OPERATIONS AND STORAGE BUILDING

Standard and Large

Purpose

The Operations and Storage Building provides office space for range personnel and a storage area for range maintenance equipment, spare parts, tools, and supplies. Many installations use the storage area for light target maintenance and testing. The standard sized building is included in the standard set of buildings for most small arms ranges; the larger version is standard on some of the larger ranges, see matrix for specifics.

Design Requirements

See the standard drawings in the RDG for details of construction not included in this document.

General

The standard design must be site adapted to local conditions such as climate, typical construction materials and methods, and the installation design guide. Design the facility in accordance with the design codes and criteria of the specific location, geotechnical information, structural loads, mechanical design criteria, etc.

The facility typically requires access by able-bodied personnel only and does not require ADA compliance.

Siting

The primary use of the facility is range maintenance; accessed mainly by range maintenance personnel. When siting the facility, consider vehicle access and circulation, access to downrange areas, and keeping separation between the areas used by maintenance personnel and trainees.

Architectural

The size of the standard facility is 800 square feet (74.3 square meters). The building is typically 20 feet wide and 40 feet long with half of the space set aside as office area. The Large Operations and Storage Building is 1800 square feet (167.2 square meters). The actual size of the office area is determined during the design process and can be reduced or eliminated as needed by the installation. Some installations prefer to combine this building with other ROCA facilities. This is not necessarily a problem, however, larger buildings can trigger increased It is allowable to change the outside dimensions of the building as needed by a specific range, but the overall square footage must meet the DD1391.

For the standard size facility, the office area typically has windows; windows in the storage area can provide natural light and ventilation. It has either a double or an overhead door for access to the storage area. The minimum ceiling height is 9 foot. Taller ceilings are acceptable, especially in the storage area or when needed to provide clearance for an overhead door. Coordinate security requirements with the installation. Most installations require forced entry resistant windows and doors.

The Large Operations and Storage Facility is a typically open bay structure. It has two overhead doors 10 feet high and wide. It may also have windows in the office area. Designing the building for vehicle maintenance or battery charging is not standard for a SRP Range Project. The

addition of either of these usages adds a complete set of additional requirements and requires an exception to standard.

Coordinate building material choices with the user and the installation design guide. The standard designs depict both Concrete Masonry Unit (CMU) and pre-engineered metal building versions as these are the most commonly used materials. Coordinate security requirements with the installation. Most installations require forced entry resistant windows and doors. Covered entries and ice guards may be required in northern climates. Provide interior finishes that are easily cleanable, durable and maintainable. Due to the location and training environment of the ranges, these facilities commonly have sealed concrete floors. The office sometimes includes vinyl tile, acoustical tile suspended ceilings, and impact resistant gypsum wallboard or other durable finished wall.

Mechanical

There are no range specific mechanical requirements for this building. The standard design does provide heating and cooling in the office area with ventilation only in the storage area; add heat to the storage area if required by the installation. The design process determines what is actually included in the project based on installation and local design code requirements.

Electrical

Power Distribution

Primary distribution service may be overhead or underground. Consider the type of tactical vehicles used in the Range Operations and Control Area, proximity of building to Ammunition Supply/Breakdown/Distribution points, and local utility requirements for determining the routing of primary power to the facility. Provide 120/240V, single-phase, 3-wire secondary power with a Surge Protective Device (SPD) on the incoming service to the facility. Provide this facility with a panelboard supplied with main circuit breaker that serves separate circuits for the lighting, convenience outlets, and HVAC equipment.

General Power Requirements

Provide general purpose 120V, 20A duplex convenience receptacles; mounted 18” (450mm) above the finished floor in office area. Provide 120/240V power for the HVAC unit(s) as required. Provide one set of target power outlets in the storage side of the facility for target lifter testing; coordinate the location with the installation. Provide maintenance outlets in storage area.

Lightning Protection and Grounding

Grounding and lightning protection systems are required for safety. Building electrical system grounding will consist of one or more ground rods connected to the service panel in accordance with NFPA 70.

Provide lightning protection system if required by NFPA 780 Risk Assessment. Follow local installation requirements for lightning protection systems where they are more stringent than the requirements defined in the Range Design Guide; there are no range program specific requirements for this building. The lightning protection system may be provided as a mast-style system or air terminals located on the building structure. Use exothermic welds for cable connections and connections to the ground rods and structural steel.

Lighting

Design illumination levels in accordance with the IES. Provide red lenses or red lamps in addition to standard lighting on ranges where training will occur at night. See Night Operations Lighting paragraph for more information. Provide Emergency and Exit lighting in accordance with NFPA 101 and NFPA 70. Provide 3-way switching for exterior lighting, with one switch located inside the Control Room and one switch located at ground level next to the bottom of the stairwell.

Night Operations Lighting

To prevent interference with specialized equipment used during night operations, provide separate fixtures with red lenses or red lamps in addition to standard lighting on ranges used for night training where the lights will be visible from training and/or staging areas. Include the following areas as a minimum

- exterior lighting visible from the training area
- rooms where ROCA building has windows that are facing the training area and cannot be covered
- rooms where the building has a doors that opens to the training area

Provide separate switching for the standard and red lighting. Clearly label switches and provide covers over white lights, or similar protective measures, to deter turning on white lights while red lights are in use. Locate switches near points of egress. Provide a means to turn off all exterior white lights including an over-ride for lights controlled by a photocell.

Common User Cable Systems

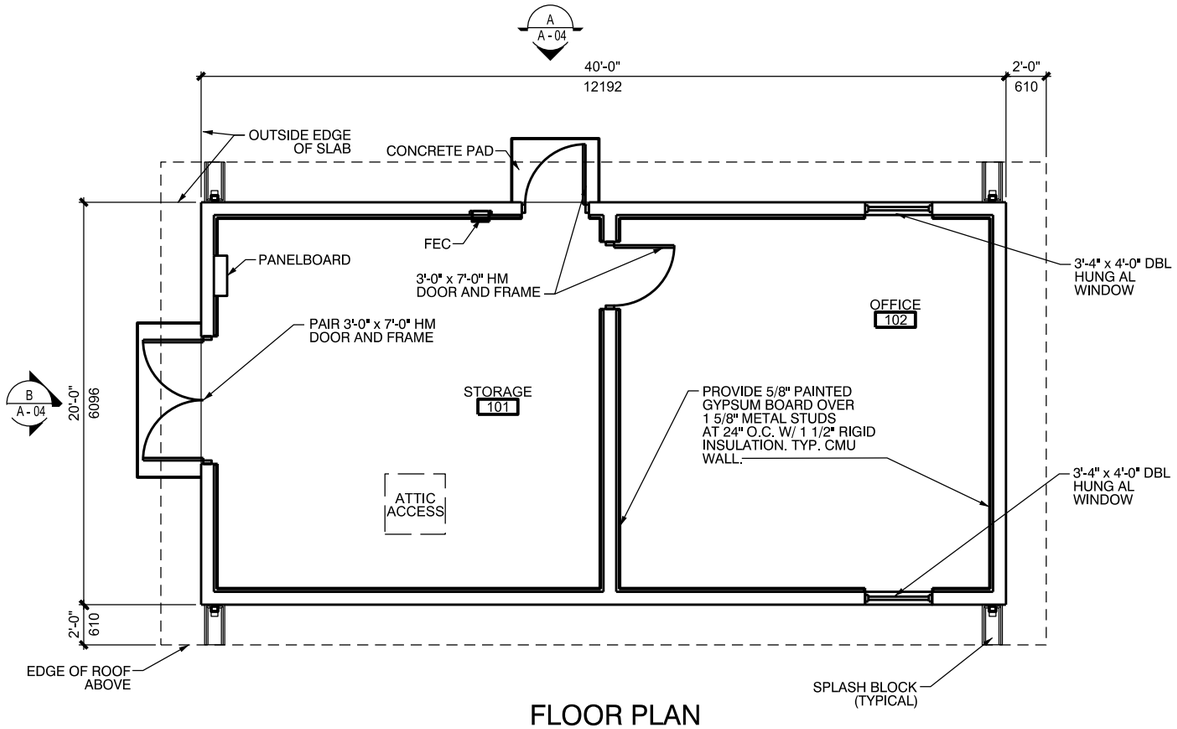
All ranges are required to have two forms of communications for safety during training exercises. These forms of communications do not have to be wired telephone service to the range. The requirement for telephone and/or common user data is a local requirement specific to each range site. It is extremely important to identify telephone and common user data requirements during the planning phase of every range project, or funding will not be available for telephones and common user data. Provide recessed telephone outlets in the office area if service is available at the range.

Do not connect downrange instrumentation and control systems to common user data networks or telephone systems; downrange instrumentation and control systems are not certified or

approved for external connection. Telephone and common user cable systems and equipment must be contained completely separated from down range control systems and equipment. Each system must have its own separate enclosures and/or cabinets, and each must be specifically labeled to indicate the systems it serves. Design and construct common user telephone and data systems in accordance with Technical Criteria for the Installation Information Infrastructure Architecture (I3A) and local Network Enterprise Center (NEC) requirements.

Special Considerations

Fire protection is not normally required for this facility, though installation requirements may control. Consult the installation Fire Marshal for local requirements. Typically, a local audible fire alarm is required. Fire extinguishers and cabinets are required per NFPA.



FLOOR PLAN

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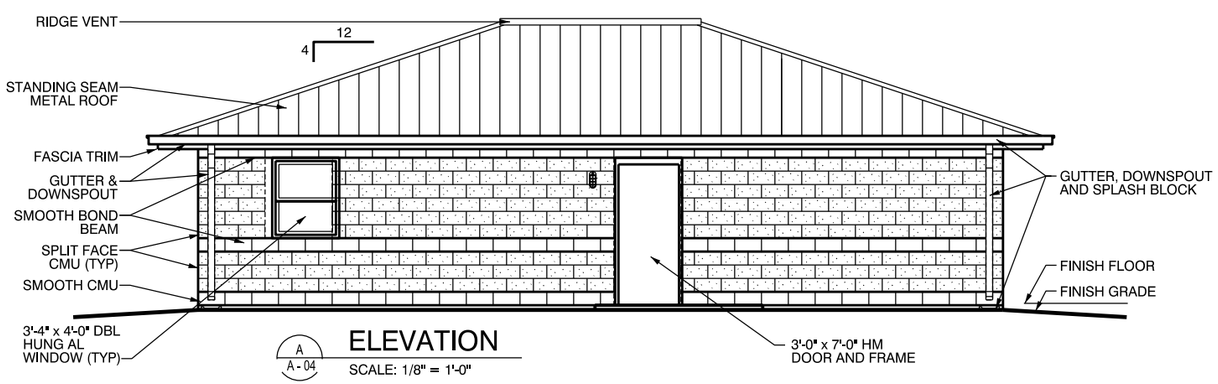

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ELEVATION

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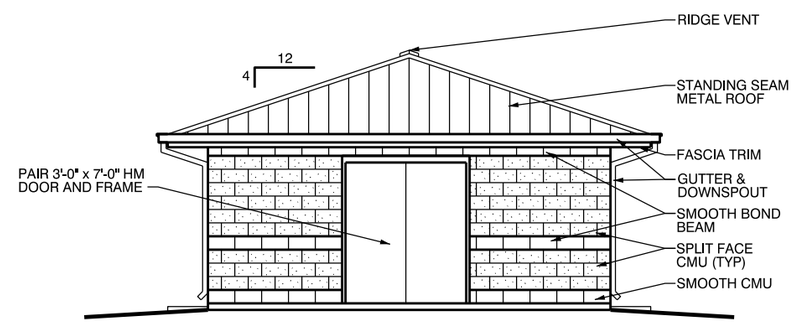

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A - 04

ELEVATION

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GENERAL

The Operations/Storage Building provides an office for range personnel, space for light target maintenance and testing, and storage space for range maintenance equipment, spare parts, tools, and supplies. The actual size of the office area is determined during the design process and can be reduced or eliminated as needed. The total size of the standard building including office and storage area is 800 square feet (74.3 square meters).

SITE ADAPTATION

The standard design must be site adapted to local conditions such as climate, typical construction materials and methods, and the installation design guide. Design the facility in accordance with the design codes and criteria of the specific location, geotechnical information, structural loads, mechanical design criteria, etc. 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, and installation specific requirements.

ADDITIONAL CRITERIA

Refer to the Range Design Guide for additional information and requirements.

LEGEND

AL - Aluminum
CMU - Concrete Masonry Unit
DBL - Double
HM - Hollow Metal
TYP - Typical

4' 2' 0 4' 8' 12'

GRAPHIC SCALE: 1/8"=1'-0"

US Army Corps of Engineers

Rev.	Description	Date	Approved
Rev. *			

Designed by:
Date:
Dwn by:
Ckd by:
Reviewed by:
Submitted by:
Rev.
Design file no.
Drawing code:
File name:
Plot scale:
Plot date:

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

OCTOBER 2013

RANGE AND TRAINING LAND PROGRAM
STANDARD DESIGN MANUAL

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Sheet reference number:
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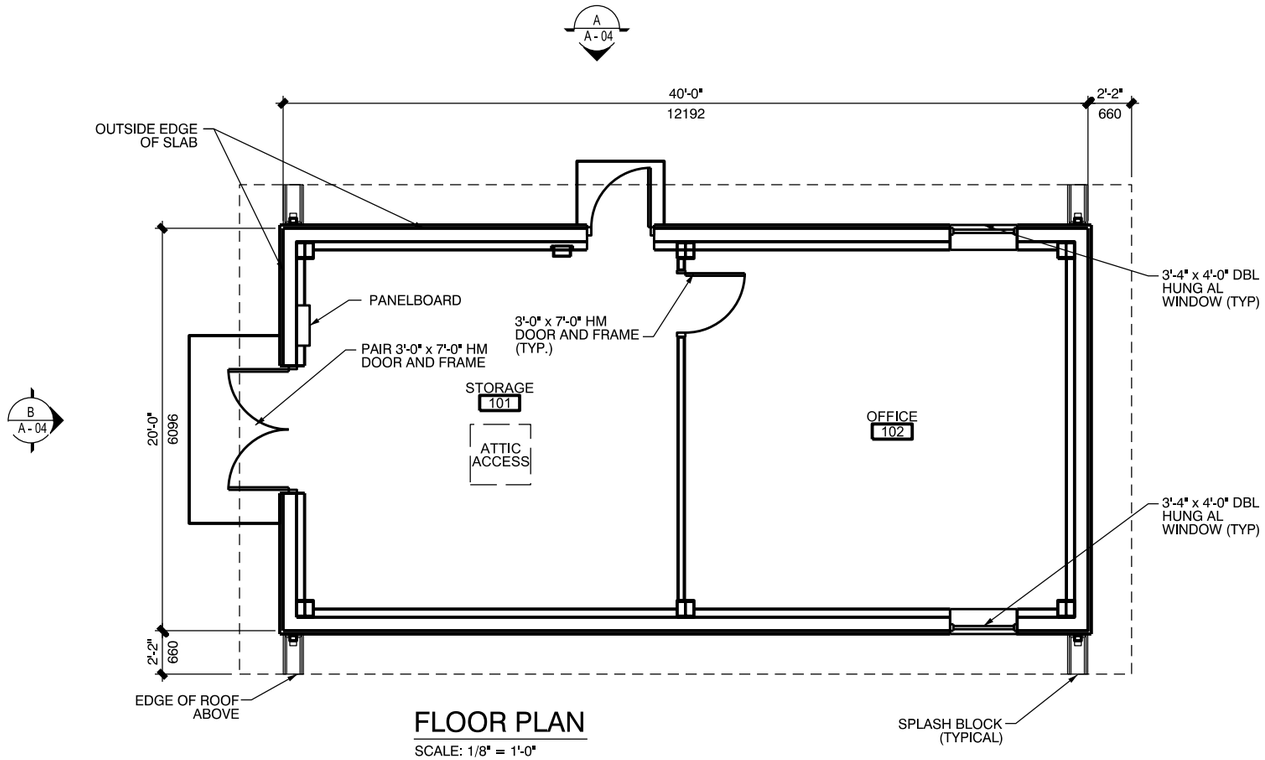

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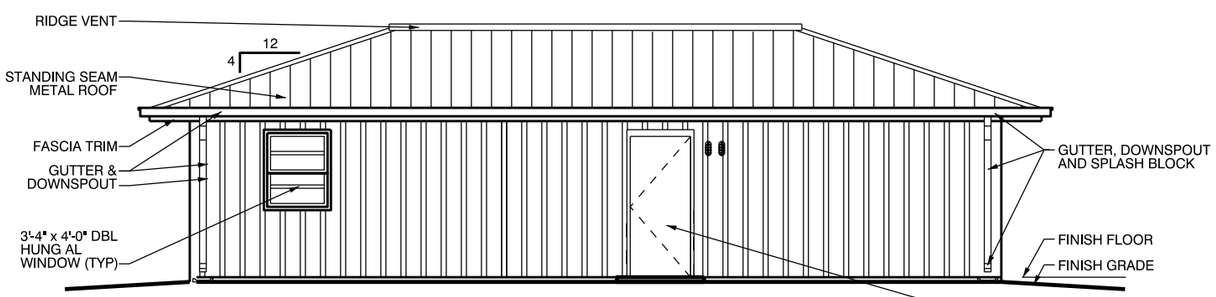

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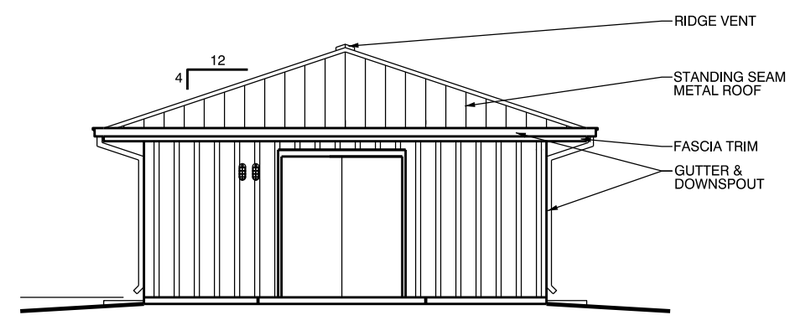

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4' 2' 0 4' 8' 12'

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US Army Corps of Engineers

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SEPTEMBER 2013

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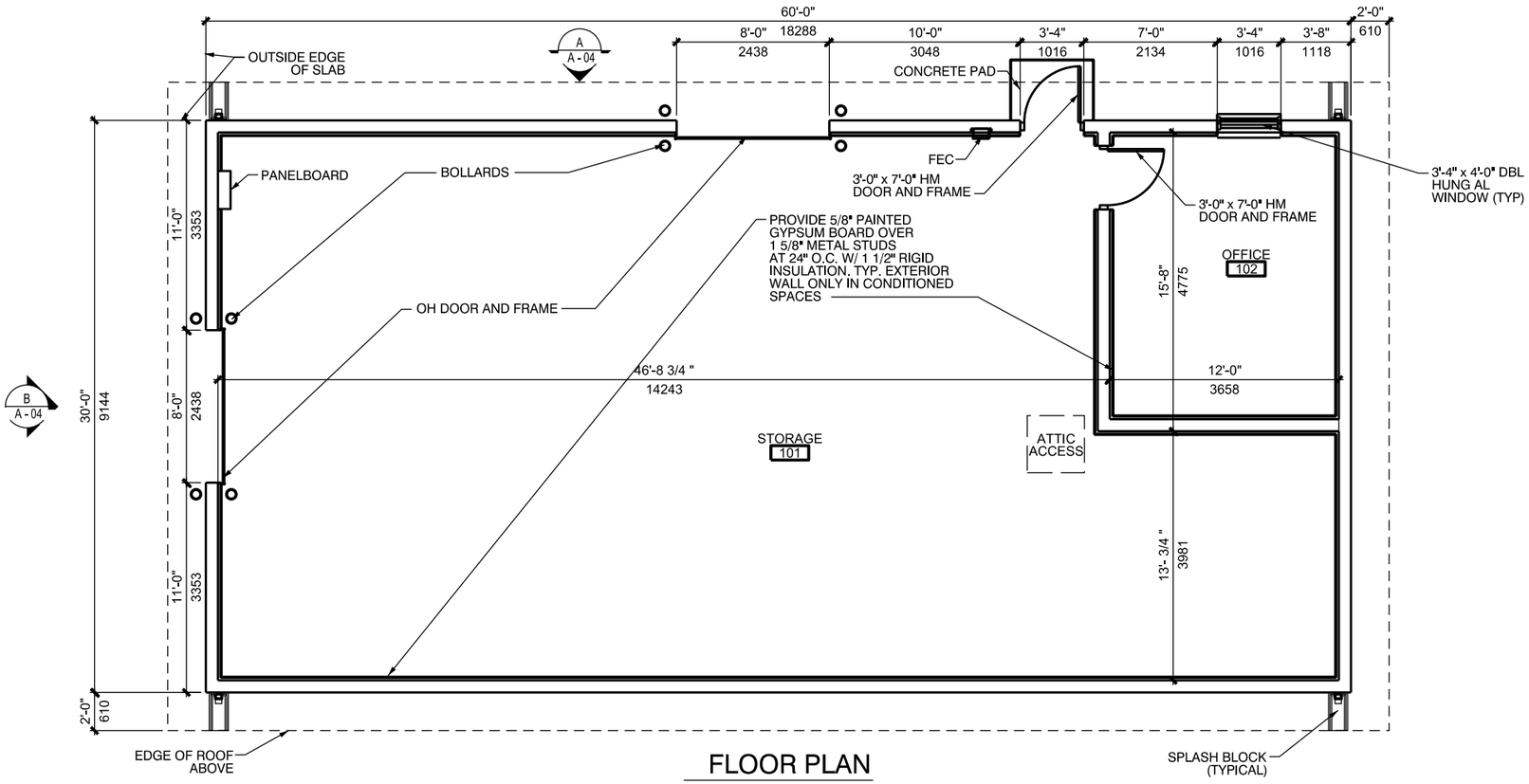

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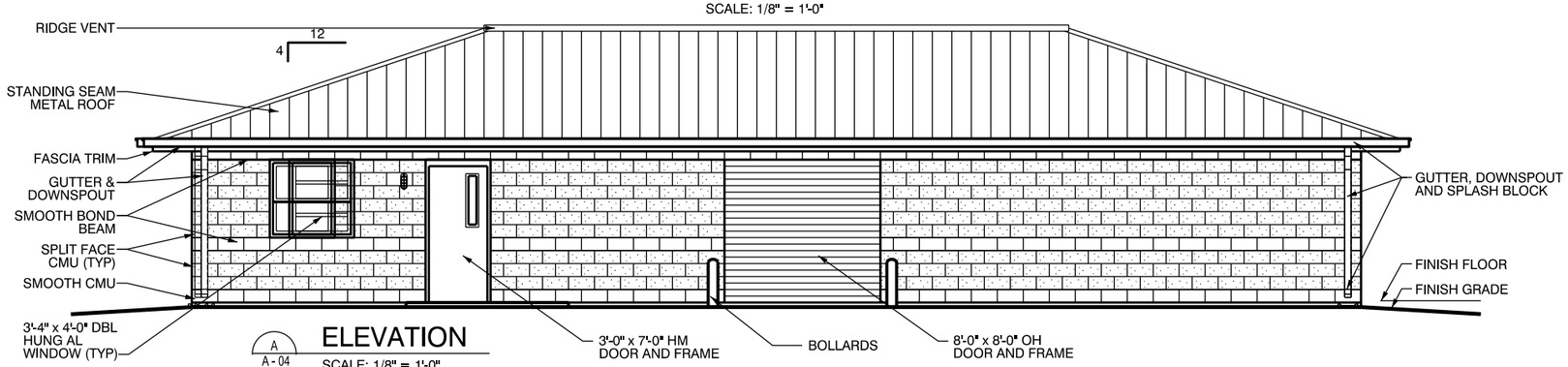

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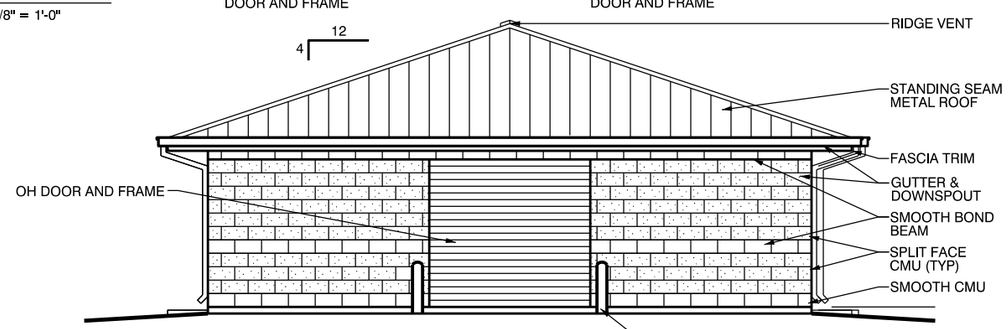

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LEGEND

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CMU - Concrete Masonry Unit
DBL - Double
HM - Hollow Metal
TYP - Typical

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SEPTEMBER 2013

RANGE AND TRAINING LAND PROGRAM
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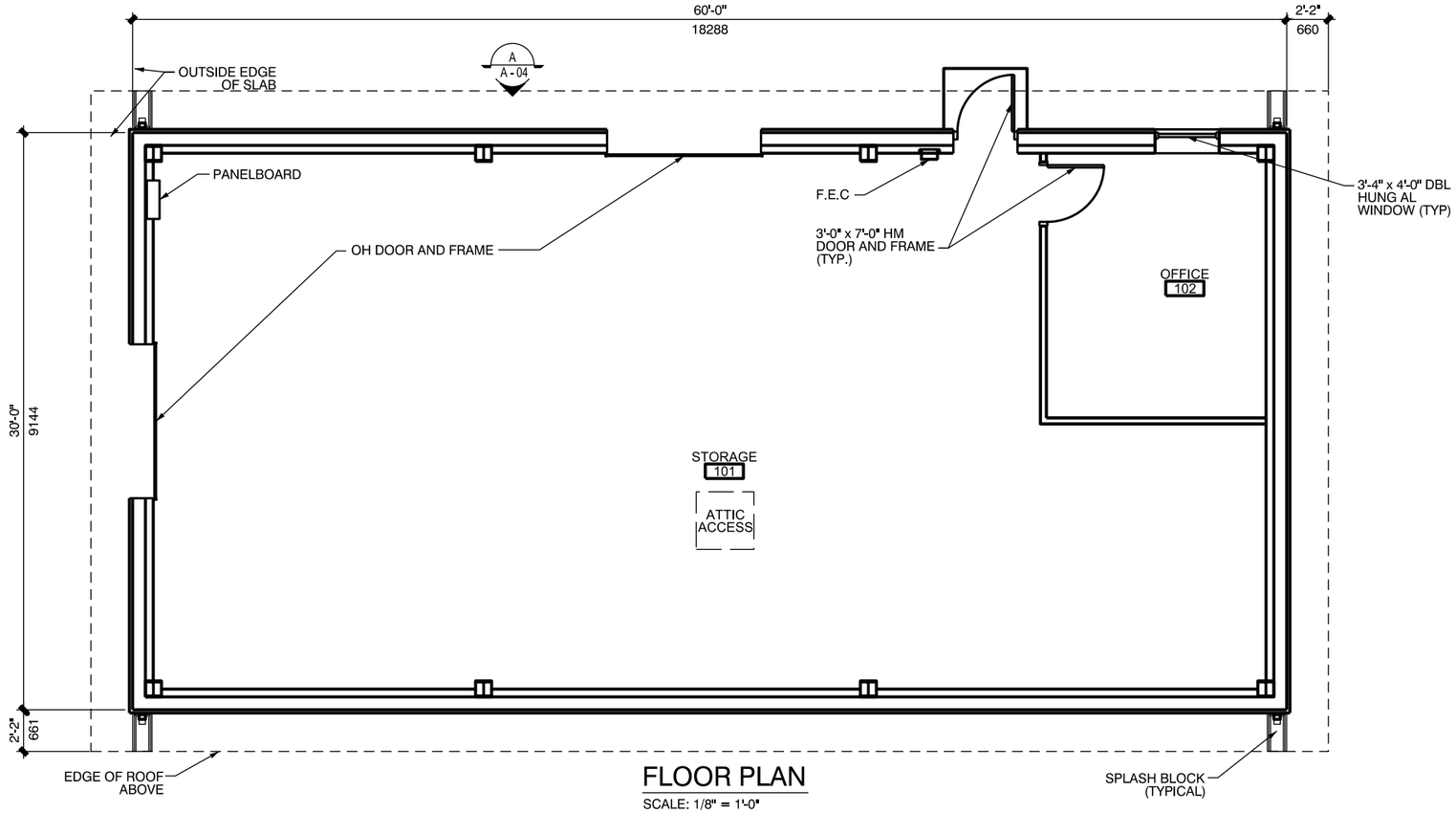

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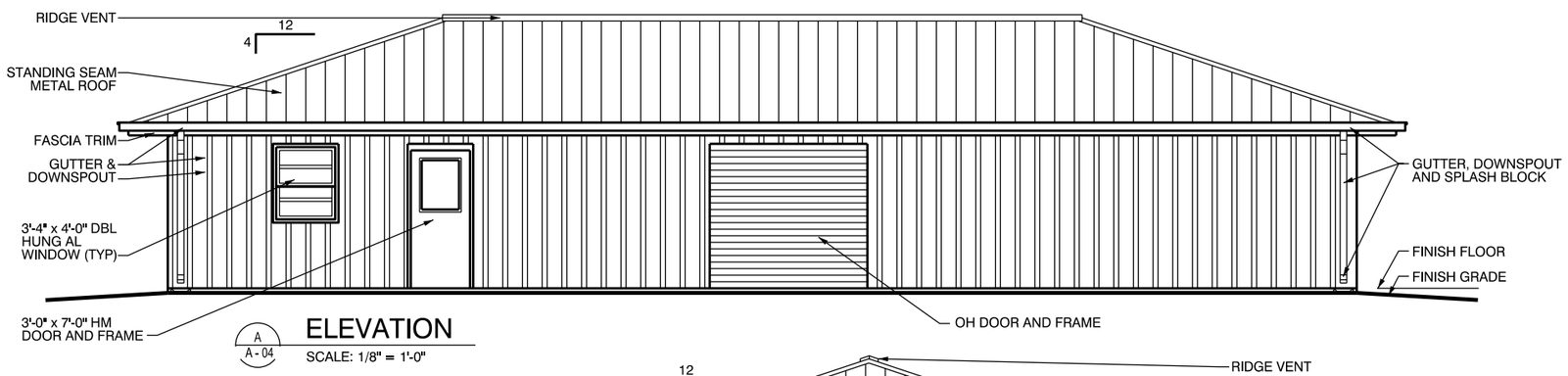

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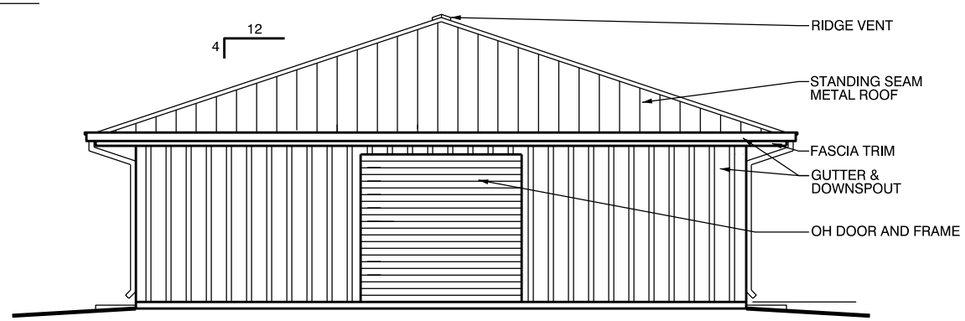

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ADDITIONAL CRITERIA

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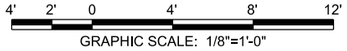
LEGEND

AL - Aluminum
DBL - Double
FEC - Fire Extinguisher Cabinet
HM - Hollow Metal
OH - Overhead
TYP - Typical



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SEPTEMBER 2013

RANGE AND TRAINING LAND PROGRAM
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OPERATIONS /STORAGE BUILDING – LARGE

Sheet reference number:
A–05