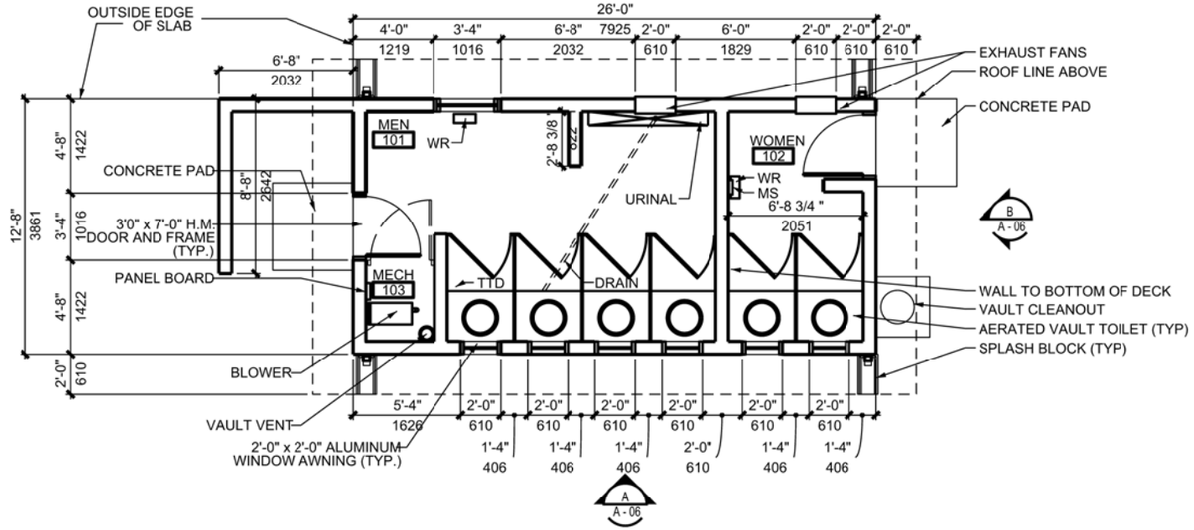
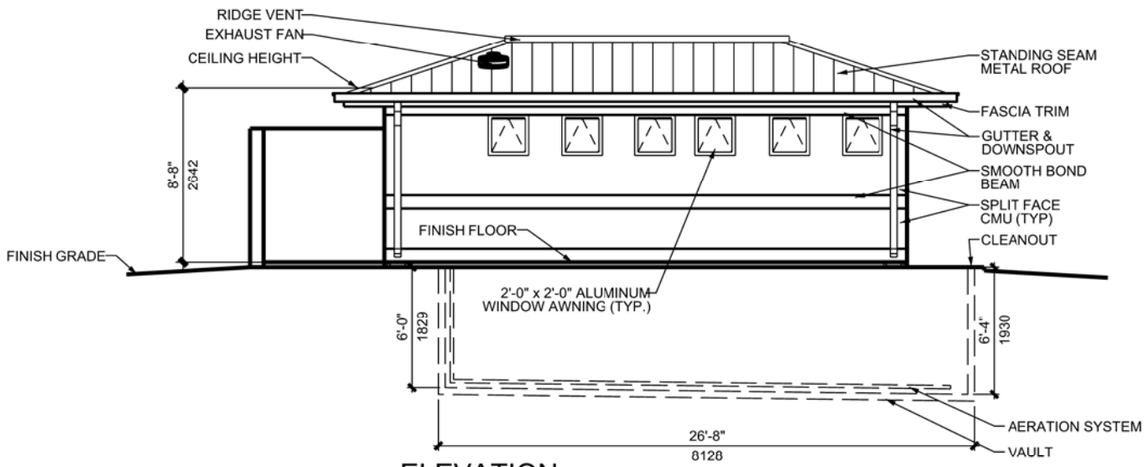


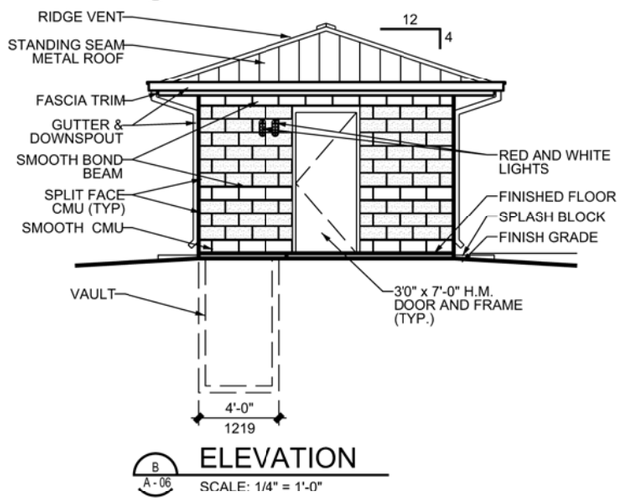
FLOOR PLAN

SCALE: 1/4" = 1'-0"



A ELEVATION

A-06 SCALE: 1/4" = 1'-0"



B ELEVATION

B A-06 SCALE: 1/4" = 1'-0"

General

The Latrine - Aerated Vault provides restroom facilities for men and women. The latrine will accommodate a training unit of up to 190 men and 35 women based on OSHA standards. The aerated vault is constructed beneath the building.

Site Adaptation

This standard definitive design should be adapted to local conditions such as climate, available construction materials and techniques, topography, seismic zone, and the existing character of surrounding buildings. These factors may affect plans, elevations, and building systems. The building foundation must be designed based on the results of a geotechnical investigation.

Alternative environmentally friendly latrine designs other than the Aerated Vault are allowable. Possibilities include, portable commercial latrines on concrete pads with optional wind screen walls, composting latrines, or other locally available commercial units.

Reference Criteria

The design and construction must comply with applicable codes and standards including: technical instruction TI800-01, "Design Criteria" Department of the Army regulations, technical manuals, handbooks, standards and specifications.

Functional Requirements

All dimensions are in feet and inches unless otherwise noted. Windows are bottom hung in-swing to meet functional requirements, providing natural lighting and ventilation. Windows have forced entry resistant metal frames and are provided with insect screens. Provide polycarbonate security glazing in windows. An 18-gauge diamond mesh partition 8'-0"(2438 mm) high with a 2'-6"(762 mm) x 7'-0" (2133 mm) diamond mesh door encloses the mechanical area. Gutters, downspouts and splash blocks should be provided where required by climatic conditions. Covered entries and ice guards may be necessary in northern climates. Floors should be sealed for ease of cleaning. Ceilings should be finished.

Mechanical

Vault latrines shall have no comfort cooling, but may have unit heaters to prevent the latrine temperature from dropping below 45 degrees F in mild climate regions and 20 degrees F in extremely cold climate regions. The unit heater shall be controlled by the light switch. Two types of Vault Latrines are used, 'Wet Vault Latrines' and 'Dry Vault Latrines'.

Ventilation

Wet vault latrines shall be provided with a roof mounted exhaust fan capable of moving 50 cfm per water closet and urinal from the vault. Stainless Steel ductwork shall extend from the exhaust fan to an elevation 6-inches blow the rim of the vault. Wall or door luvers shall be installed one in the Men's and one in the Women's Latrine to provide cross ventilation make-up air. Each louver shall be sized based on its open area to flow equal velocity as calcuated by the number of fixtures served. The stools provided over the vault shall be stainless steel and shall have a seat withno cover. The air flow pattern enters the louver, cross-ventilates the latrine, passes through the stool to enter the vault and is removed from the vault by the exhaust fan. The exhaust fan shall operate continuously. Ventilation practice for the dry vault is exactly the same except the flow rate shall be calculated at a rate of 70 cfm per fixture.

Wet Vault Latrine Aerobic Air Supply System

The wet vault latrine shall be provided with an aeration system that is comprised of an oil-free, lobe or vane type air blower. This air blower shall under normal latrine usage sites provide 5 cfm to 20 cfm of air flow at a pressure of 15 psig to 5 psig. The above vault pipe material shall be 3/4" galvanized steel, which shall be connected to 3/4" Schedule 40 PVC pipe using a flexible hose of approximately 2 feet long to connect the two pipes. The PVC pipe shall extend to an elevation 6" above the bottom of the vault and elbow into and aeration header. The aeration header shall extend to within 6-inches of each end of the vault, be centered in the vault, and be supported from the bottom of the vault by 6" using tees, elbows and PVC pipe. The supports shall be placed at each end of the header and space no greater than 7 feet on center. The aeration headed shall have 1/8" diameter holes drilled staggered 2" on center one hole on the left and one hole on the right in the bottom 1/4 of the pipe. Alternate air diffusion devices are manufactured and may be used instead of the distribution header.

Electrical

The Latrine shall be served by 120/240V, 1 phase, 3-wire secondary power. Provide Surge Protective Device (SPD) for incoming service. Rigid Steel conduit shall extend a minimum of 5' (1524mm) outside the building for power and communication circuits entering and leaving the building.
Voltage drop shall comply with NFPA 70 standards and Army technical manuals. Grounding will be installed in accordance with NFPA 70 and other applicable standards.
The panelboard shall be 120/240V single phase, mounted inside the building and shall be recessed mounted in finished areas. Receptacles shall be general purpose, GFCI, 120V, 20A Duplex mounted 18"(450mm) above the finish floor. All outlets receptacles and conduit shall be recess mounted.
Provide 120/240V power the HVAC unit.
Illumination levels will be designed in accordance with IES. Exterior lighting shall be provided with separate switching located near points of egress. Provide additional fixtures with red lamps next to all exterior fixtures and in all rooms with doors or windows that open to the training area for ranges where training will occur at night. Red lights shall be switched separate from white lights and there shall be provisions to prevent accidental illumination of white lights while red lights are in use.
The emergency electrical system shall comply with NFPA 70 and NFPA 101. Exit signs will be provided in accordance with NFPA 101. Emergency lighting shall be provided to ensure adequate illuminations to egress building in the event of a power outage.

Perform lightning protection risk assessment in accordance with NFPA 780 to determine the need for lightning protection.

Fire Protection

Fire protection is not required per fire codes for this building. The fire alarm shall be a local audible alarm. Fire extinguisher's and cabinets are required per NFPA. Consult local Fire Marshall for compliance with local requirements. Provide a Mass Notification system per UFC.

Abbreviations

MS- Mirror with shelfTTD- toilet tissue dispenserWR- waste receptacle

4' 2' 0 4' 8' 12'

GRAPHIC SCALE: 1/4"=1'-0"

US Army Corps of Engineers

Rev. | Description | Date | Approved

Designed by: | Drawn by: | Checked by: | Reviewed by: | Submitted by:

U.S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE HUNTSVILLE, ALABAMA

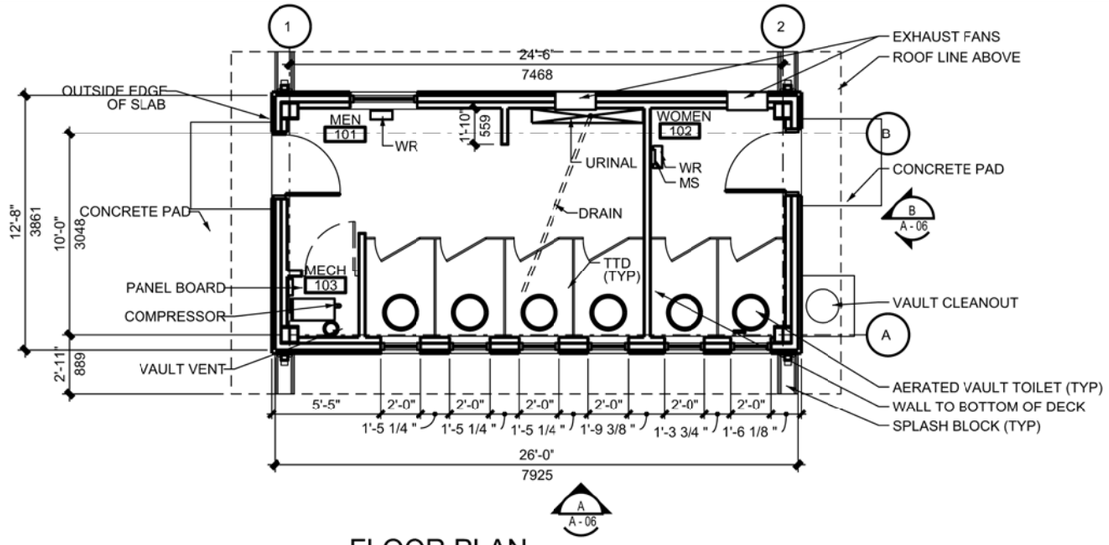
MARCH 2011

RANGE AND TRAINING LAND PROGRAM
STANDARD DESIGN MANUAL

LATRINE WITH AERATED VAULT

Sheet reference number:

A–06



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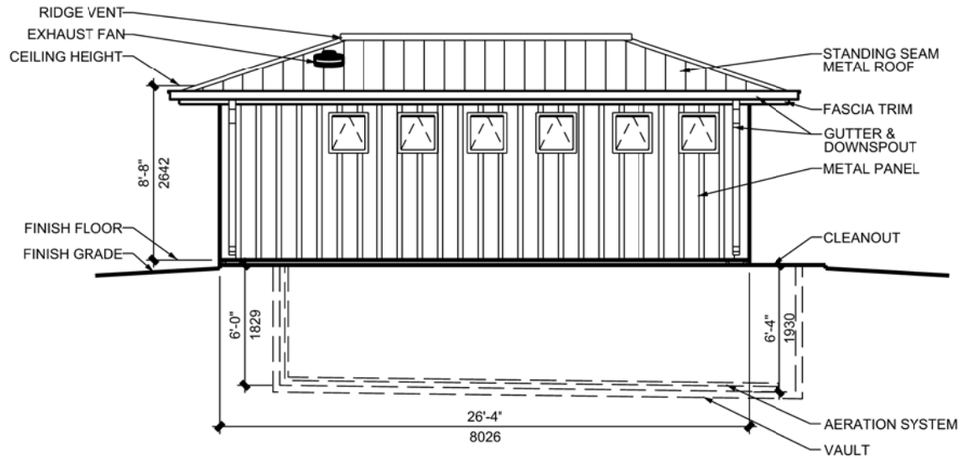
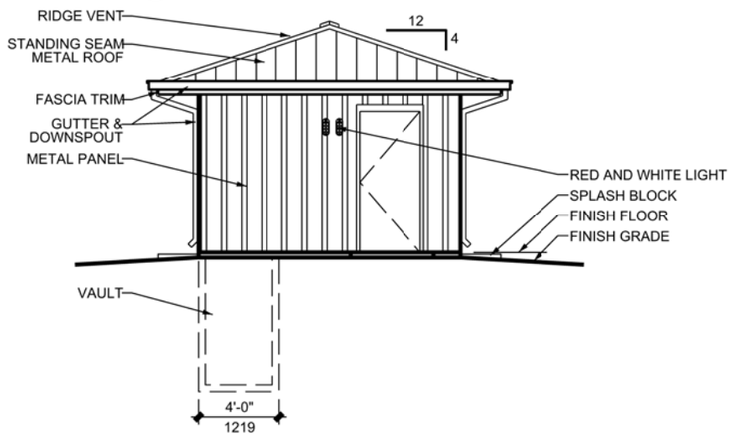


ELEVATION

A
A - 06

SCALE: 1/4" = 1'-0"



ELEVATION

B
A - 06

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US Army Corps of Engineers

Rev.	Description	Date	Approved

Designed by:
Drawn by:
Date:
Checked by:
Design file no.:
Reviewed by:
Drawing code:
Submitted by:
File name:
Plot scale:
Plot date:

U.S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE
HUNTSVILLE, ALABAMA

MARCH 2011

RANGE AND TRAINING LAND PROGRAM
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