <Insert value>.
 - b. Phase(s): [Single] [Three].
 - c. Hertz: [60] <Insert value> Hz.
 - d. Full-Load Amperes: <Insert value>.
 - e. Minimum Circuit Ampacity: <Insert value>.
 - f. Maximum Overcurrent Protection: <Insert amperage>.
10. Receiver: ASME construction steel tank.
 - a. Arrangement: [Horizontal] [Vertical].
 - b. Capacity: <Insert gal.>.
 - c. Interior Finish: [Epoxy] [Epoxy or galvanized] [Galvanized] <Insert coating> coating.
 - d. Pressure Rating: [100 psig] [125 psig] [150 psig] [200 psig] [250 psig] <Insert value> minimum.
 - e. Pressure Regulator Setting: <Insert psig>.
 - f. Pressure Relief Valve Setting: <Insert psig>.
 - g. Drain: [Automatic] [Manual] valve.

2.5 OIL-FREE, ROTARY-SCREW AIR COMPRESSORS

- A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide [product indicated on Drawings] <Insert manufacturer's name; product name or designation> or comparable product by one of the following:
 1. Atlas Copco.
 2. CompAir, Ltd.
 3. Gardner Denver, Inc.
 4. Ingersoll-Rand; Air Solutions Group.
 5. Or Approved Equal.
- C. Compressor(s): Oil-free, rotary-screw type with nonlubricated helical screws and lubricated gear box, and of construction that prohibits oil from entering compression chamber.
 1. Coupling: Nonlubricated, flexible type.

2. Cooling/Lubrication System: Unit-mounted, air-cooled exchanger package prepiped to unit; with air pressure circulation system with coolant stop valve, full-flow coolant filter, and thermal bypass valve.
3. Air Filter: Dry type, with maintenance indicator and cleanable replaceable filter element.
4. Air/Coolant Receiver and Separation System: 150-psig- rated steel tank with ASME safety valve, coolant-level gage, multistage air-coolant separator element, minimum pressure valve, blowdown valve, discharge check valve, coolant stop valve, full-flow coolant filter, and thermal bypass valve.
5. Capacity Control: Capacity modulation between zero and 100 percent air delivery, with operating pressures between 50 and 100 psig. Include necessary control to hold constant pressure. When air demand is zero, unload compressor by using pressure switch and blowdown valve.

D. Capacities and Characteristics:

1. Air Compressor(s): [One] [Two] <Insert number>; single stage.
2. Standard-Air Capacity of Each Air Compressor: <Insert scfm> free air.
3. Actual-Air Capacity of Each Air Compressor: <Insert acfm> delivered.
4. Discharge-Air Pressure: [100 psig] [125 psig] [175 psig] <Insert value>.
5. Intake-Air Temperature: <Insert deg F>.
6. Discharge-Air Temperature: <Insert deg F>.
7. Motor (Each Air Compressor):
 - a. Horsepower: <Insert value>.
 - b. Speed: [1750] [3400] <Insert speed> rpm.
8. Unit Electrical Characteristics:
 - a. Volts: <Insert value>.
 - b. Phase(s): [Single] [Three].
 - c. Hertz: [60] <Insert value> Hz.
 - d. Full-Load Amperes: <Insert value>.
 - e. Minimum Circuit Ampacity: <Insert value>.
 - f. Maximum Overcurrent Protection: <Insert amperage>.
9. Receiver: ASME construction steel tank.
 - a. Arrangement: [Horizontal] [Vertical].
 - b. Capacity: <Insert gal.>.
 - c. Interior Finish: [Epoxy] [Epoxy or galvanized] [Galvanized] <Insert coating> coating.
 - d. Pressure Rating: [100 psig] [125 psig] [150 psig] [200 psig] <Insert value> minimum.
 - e. Pressure Regulator Setting: <Insert psig>.
 - f. Pressure Relief Valve Setting: <Insert psig>.
 - g. Drain: [Automatic] [Manual] valve.
10. Enclosure: Steel with sound-attenuating material lining.

2.6 OIL-FLOODED, ROTARY-SCREW AIR COMPRESSORS

- A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide [product indicated on Drawings] <Insert manufacturer's name; product name or designation> or comparable product by one of the following:
1. Atlas Copco.
 2. CompAir, Ltd.
 3. Gardner Denver, Inc.
 4. Ingersoll-Rand; Air Solutions Group.
 5. Kaeser Compressors, Inc.
 6. Quincy Compressor; an EnPro Industries company.
 7. Sullair Corporation.
 8. Or Approved Equal.
- C. Compressor(s): Oil-flooded, rotary-screw type with lubricated helical screws and lubricated gear box.
1. Coupling: Nonlubricated, flexible type.
 2. Cooling/Lubrication System: Unit-mounted, air-cooled exchanger package prepiped to unit; with air pressure circulation system with coolant stop valve, full-flow coolant filter, and thermal bypass valve.
 3. Air Filter: Dry type, with maintenance indicator and cleanable replaceable filter element.
 4. Air/Coolant Receiver and Separation System: 150-psig- rated steel tank with ASME safety valve, coolant-level gage, multistage air-coolant separator element, minimum pressure valve, blowdown valve, discharge check valve, coolant stop valve, full-flow coolant filter, and thermal bypass valve.
 5. Capacity Control: Capacity modulation between zero and 100 percent air delivery, with operating pressures between 50 and 100 psig. Include necessary control to hold constant pressure. When air demand is zero, unload compressor by using pressure switch and blowdown valve.
- D. Capacities and Characteristics:
1. Air Compressor(s): [One] [Two] <Insert number>; [single] [single or two] [two] stage.
 2. Standard-Air Capacity of Each Air Compressor: <Insert scfm> free air.
 3. Actual-Air Capacity of Each Air Compressor: <Insert acfm> delivered.
 4. Discharge-Air Pressure: [100 psig] [125 psig] [175 psig] [200 psig] <Insert value>.
 5. Intake-Air Temperature: <Insert deg F>.
 6. Discharge-Air Temperature: <Insert deg F>.
 7. Motor (Each Air Compressor):
 - a. Horsepower: <Insert value>.
 - b. Speed: [1750] [3400] <Insert speed> rpm.
 8. Unit Electrical Characteristics:
 - a. Volts: <Insert value>.
 - b. Phase(s): [Single] [Three].
 - c. Hertz: [60] <Insert value> Hz.

- d. Full-Load Amperes: <Insert value>.
 - e. Minimum Circuit Ampacity: <Insert value>.
 - f. Maximum Overcurrent Protection: <Insert amperage>.
9. Receiver: ASME construction steel tank.
- a. Arrangement: [Horizontal] [Vertical].
 - b. Capacity: <Insert gal.>.
 - c. Interior Finish: [Epoxy] [Epoxy or galvanized] [Galvanized] <Insert coating> coating.
 - d. Pressure Rating: [100 psig] [125 psig] [150 psig] [200 psig] [250 psig] <Insert value> minimum.
 - e. Pressure Regulator Setting: <Insert psig>.
 - f. Pressure Relief Valve Setting: <Insert psig>.
 - g. Drain: [Automatic] [Manual] valve.
10. Enclosure: Steel with sound-attenuating material lining.

2.7 OIL-FREE, ROTARY, SLIDING-VANE AIR COMPRESSORS

- A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide [product indicated on Drawings] <Insert manufacturer's name; product name or designation> or comparable product by one of the following:
- 1. Becker Pumps Corp.
 - 2. Gast Manufacturing Inc.
 - 3. Or Approved Equal.
- C. Compressor(s): Oil-free, nonpulsating, rotary, sliding-vane type with nonlubricated sliding vanes.
- 1. Cleanable inlet screens.
 - 2. Outlet silencers on discharge connections.
- D. Capacities and Characteristics:
- 1. Air Compressor(s): [One] [Two] <Insert number>; single stage.
 - 2. Standard-Air Capacity of Each Air Compressor: <Insert scfm> free air.
 - 3. Actual-Air Capacity of Each Air Compressor: <Insert acfm> delivered.
 - 4. Discharge-Air Pressure: [15 psig] [20 psig] [25 psig] <Insert value>.
 - 5. Intake-Air Temperature: <Insert deg F>.
 - 6. Discharge-Air Temperature: <Insert deg F>.
 - 7. Mounting: [Freestanding] [Tank mounted].
- a. Motor (Each Air Compressor):
 - b. Horsepower: <Insert value>.
8. Speed: [1750] [3400] <Insert speed> rpm.

- a. Unit Electrical Characteristics:
- b. Volts: <Insert value>.
- c. Phase(s): [Single] [Three].
- d. Hertz: [60] <Insert value> Hz.
- e. Full-Load Amperes: <Insert value>.
- f. Minimum Circuit Ampacity: <Insert value>.
- g. Maximum Overcurrent Protection: <Insert amperage>.

9. Receiver: ASME construction steel tank.

- a. Arrangement: [Horizontal] [Vertical].
- b. Capacity: <Insert gal.>.
- c. Interior Finish: [Epoxy] [Epoxy or galvanized] [Galvanized] <Insert coating> coating.
- d. Pressure Rating: [100 psig] <Insert value> minimum.
- e. Pressure Regulator Setting: <Insert psig>.
- f. Pressure Relief Valve Setting: <Insert psig>.
- g. Drain: [Automatic] [Manual] valve.

2.8 OIL-SEALED, ROTARY, SLIDING-VANE AIR COMPRESSORS

- A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide [product indicated on Drawings] <Insert manufacturer's name; product name or designation> or comparable product by one of the following:
 1. Becker Pumps Corp.
 2. Davey Compressor Company.
 3. Gast Manufacturing Inc.
 4. CompAir, Ltd.
 5. Or Approved Equal.
- C. Compressor(s): Nonpulsating, rotary, sliding-vane type with oil-sealed sliding vanes.
 1. Cleanable inlet screens.
 2. Outlet silencers and oil-mist separators on discharge connections.
- D. Capacities and Characteristics:
 1. Air Compressor(s): [One] [Two] <Insert number>; single stage.
 2. Standard-Air Capacity of Each Air Compressor: <Insert scfm> free air.
 3. Actual-Air Capacity of Each Air Compressor: <Insert acfm> delivered.
 4. Discharge-Air Pressure: [20 psig] [25 psig] [30 psig] [100 psig] [125 psig] <Insert value>.
 5. Intake-Air Temperature: <Insert deg F>.
 6. Discharge-Air Temperature: <Insert deg F>.
 7. Mounting: [Freestanding] [Tank mounted].
 8. Motor (Each Air Compressor):
 - a. Horsepower: <Insert value>.

- b. Speed: [1750] [3400] <Insert speed> rpm.
- 9. Unit Electrical Characteristics:
 - a. Volts: <Insert value>.
 - b. Phase(s): [Single] [Three].
 - c. Hertz: [60] <Insert value> Hz.
 - d. Full-Load Amperes: <Insert value>.
 - e. Minimum Circuit Ampacity: <Insert value>.
 - f. Maximum Overcurrent Protection: <Insert amperage>.
- 10. Receiver: ASME construction steel tank.
 - a. Arrangement: [Horizontal] [Vertical].
 - b. Capacity: <Insert gal.>.
 - c. Interior Finish: [Epoxy] [Epoxy or galvanized] [Galvanized] <Insert coating> coating.
 - d. Pressure Rating: [100 psig] [125 psig] [150 psig] <Insert value> minimum.
 - e. Pressure Regulator Setting: <Insert psig>.
 - f. Pressure Relief Valve Setting: <Insert psig>.
 - g. Drain: [Automatic] [Manual] valve.

2.9 INLET-AIR FILTERS

- A. Description: Combination inlet-air filter-silencer, suitable for remote installation, for each air compressor.
 - 1. Construction: Weatherproof housing for replaceable, dry-type filter element, with silencer tubes or other method of sound reduction.
 - 2. Capacity: Match capacity of air compressor, with filter having collection efficiency of 99 percent retention of particles larger than 10 micrometers.
- B. Description: Combination inlet-air filter-silencer, suitable for remote installation, for multiple air compressors.
 - 1. Construction: Weatherproof housing for replaceable, dry-type filter element, with silencer tubes or other method of sound reduction.
 - 2. Capacity: Match total capacity of connected air compressors, with filter having collection efficiency of 99 percent retention of particles larger than 10 micrometers.

2.10 AIR-COOLED, COMPRESSED-AIR AFTERCOOLERS

- A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide [product indicated on Drawings] <Insert manufacturer's name; product name or designation> or comparable product by one of the following:
 - 1. Air/Tak, Inc.
 - 2. Arrow Pneumatics, Inc.
 - 3. Curtis-Toledo.

4. Gardner Denver, Inc.
 5. Hankison International.
 6. Ingersoll-Rand; Air Solutions Group.
 7. Pneumatech Inc.
 8. Saylor-Beall Manufacturing Company.
 9. Van Air Systems, Inc.
 10. Zeks Compressed Air Solutions.
 11. Or Approved Equal.
- C. Description: Electric-motor-driven, fan-operation, finned-tube unit; rated at [250 psig] <Insert pressure> and leak tested at 350-psig minimum air pressure; in capacities indicated. Size units to cool compressed air in compressor-rated capacities to [10 deg F] <Insert temperature> above summertime maximum ambient temperature. Include moisture separator and automatic drain.
- D. Capacities and Characteristics:
1. Standard-Air Capacity of Each Aftercooler: <Insert scfm> free air.
 2. Pressure: <Insert psig>.
 3. Entering, Compressed-Air Temperature: <Insert deg F>.
 4. Leaving, Compressed-Air Temperature: <Insert deg F>.
 5. Ambient-Air Temperature: <Insert deg F>.
 6. Maximum Compressed-Air-Pressure Drop: <Insert psig>.
 7. Motor Horsepower: <Insert value>.
 8. Electrical Characteristics:
 - a. Volts: <Insert value>.
 - b. Phase(s): [Single] [Three].
 - c. Hertz: [60] <Insert value> Hz.
 - d. Full-Load Amperes: <Insert value>.
 - e. Minimum Circuit Ampacity: <Insert value>.
 - f. Maximum Overcurrent Protection: <Insert amperage>.

2.11 WATER-COOLED, COMPRESSED-AIR AFTERCOOLERS

- A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide [product indicated on Drawings] <Insert manufacturer's name; product name or designation> or comparable product by one of the following:
1. Air/Tak, Inc.
 2. Arrow Pneumatics, Inc.
 3. Curtis-Toledo.
 4. Gardner Denver, Inc.
 5. Hankison International.
 6. Ingersoll-Rand; Air Solutions Group.
 7. Pneumatech Inc.
 8. Saylor-Beall Manufacturing Company.
 9. Van Air Systems, Inc.
 10. Zeks Compressed Air Solutions.

11. Or Approved Equal.
- C. Description: Shell and tube unit, rated at [250 psig] <Insert pressure> and leak tested at 350-psig minimum air pressure, in capacities indicated. Include moisture separator and automatic drain.
- D. Capacities and Characteristics:
1. Standard-Air Capacity of Each Aftercooler: <Insert scfm> free air.
 2. Pressure: <Insert psig>.
 3. Entering-Water Temperature: <Insert deg F>.
 4. Water Flow: <Insert gpm>.
 5. Entering, Compressed-Air Temperature: <Insert deg F>.
 6. Leaving, Compressed-Air Temperature: <Insert deg F>.

2.12 REFRIGERANT COMPRESSED-AIR DRYERS

- A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide [product indicated on Drawings] <Insert manufacturer's name; product name or designation> or comparable product by one of the following:
1. Air/Tak, Inc.
 2. Arrow Pneumatics, Inc.
 3. Atlas Copco.
 4. Curtis-Toledo.
 5. Domnick Hunter Limited; ZANDER, Inc.
 6. Donaldson Company, Inc.; Donaldson Ultrafilter Co.
 7. Hankison International.
 8. Ingersoll-Rand; Air Solutions Group.
 9. Kaeser Compressors, Inc.
 10. Numatics, Incorporated.
 11. Pioneer Air Systems, Inc.
 12. Pneumatech Inc.
 13. SPX Air Treatment.
 14. Van Air Systems, Inc.
 15. Wilkerson Operations; Pneumatic Division.
 16. Zeks Compressed Air Solutions.
 17. Or Approved Equal.
- C. Description: Noncycling, air-cooled, electric-motor-driven unit with steel enclosure and capability to deliver 35 deg F, 100-psig air at dew point. Include automatic ejection of condensate from airstream, step-down transformers, disconnect switches, inlet and outlet pressure gages, thermometers, automatic controls, and filters.
- D. Capacities and Characteristics:
1. Standard-Air Capacity of Each Compressed-Air Dryer: <Insert scfm> free air.
 2. Pressure: <Insert psig>.
 3. Entering-Air Temperature: <Insert deg F>.

4. Leaving-Air Temperature: <Insert deg F>.
5. Leaving-Air Dew Point Temperature: <Insert deg F>.
6. Ambient-Air Temperature: <Insert deg F>.
7. Maximum Air-Pressure Drop: <Insert psig>.
8. Inlet Filter: [5] <Insert number> micrometers.
9. Outlet Filter: [1] <Insert number> micrometer(s).
10. Motor Horsepower: <Insert value>.
11. Electrical Characteristics:
 - a. Volts: <Insert value>.
 - b. Phase(s): [Single] [Three].
 - c. Hertz: [60] <Insert value> Hz.
 - d. Full-Load Amperes: <Insert value>.
 - e. Minimum Circuit Ampacity: <Insert value>.
 - f. Maximum Overcurrent Protection: <Insert amperage>.

2.13 DESICCANT COMPRESSED-AIR DRYERS

- A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide [product indicated on Drawings] <Insert manufacturer's name; product name or designation> or comparable product by one of the following:
 1. Air/Tak, Inc.
 2. Domnick Hunter Limited; ZANDER, Inc.
 3. Donaldson Company, Inc.; Donaldson Ultrafilter Co.
 4. Hankison International.
 5. Ingersoll-Rand; Air Solutions Group.
 6. Kaeser Compressors, Inc.
 7. Numatics, Incorporated.
 8. Pioneer Air Systems, Inc.
 9. Pneumatech Inc.
 10. SPX Air Treatment.
 11. Van Air Systems, Inc.
 12. Wilkerson Operations; Pneumatic Division.
 13. Zeks Compressed Air Solutions.
 14. Or Approved Equal.
- C. Description: Twin-tower unit with purge system, mufflers, and capability to deliver [plus 10 deg F, 100-psig] <Insert values> air at dew point. Include dew point controlled purge, step-down transformers, disconnect switches, inlet and outlet pressure gages, thermometers, automatic controls, and filters.
- D. Capacities and Characteristics:
 1. Standard-Air Capacity of Each Compressed-Air Dryer: <Insert scfm> free air.
 2. Pressure: <Insert psig>.
 3. Entering-Air Temperature: <Insert deg F>.
 4. Leaving-Air Temperature: <Insert deg F>.
 5. Leaving-Air Dew Point Temperature: <Insert deg F>.

6. Ambient-Air Temperature: <Insert deg F>.
7. Maximum Air-Pressure Drop: <Insert psig>.
8. Inlet Filter: [5] <Insert number> micrometers.
9. Outlet Filter: [1] <Insert number> micrometer(s).
10. Electrical Characteristics:
 - a. Volts: <Insert value>.
 - b. Phase(s): [Single] [Three].
 - c. Hertz: [60] <Insert value> Hz.
 - d. Full-Load Amperes: <Insert value>.
 - e. Minimum Circuit Ampacity: <Insert value>.
 - f. Maximum Overcurrent Protection: <Insert amperage>.

2.14 COMPUTER INTERFACE CABINET

A. Description:

1. Wall mounting.
2. Welded steel with white enamel finish.
3. Gasketed door.
4. Grounding device.
5. Factory-installed, signal circuit boards.
6. Power transformer.
7. Circuit breaker.
8. Wiring terminal board.
9. Internal wiring capable of interfacing [20] <Insert number> alarm signals.

2.15 MOTORS

A. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Division 23.

1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
2. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in Division 26 Sections.

B. <Insert unique motor characteristics>.

PART 3 – EXECUTION

3.1 EQUIPMENT INSTALLATION

A. Equipment Mounting: Install air compressors [and aftercoolers] [and air dryers] [, aftercoolers, and air dryers] on concrete housekeeping pads using [elastomeric pads] [elastomeric mounts] [restrained spring isolators] <Insert device>. Comply with requirements in Division 03 Section "[Cast-in-Place Concrete] [Miscellaneous Cast-in-Place Concrete]." Comply with requirements for vibration isolation devices specified in Division 23.

1. Minimum Deflection: [1/4 inch] [1 inch] <Insert dimension>.
2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.

3. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
 4. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 5. Install anchor bolts to elevations required for proper attachment to supported equipment.
- B. Equipment Mounting: Install air compressors [and aftercoolers] [and air dryers] [, aftercoolers, and air dryers] using [elastomeric pads] [elastomeric mounts] [restrained spring isolators] <Insert device>. Comply with requirements for vibration isolation devices specified in Division 23.
1. Minimum Deflection: [1/4 inch] [1 inch] <Insert dimension>.
- C. Equipment Mounting: Install air compressors [and aftercoolers] [and air dryers] [, aftercoolers, and air dryers] on vibration isolation inertia bases. Comply with requirements specified in Division 23.
- D. Equipment Mounting: Install air compressors [and aftercoolers] [and air dryers] [, aftercoolers, and air dryers] on concrete housekeeping pads. Comply with requirements in Division 03.
1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
 2. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
 3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 4. Install anchor bolts to elevations required for proper attachment to supported equipment.
- E. Equipment Mounting: Install [water-cooled, compressed-air aftercoolers] [and] [desiccant compressed-air dryers] on concrete housekeeping pads. Comply with requirements in Division 03.
1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
 2. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
 3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 4. Install anchor bolts to elevations required for proper attachment to supported equipment.
- F. Install compressed-air equipment anchored to substrate.
- G. Arrange equipment so controls and devices are accessible for servicing.
- H. Maintain manufacturer's recommended clearances for service and maintenance.
- I. Install the following devices on compressed-air equipment:

1. Thermometer, Pressure Gage, and Safety Valve: Install on each compressed-air receiver.
2. Pressure Regulators: Install downstream from air compressors [and dryers].
3. Automatic Drain Valves: Install on aftercoolers, receivers, and dryers. Discharge condensate over nearest floor drain.

3.2 CONNECTIONS

- A. Comply with requirements for piping specified in Division 22. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to machine to allow service and maintenance.

3.3 IDENTIFICATION

- A. Identify general-service air compressors and components. Comply with requirements for identification specified in Division 23.

3.4 STARTUP SERVICE

- A. [Engage a factory-authorized service representative to perform] [Perform] startup service.
 1. Complete installation and startup checks according to manufacturer's written instructions.
 2. Check for lubricating oil in lubricated-type equipment.
 3. Check belt drives for proper tension.
 4. Verify that air-compressor inlet filters and piping are clear.
 5. Check for equipment vibration-control supports and flexible pipe connectors and verify that equipment is properly attached to substrate.
 6. Check safety valves for correct settings. Ensure that settings are higher than air-compressor discharge pressure but not higher than rating of system components.
 7. Check for proper seismic restraints.
 8. Drain receiver tanks.
 9. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 10. Test and adjust controls and safeties.

3.5 DEMONSTRATION

- A. [Engage a factory-authorized service representative to train] [Train] Owner's maintenance personnel to adjust, operate, and maintain air compressors [and aftercoolers] [and air dryers] [, aftercoolers, and air dryers].

END OF SECTION