221500  COMPRESSED AIR

PART 1  GENERAL

1.01  RELATED SECTIONS

A.  Section 220500 – Plumbing Basic Materials and Methods

B.  Section 230523 – Valves

1.02  COMPRESSED AIR SYSTEMS

A.  Cornell identifies three classes of air on campus with the associated general operating parameters:

1.  Building or Lab Air

   a.  Pressure:  50-100 psig
   b.  Dewpoint:  > 40 °F
   c.  Filtration:  > 0.1 Micron

2.  Temperature Control Air

   a.  Pressure:  < 50 psig
   b.  Dewpoint:  > 40 °F
   c.  Filtration:  > 0.1 Micron

3.  Special Systems

   a.  Pressure:  > 100 psig
   b.  Dewpoint:  < 40 °F
   c.  Filtration:  < 0.1 Micron

B.  Each system operates independently and may be at any pressure or condition.

PART 2  PRODUCTS

2.01  AIR COMPRESSORS

A.  Cornell utilizes the following types of air compressors:

1.  Reciprocating (Single and Double Acting) – Iron case/ball bearing construction.
2. Screw (Oil Flooded and Oil Free) – Preferred where size or noise is a consideration.
3. Centrifugal – Only for central plan configurations for base loading.

2.02 COMPRESSED AIR DRYER TYPES

A. Cornell utilizes the following types of air dryers:
   1. Refrigerated (Cycling, Non-cycling, Thermal Mass) – Thermal mass preferred.
   2. Desiccant (Dewpoint or Timed Generation)
   3. Heat of Compression

B. Generally thermal mass refrigerated dryers shall be provided for building air applications.

2.03 COMPRESSED AIR RECEIVER TANKS

A. Tanks shall be provided with safety relief and automatic drain valve.
B. Tanks shall be ASME rated.
C. Pipe receivers with the inlet low and the outlet high to prevent carryover of oil or debris.
D. Provide at least 4 gallons per cfm of compressor capacity for start/stop or load/unload compressors.
E. For reciprocating compressor applications receiver tanks should be selected to limit compressor starts to less than 8 per hour and a maximum run time of 60%.

2.04 COMPRESSED AIR PIPING SYSTEMS

A. Quick disconnects are only to be used where absolutely necessary.
B. Pipe and components should be sized for highest flow and pressure expected during normal operation.
C. Total pressure loss from storage receiver to end use should not exceed 10% of the initial pressure.
D. Piping and Joints: See Section 220500.
2.05 VALVES

A. Shutoff Service – See Section 230523.

B. Control/Modulating – Needle Valves.

2.06 COMPRESSED AIR FILTRATION

A. When using coalescing filters, good upstream particulate filtration shall be provided when high efficiency filtration is required.

B. Generally combination air filters shall be provided which include a coalescer to remove condensation, particulates and oil in the air stream with minimum 99.7% efficiency at 0.01 microns.