AIR FORCE INSTALLATION FACILITIES STANDARDS

2025

Ellsworth Air Force Base
Installation Facilities Standards (IFS)

G22 Ellsworth AFB IFS Plumbing

Comply with Air Force Corporate Standards for Overview:
http://afcfs.wbdg.org/index.html

Summary of Sections in this Supplemental Document:

G22.0. General Requirements

1. This document is provided as a supplement to the Ellsworth AFB IFS. If there are any discrepancies between this Supplemental Document and the requirements of the IFS, the IFS will govern.

2. This Supplemental Document supersedes all previous versions of design standards documents for Ellsworth AFB on this subject matter.

G22.1. Design Requirements

1. Contractors must reference and follow the below standards when designing, installing, changing, modifying, or repairing any plumbing related system.

   Unified Facilities Criteria (UFC) 3-230-01 Water Storage and Distribution
   UFC 3-240-01 Wastewater Collection and Treatment
   International Plumbing Code
   Uniform Plumbing Code
   OSHA Regulations
   Americans with Disabilities Act
   Uniform Federal Accessibility Standards

2. Provide access panels to valves, backflow prevention devices, faucets, etc. for facilities on base.

3. Provide proper backflow, cross-connection prevention and fire protection appropriate for the hazard involved per American Water's section 22 11 16.13, Cross Connection Control /Backflow Prevention and Fire Protection Systems.

G22.2. Plumbing Fixtures/Fittings/Products/Manufacturers

1. Provide manual flush valve water closets and urinals. Automatic flush systems are allowed however, we prefer manual. Tank-flush fixtures are allowed.

2. All isolation valves will be brass ball valves or brass angle valves. Gate valves are not authorized for indoor use.

3. DO NOT provide waterless urinals or commodes.

4. For existing facilities, water closets will use 1.6 gpf and urinals will use 1.0 gpf.

5. Wall-hung water closets are acceptable but must be installed with an accessible chase if possible and the carrier will have a rating of at least 700 pounds.

6. Floor-mounted water closets are acceptable but piping through concrete floors must be sealed with cement or applicable substance.

7. Provide manual or automatic action lavatory faucets.

8. Provide "P" trap drainage system for all sinks and drinking fountains.

9. Garbage disposals are permitted for kitchen sink areas. Commercial grade disposals are required for the Dining Facility, Dakota's Club and Child Development Center.

10. The following items/manufacturers are preferred. The specifications will be reviewed annually for any revisions from the manufacturer. When new facilities are constructed, construction submittals of alternate products will be reviewed and accepted if they are technically equal.

    Preferred faucet and shower valve manufacturers (w/stops) include: Delta, American Standard, or Symmons.

    Preferred garbage disposal manufacturers include: InSinkErator

    Preferred bottle filler manufactures/models include: Elkay

    -EZH20 w/Bi-Level ADA Cooler, Non-Filtered, 8 GPH, Light Grey (Part# EMABFTL8WSLK)

    -EZH20 Bottle Filling Station w/Single ADA Cooler, Non-Filtered, 8 GPH, Light Grey (Part# EMABF8WSLK)

    -EZH20 Retrofit Bottle Filling Station Kit, Non-Filtered, Non-Refrigerated (Part# EMABFWS-RF)

    -EZH20 Retrofit Bottle Filling Station Kit, Non-Filtered, Non-Refrigerated (Part# EZWSRK)

G22.3. Piping

1. Coordinate with the Engineering and Site Development Sections at Ellsworth AFB for location of water mains and the operating pressure ranges in the area of connection.

2. Above ground plastic domestic water piping and fittings will be specified or installed. This includes polyethylene (PE), polyvinyl chloride (PVC), chlorinated polyvinyl chloride (CPVC), and polypropylene (PP). PEX-A is preferred.

3. Below ground domestic water main piping will be PVC type C-900. Fittings must be UL or ANSI approved for domestic water applications and pressure rated to withstand Ellsworth AFB's distribution system pressure. Below ground domestic service piping will be Copper type K, PEX-A, or Polyethylene.

4. Below ground sanitary sewer main piping will be PVC type SDR-35. Fittings must be UL or ANSI approved for sanitary sewer applications. Below ground sanitary sewer service lines will be PVC schedule 40. Drain, waste, and vent piping as required for sanitary sewer system from each new facility.

5. Insulated steel core, copper plated tracer wire will be installed on all exterior direct buried PVC/HDPE water lines, sanitary sewer lines and gas lines.

6. The wire will be terminated at the isolation valves or at the facility in a cast iron test station.

7. Test station will have appropriate utility marking (i.e. water for water, gas for gas, sewer for sewer, and fuel for fuel) cast into the test station lid.

8. A locate or conductivity test will be performed on the tracer wire after installation.

9. For cross-linked polyethylene (PEX), use red colored pipe for hot water, blue/white colored pipe for cold water or clear expandable PEX-A piping. Follow ASTM F877 and manufacturer's recommendation for proper installation.

10. Copper pro press fitting technology is allowed for use on domestic water systems where space allows. Solder copper fittings and piping is preferred.

11. Piping is to be insulated with fiber glass insulation.

12. Provide dielectric unions when connecting dissimilar metals.

13. Provide lead free plumbing components.

14. Provide identification labels for pipes in mechanical rooms.

15. Provide valves to isolate portions of the building to avoid shutdown of the entire building.

16. The contractor installing new pipe to existing pipe is required to conduct an air test to determine whether existing leaks are present in the entire system interconnected to the new installation.

17. If the piping that remains can become pressurized due to upstream valve failure, then end caps, blind flanges, or other types of plugs or fittings with a pressure gauge and bleed valve will be attached to the open end of the pipe to ensure positive leak control.

18. Water and sanitary sewer line burial depth has been determined based on historical performance of our systems, local design criteria, and refined frost estimate calculations.

Taking these parameters into account, the burial depth of new domestic water, sanitary sewer, and fire protection lines will be no less than 72 inches below finished grade.

G22.4. Natural Gas

1. Natural gas is supplied by Montana Dakota Utilities (MDU).

2. Contractors will contact MDU and the WFSM shop prior to the performing any work that involves the disruption of any above or below ground natural gas distribution system.

3. Underground distribution piping, gas regulator, and meter will be provided and installed by MDU or an MDU approved contractor.

4. The repair of natural gas piping and associated components can be completed by either MDU, the WFSM shop, or an approved contractor depending on the location and severity of damaged system components.

5. Piping from the outside main shut off valve, throughout the facility, and to the equipment being served will be black iron. UL approved stainless steel flexible supply lines are permitted for use for final connections to the appliance. An isolation valve must be installed between the hard piping and flexible supply line. Flexible supply lines will not exceed 3 feet in length.

6. Repairs done to systems installed within a facility, will be done using black iron fittings and piping.

7. All shut-off valves inside the facility be brass ball valves.

G22.5. Fire Codes and Regulations

1. Refer to IFS Supplemental Document *G21 Ellsworth AFB IFS Fire Suppression* for information regarding automatic sprinkler systems.

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