SECTION 224500 - EMERGENCY PLUMBING FIXTURES (Emergency Eyewash and Shower Equipment)

1.1 GENERAL

Emergency eyewash and shower equipment must be available for immediate use as defined in ANSI Z358.1-2014.

If the Design Consultant believes these specifications should be modified in any way, the Consultant shall apply in writing for a variance and explain the reason for not applying these specifications, and provide applicable supporting documentation. Any deviations or modifications to these standards must be reviewed by the affected departments and Environmental Health & Safety (EH&S) and, if found acceptable, approved before the design, type, or the installation of these systems can be changed.

Safety showers, eyewashes, and drench hoses must be located at least 6 feet away from electrical appliances, panels, controllers, switches, communication equipment, etc. in a manner in which their operation does not present a hazard. Any electrical outlets within 6 feet are discouraged but must be GFCI protected if so located.

Eyewash station and/or safety shower requirements must be reviewed with the users and with EH&S. This is to ensure the placement of this equipment wherever it is needed and to educate the users on the value and proper usage.

A. Safety Showers

1. Safety showers are required in areas where potentially harmful corrosive/hazardous chemicals, and/or hazardous particulates can be splashed, sprayed, or otherwise come into contact with an employee’s body or clothing.

2. Safety showers must be designed and installed in accordance with ANSI Z358.1-2014. If ANSI Z358.1-2014 and the requirements of this document conflict, this document shall take precedence.

3. Safety showers shall have highly visible signage installed as required by ANSI Z358.1-2014.

4. Safety showers must be supplied with tempered water (mixing valve) as per ANSI Z358.1-2014.

5. Plumbed and self-contained shower equipment shall be capable of delivering flushing fluid at a minimum of 76 liters per minute (20 gpm) and no more than 114 liters per minute (30 gallons) continually for at least a minimum of 15 minutes. [This flow can be controlled by the installation of an appropriate orifice faceplate or ground joint union.] For high hazard areas, EH&S shall make the determination for flow rate in conjunction with affected users.

6. Not used.

7. Showers shall signal to Security when activated for all locations, including renovations and new construction, from the effective date of this standard.

8. Safety showers must be mounted with no less than an 18” clearance between the center of the showerhead and the nearest wall. The showerhead shall be mounted a minimum 82” and a maximum 96” above the floor.

9. Safety showers must not be placed so that equipment or material storage will interfere with the use of the shower. Flooring color changes, signage, or other methods to identify the no-storage area are preferred.
10. The activation handle for a safety shower must never be greater than 69 inches above floor level. ADA requirements may require the handle be lowered to 48 inches from the floor.

11. Emergency showers must be placed so that travel distance and the number of obstacles (i.e., doorways) are minimized.

12. Provide a readily accessible shut off valve within 10’ of the shower. Emergency showers shall be equipped with a second water shut-off valve on the shower or on the branch line to permit closing of the water supply for maintenance or for circumstances when the shower fails to shut-off properly.

13. Self-contained (bottled, gravity fed, or otherwise non-plumbed) safety showers are NOT permitted except where plumbing is not available for tie-ins, such as in remote outdoor settings (dry system). When used, they must meet the ANSI 358.1-2014 standard for flow rate, quantity, and duration. Each use shall be approved by EH&S.

14. Safety showers are to be provided with tempered water. Showers in unheated areas must be protected from freezing. The temperature setting for every shower shall be in the range of 60-90°F. When setting the temperature, the installer should aim for a temperature of approximately 75°F to allow for fluctuations in the water temperature supply.

15. Safety shower water flow valves shall be of a manual-closing type. Facilities O&M shall determine the type of flow switch that will be installed.

16. The activation valve shall activate with a single motion & remain activated until physically shut off maintaining a hands-free operation, have an active pull-on, pull-off or similar type. Self-closing activation values must never be used.

17. Safety showers shall not be removed without EH&S approval.

B. Eyewashes

1. Eyewash stations are required in areas where human or animal blood or body fluids, any potentially harmful hazardous or corrosive chemicals, and/or hazardous particulates can be splashed, sprayed, or otherwise come into contact with the face or eyes.

2. Construction projects provide an opportunity to evaluate the present safety equipment in a location (including labs). Should a location have no eyewash unit, a bottled eyewash unit, a self contained eye wash unit, or a faucet mounted eyewash unit, the eyewash unit must be upgraded to that listed in 1.1.B.6 and 1.1B.7. EH&S shall perform this evaluation. Campus Planning Design and Construction Management’s Project Manager is responsible for notifying EH&S this evaluation is needed during the design phase.

3. Eyewashes must be designed and installed in accordance with ANSI Z358.1-2014. If ANSI Z358.1-2014 and the requirements of this document conflict, this document shall take precedence.

4. Eyewash units are to have a single valve to activate the unit. Once activated, the valve maintains the water flow through the unit, offering hands-free operation. Each unit shall have operational covers to assist in maintaining hygienic conditions.

5. Eyewashes shall have highly visible signage installed as required by ANSI Z358.1-2014.

6. Eyewashes must be supplied with tempered water (mixing valve) as per ANSI Z358.1-2014. Eyewashes in unheated areas must be protected from freezing. The temperature setting of the eyewash units shall be in the range of 60-90°F. When setting the temperature, the installer should aim for a temperature of approximately 75°F to allow for fluctuations in the water temperature supply. A check valve shall be installed after the mixing valve.
7. Eyewash stations shall be WaterSaver EW1022 or the equivalent Guardian G5022. EH&S shall be consulted and must approve the appropriateness of any other alternative eyewash from Watersaver or Guardian or other manufacturers that may be requested or suggested as an alternative equivalent.

8. Eyewashes shall be mounted to allow the top of the water spray arch to fall within a minimum of 33 inches and a maximum of 53 inches from the floor the user will be standing on. Counter height, eye wash installation and building water pressure need to be coordinated to comply with ANSI Z358.1-2014 spray arch.

9. If mounted to a counter top, eyewashes must be located a maximum of 7 inches from the front of the counter and preferably to the right of an adjacent sink. Additionally, eyewashes must be mounted so that there is no potential for hitting one’s head or eyes or obstructions (i.e., walls, gas nozzles, sink fixtures, shelves, etc.) within 8 inches of the closest part of the eyewash. If mounted beneath movable shelves, the shelves shall be secured so that they may not be lowered to within 8 inches of the top of the eyewash station. Additionally, shelves, cabinets, paper towel dispensers, etc. shall be mounted so they are behind a vertical plane established by the eyewash. Alternative eyewash mounting locations must be approved by EH&S and the affected users prior to installation. See Figure A at the end of this document.

10. Eyewashes must be placed in all locations where lead acid batteries are recharged, fluids replaced, or repaired in any manner. Exempted from this are fixed in place batteries on constant trickle charge. These would be batteries for emergency generators, computer and telephone backup systems, and PAPR (respirator) chargers. Deviations from this must be approved by EH&S.

11. Eyewash stations must be placed so that travel distance (no more than 55 feet) and the number of obstacles (i.e., no more than one doorway) are minimized. A doorway must open in the direction of travel to the eyewash station, must be non-lockable in the direction of travel, and open with a single motion.

12. Eyewash stations must be kept clean. As a minimum, their placement must not result in contamination of the unit.

13. Self-contained (bottled, gravity fed, or otherwise non-plumbed) eyewash stations are not permitted except where plumbing is not available for tie-ins, such as in remote outdoor settings. When used, they must meet the ANSI 358.1-2014 standard for flow rate, quantity, and duration. Each use shall be approved by EH&S.

14. Eyewashes shall not be removed without EH&S approval.

15. Eyewashes shall not be alarmed.

C. Drench Hoses

1. The university specifies an eyewash unit that also doubles as a drench hose, thus providing maximum protection and versatility. See Section B. 7 above.

D. Commissioning and Acceptance

1. The contractor responsible for installing an eyewash and/or safety shower is responsible for testing and verifying that each unit has been installed according to this specification and applicable codes, and providing documentation verifying this. A copy of the document is to be submitted to EH&S and Facilities.

2. EH&S shall perform acceptance testing of every emergency eyewash and safety shower installation. It is up to the contractor or the project manager to schedule this. Acceptance testing confirms proper installation and performance parameters as specified in this design standard. EH&S will provide the acceptance test documentation to the project manager.

3. The contractor responsible for selecting or installing the unit shall correct deficiencies, if any, before EH&S gives final approval of the installation.
Figure A

Side view of standard University of Rochester eyewash showing the vertical plane for which nothing can be mounted forward of and for which there must be a minimum 8 inch clearance from the spray nozzles.

When counter or bench top mounted, the eyewash shall be a maximum 7” from the front of the counter or bench top. This does not apply to wall mounted or shower/eyewash combination units. Height for all styles shall be a minimum 33” to a maximum 53” at the top of the water arc” from the floor.