PART 1 - GENERAL

SUMMARY:

A. Section Includes:
   1. Laboratory service fixtures.
      
      This section covers water, air, gas, steam and electric outlets for lab tops and fume hoods, and emergency showers and eyewashes. It provides single source responsibility for casework, tops, equipment and fixtures which can be in Division 15.

B. Related Sections:
   1. Section 12304 - Plastic Laminate Faced Casework.
   2. Section 12345 - Metal Laboratory Casework.
   3. Section 12346 - Wood Laboratory Casework.
   4. Section 12348 - Laboratory tops and sinks.
   5. Division 15 sections - Mechanical work except for furnishing service fixtures.
   6. Division 16 section - Electrical work except for furnishing service fixtures.

1.2 SUBMITTALS:

A. Product Data:
   1. Submit manufacturer's data and installation instructions for each type of service fixture.

B. Shop Drawings:
   1. Submit shop drawings for service fixtures, unless fully shown on laboratory top and sink shop drawings showing detailed layouts and locations and coordinated with laboratory casework equipment and tops.

1.3 QUALITY ASSURANCE:

A. Provide laboratory service fixtures and accessories (for integration with laboratory casework and fume hoods, as required) furnished by the same supplier as for casework for single responsibility.
PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Provide service fixtures and accessories produced by one of the following:
   2. Hamilton Manufacturing Co.
   4. Chicago Faucet Co.
   5. Water Saver Co.
   6. Desert Assembly, Inc.

2.2 MANUFACTURED UNITS:

A. General:
   1. Provide units complete with washers, locknuts, unions, nipples and other accessories for positive mounting to supporting laboratory units. Include wall and deck flanges, escutcheons, handle extension rods, remove valves, and similar items required. Fabricate units to withstand test pressure of 100 psig.

B. Service Outlets Identification:
   1. Provide colored plastic index discs with embossed identification letters at each service fixture handle or knob. Secure discs to fixture handles to be virtually tamperproof. For remodeling work recode existing fixtures to meet requirements of this section. Color code as follows:
      a. Air - Orange
      b. Gas - Blue
      c. Vacuum - Yellow
      d. Carbon Dioxide - Pink
      e. Steam - Black
      f. Hot Water - Red
      g. Cold Water - Green
      h. Distilled or Deionized Water - White

C. Water Valves or Faucets:
   1. Provide units with renewable barrel locked in valve body. Barrel shall contain all wearing parts, with renewable discs. Equip with vacuum breaker for all units.

D. Hand of Fixtures:
   1. Furnish fixtures all handed in the same direction for each type provided unless specifically required otherwise by the user. In existing spaces, hand fixtures to match exiting like fixtures.
E. **Self-Closing Cocks:**

1. Wherever drawing symbols are followed by "-sc," provide self closing valves.

DELETE THIS PART IF NOT REQUIRED FOR SPECIFIC PROJECT.

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2.3 **SERVICE FIXTURES**

PROVIDE COMPLETE LIST OR SCHEDULE OF ALL SERVICE FIXTURES INCLUDING MATERIAL AND FINISH.

2.4 **EMERGENCY SHOWERS AND EYE/FACE WASHES:**

A. The selection, location and installation of emergency safety showers and eye/face washes for the UCB Campus must comply with ANSI Standard Z358.1, NIH Guidelines for Research Involving Recombinant DNA Molecules, CDC-NIH Biosafety in Microbiological and Biomedical Laboratories, OSHA Bloodborne Pathogen Standard 29 CFR 1910.1030, UCB Standard 15440, and the following:

1. A chemical and gas inventory must be completed so that the design team can determine the types and locations requiring shower and eyewash units. Chemical, biological, and radioactive materials, hazardous gases, particulates, dust/debris, open flames, etc. shall be considered a “hazard”.

2. Showers should be located over a floor drain that is connected to a sanitary sewer drain. All eye/face wash units (e.g., wall mount, counter mount, combination shower and eye/face wash station), must be connected to a sanitary sewer drain using a hard connection (i.e., drain pipe should not be open and located above floor drain). Exceptions to this must be approved by the University of Colorado at Boulder.

3. The use of self-contained shower and eye/face wash units are discouraged, but may be permitted in special circumstances specifically when approved by the University of Colorado at Boulder, and only in conformance with all criteria in ANSI Z358.1.

PERSONAL EYEWASH EQUIPMENT SUPPORTS CONNECTED AND SELF-CONTAINED UNITS BUT SHALL NOT REPLACE THEM.

HAND-HELD DRENCH HOSES PROVIDE SUPPORT FOR SHOWER AND EYEWASH UNITS BUT SHALL NOT REPLACE THEM.
4. Eye/face wash unit shall provide a continuous flow of water to both eyes and face simultaneously.

5. Eye/face wash unit should be located and connected so that all water is drained when in use or tested and no flooding occurs. Note that most “swing out” and “swing down” deck mounted units will cause flooding to counter or floor while in operation.

6. Eye/face wash units shall be in accessible locations that require no more than 10 seconds to reach from any adjacent laboratory space and must be in the same room as the hazard. The eye/face wash shall be located on the same level as the hazard and the path of travel shall be free of obstructions that may inhibit the immediate use of the equipment, including doors. For a strong acid or strong caustic, the eye/face wash unit shall be immediately adjacent to or within 10 feet to the hazard.

7. Showers shall be in accessible locations that require no more than 10 seconds to reach from any adjacent laboratory space. The shower shall be located on the same level as the hazard and the path of travel shall be free of obstructions that may inhibit the immediate use of the equipment.

8. If a shower must be located immediately adjacent to a chemical use/storage area, a method must be incorporated, such as a berm or sloped floor, to prevent releases from hazardous material containers to the sanitary sewer while collecting and directing shower water to the drain. Existing floor drains which are located immediately adjacent to chemical use/storage areas where the floor is not sloped or bermed, should be plugged to prevent accidental hazardous releases to the sanitary sewer.

9. Water flow should be activated by a push-pull or on-off mechanism so that the water remains on without requiring the use of the operator’s hands. Automatic shut-off or water volume/timed units are not permitted. Whenever possible, shower units should have a visible, dedicated, labeled shut-off valve. If the valve is concealed, such as above the ceiling, a sign must indicate the location of the valve.

10. Showers in hallways or other high traffic areas should have stainless steel fixtures and other non-plastic components so as to be more resistant to damage. Showerheads should be positioned below ceiling tiles and away from walls to prevent water damage to building materials. Flushed or recessed heads are not permitted without written approval from the University of Colorado at Boulder.

11. Showers and eye/face wash units must be identified with highly visible signs per ANSI Z358.1.

12. In consideration of ADA accessibility issues: Aisles and pathways to shower and eye/face wash units must be wheelchair accessible as per ADA regulations.
PART 3 - EXECUTION

3.1 EXAMINATION:

A. Verify rough-ins for mechanical and electrical services for types, sizes, adequacy and locations.

3.2 INSTALLATION:

A. Installation, connection, and adjustment of service fixtures are to be specified under work of Division 15 and 16 sections.

3.3 FIELD QUALITY CONTROL:

A. FIELD TEST:

1. Field test each unit after completion of installation to verify proper operation in accordance with ANSI Standard Z358.1 and UCB Standard 15440. Perform field tests in accordance with Manufacturer’s specifications, ANSI Standard Z358.1 and UCB Standard 15440. Submit field test results.

END OF SECTION 12349