TPD GUN RANGE DESIGN – BUILD

DESIGN CRITERIA PACKAGE PREPARED

by

TAGLIARINI ARCHITECTURE, INC.

DATED: APRIL 5, 2013

City of Tampa - Tampa Police Department Outdoor Shooting Range Criteria Letter
April 5, 2013

Tagliarini Architecture, Inc.

1. Purpose

1.1 This letter provides the criteria for the design and construction of the outdoor shooting range for the Tampa Police Department. It will list the minimum design criteria necessary for achieving a safe range design. The facility will consist of two ranges, a range master control tower, a shoot house, a training building and a parking lot.

1.2 This package is not a specification or prescriptive checklist and is not intended to replace the professional judgment by a competent licensed professional engineer or architect after coordination with the end-user or installation section. Additionally, nothing in this should preclude consideration and use of emerging technologies and commercially available products if they can be proven to result in a safe and satisfactory range design.

2. Definitions

2.1 Small Arms Range: a live fire training facility for training and certifying personnel in the use of handguns, shotguns, and rifles up to 7.62 mm, 45 caliber, and 12gauge ammunition size.

2.2 Surface Danger Zone: the portions of the range in the horizontal plane that are endangered by firing a particular weapon. The surface danger zone includes the area between the firing line and the target line and impact area, a ricochet trajectory area and a secondary danger zone.

2.3 Vertical Danger Zone: for non-contained and partially contained ranges, the vertical danger zone is the volume of air space above the surface danger zone between the ground surface in the maximum ordinance of a direct fired or ricochet round. The height of the verticals danger zone varies with the weapon and ammunition fired.

2.4 Non-Contained Range: a non-contained Range is an outdoor open range. The firing line may be covered or uncovered. Direct fire rounds and ricochets are impeded and may fall anywhere within the surface danger zone.

2.5 Partially Contained Range: this range has a covered firing line, side containment, overhead baffles and a bullet backstop. Direct fire is totally contained by the firing line canopy, side containment, baffles and bullet trap (no blue sky observed from firing positions). Ricochets are totally contained, but reduced by the baffles and side containment.

2.6 The Range: includes two primary shooting ranges, one range is a tactical pistol range with multiple shooting line locations; and a secondary rifle qualification range for long-range shooting and an area for variable rotating target. Each range includes firing line positions with position numbering, position barricades, firing line, ready line and target line locations identified. The Range is further identified as 2.1 through 2.5.

3. Design Criteria

3.1 The Range design is based on providing facilities that meet the needs of the training "courses of fire" specified by the Tampa Police Department. These needs are based on mission and operation needs. The range design considers courses of fire that may differ from traditional "line up and shoot" courses of fire: certain courses of fire may require the shooter to advance downrange toward the target; other scenarios may include cover techniques and target engagement. It is imperative that the final designer and preparer of construction documents fully understand what types of training and courses of fire will take place on the range and design this range accordingly.

3.2 The goal of the Tampa Police Department outdoor shooting range training program is to increase the current 25 yd standard target distance and expand the diversity of training that can be accomplished on the range. This range is designed to allow the greatest target distance possible within the available land at the site (including two ranges of up to 25 yd and 100 yd respectively). The desired target distance is at or as close as possible in the site zero distance for each weapon.

3.3 The various types of weapons designed to be used at this range will include, but not be limited to; handguns up to 45 caliber ammunition, shotguns up to and including 12gauge and rifles up to and including 7.62 mm ammunition.

4. Facility Development Criteria

4.1 The Site Criteria and all structures and components on the site are based on the existing site identified by the City of Tampa. The size and spacing of each of the facilities is based on information provided by the Tampa Police Department.

4.2 The site includes two primary shooting ranges, a tactical pistol range with multiple shooting line locations and a secondary rifle qualification range for long-range shooting and an area for variable rotating target. Each range includes firing line positions with position numbering, position barricades, firing line, ready line and target line locations identified. The site also contains a one story training and office building with restroom facilities, a one story shoot house, a range control booth and a parking lot area.

4.3 Ballistic safety structures including baffles, side containment and backstops are incorporated into the designs of the two ranges. Safety structures classified as canopy baffles or overhead baffles are incorporated into the design. Side containment is provided by concrete sidewalls or discontinuous side baffles.

4.4 The use of proper materials for sidewalls, baffles, overhead containment, bullet traps and other areas where a projectile could impact will ensure that the bullet is deflected downrange and not towards the firing line. Ricochet control is to be considered when positioning brackets used for baffles, locating bulkheads and selecting protective construction.

4.5 The outdoor ranges use positive grading to direct stormwater away from the firing line in toward the target line when the length of the slope or the neutral terrain requires using drains between the target and the firing line. A trench drain is located at the front edge of the bullet trap. The bullet trap extends into the trench drain to eliminate any exposed edges that may cause unpredictable ricochets. The use of grade breaks to prevent exposing vertical surfaces to the firing line is necessary. The routing of stormwater runoff from any range floor to a stream, pond or other body of surface water is eliminated in the design.

4.6 The Range ventilation system provides a laminar airflow across the range toward the bullet trap. At the firing line, the air velocity must be adequate to provide clean, breathable air to the shooters to ensure contaminants are removed from the firing line. The installation of a perforated air distribution plenum, radial plenum, or other distribution fixture along the rear area of the shooting line should be provided for unidirectional airflow across the firing line and continuing downrange.

4.7 The Shoot House ventilation system must control exposure to lead particles in the shoot house. The shoot house must have supply and exhaust air systems critical to the safe operation of a fully contained shooting range and for the health of shoot house range users. For the fully contained indoor shooting house the ventilation design must include a positive exhaust system for effectively capturing and removing airborne contaminants. Exhaust intakes are used to ensure proper airflow and will be located at or behind the primary bullet trap or shooting end of the shoot house.

4.8 Engineered design control devices should be used to reduce noise levels and dampen reverberation. These devices include the use of an open air berm and sound absorbing walls.

4.9 The range control booth is a control center from where the chief range officer can observe and control the entire range. The following types of criteria are applied in the design and consideration of the booth. The booth is placed to permit an unrestricted view of the firing positions. The size of the booth is based on the installation of the bullet trap and targeting system control equipment. It is large enough and high enough to permit the range official an unobstructed view and to ensure the firing line is safe and that all projectile impact areas including all range entry points are clear. Most of the range bullet trap and targeting system equipment and controls are based on equipment from Action Target. The range control booth is also positioned to control entry into the shoot house area and ongoing training activities within the shoot house area.

4.10 The range communication system must support communications between the control booth, the firing line, range control, shoot house, range support buildings and emergency response personnel. A permanent, hardwired public address system is required. On a multiple range complex, such as this one, the system also supports communications between individual ranges and the shoot house. To ensure constant communications, the use of radio or cellular communications is also advised by the user. The control booth is wired with connections to the local area emergency response teams.

4.11 Downrange lighting should be designed to provide for safety and housekeeping operations, as well as, general range illumination. Controls for the lighting should provide for the ability to vary the lighting intensity throughout the range and shoot house to accommodate subdued light training requirements.

4.12 Typical range and shoot house signs should also be provided. Warning signs and flashing red warning lights for night operations should be positioned on the approaches to the range and shoot house along the perimeter of this SDZ – Surface Danger Zone. The use of red flags and/or rotating flashing red lights at appropriate locations to signals when the range and shoot house are in use is also to be recommended.

4.13 Utilities in the design should provide safety from damage from normal firing range operations. Utilities should be installed below ground whenever possible.

4.14 Water should be provided at the site, available for drinking, sanitation, handwashing and safety. Drinking water and restroom facilities are designed to be provided in the one story training building. Water should also be provided in the one story shoot house.

4.15 Electrical power should be provided throughout the site for lighting, maintenance equipment, public address systems, ventilation, bullet trap and targeting systems.

4.16 The parking lot area is designed for access by personal vehicles and lighter to medium trucks. The parking area is located behind and to the side of firing platform locations and partially blocked by concrete safety walls.

4.17 Canopy baffles are angled, horizontal baffles attached to and directly above the firing platform, extending downrange from the firing line. This design prevents direct fired rounds from escaping the range between the firing line in the first overhead baffle. The bottom of the canopy must be at least 8 feet above the level of the firing platform. The canopy should begin at least 3 feet behind the firing line and extend at least 14 feet forward of the firing line toward the target line. Canopy baffles are used to provide a covered firing line position on the partially contained range. Line of site analysis is used to consider rounds fired from any angle and any training position forward of the firing line. Angled overhead baffles redirect projectiles downrange. They are installed angled and overhead but the bottom edge is further downrange than the top edge. Additional criteria provides for the use of vehicles. New training scenarios use vehicles for practicing vehicle dismount, cover and engaging targets from the vehicle. The design vehicle for standard range operations is primarily the standard police patrol car.

4.18 Continuous walls down the sides of each shooting range are constructed of reinforced concrete, CMU with fully filled cores or other material that may be chosen at a later date. The walls are designed for dead load and live load and include lateral forces. The walls extend at least 3 feet beyond the firing line to prevent a bullet fired parallel to the firing line from leaving the range.

4.19 There is an earth berm located in the current site design. Its primary purpose is to allow an onsite location for the placement of excavated ash (considered landfill debris) relocated during the construction process as necessary. The slope of the earth berm should not exceed a 2 to 3 vertical to horizontal ratio. They should include the use of reinforced fabrics in the fill. The additional purpose of the berm is for sound absorption and deflection of noise. By separate procurement, the Environmental Engineering Services is under contract.

4.20 There is a commercially design bullet trap and targeting system from Action Target designed and constructed for both ranges. The traps are used to contain the rounds fired and deflect, stop, trap and contain direct fired rounds~~,~~ (and incorporate a vacuum or other dust management system to capture projectile particles in the shoot house). A bullet trap is designed to accommodate the ammunition to be fired, as well as, the expected quantity of ammunition fired. The bullet trap on range one extends the entire width of the firing line. The trap does not present any blunt surface exposure that would create a ricochet hazard internal to the equipment or at the connection of the side walls and floor. All future purchases of built traps can be incorporated into the current design and should be considered as funding becomes available.

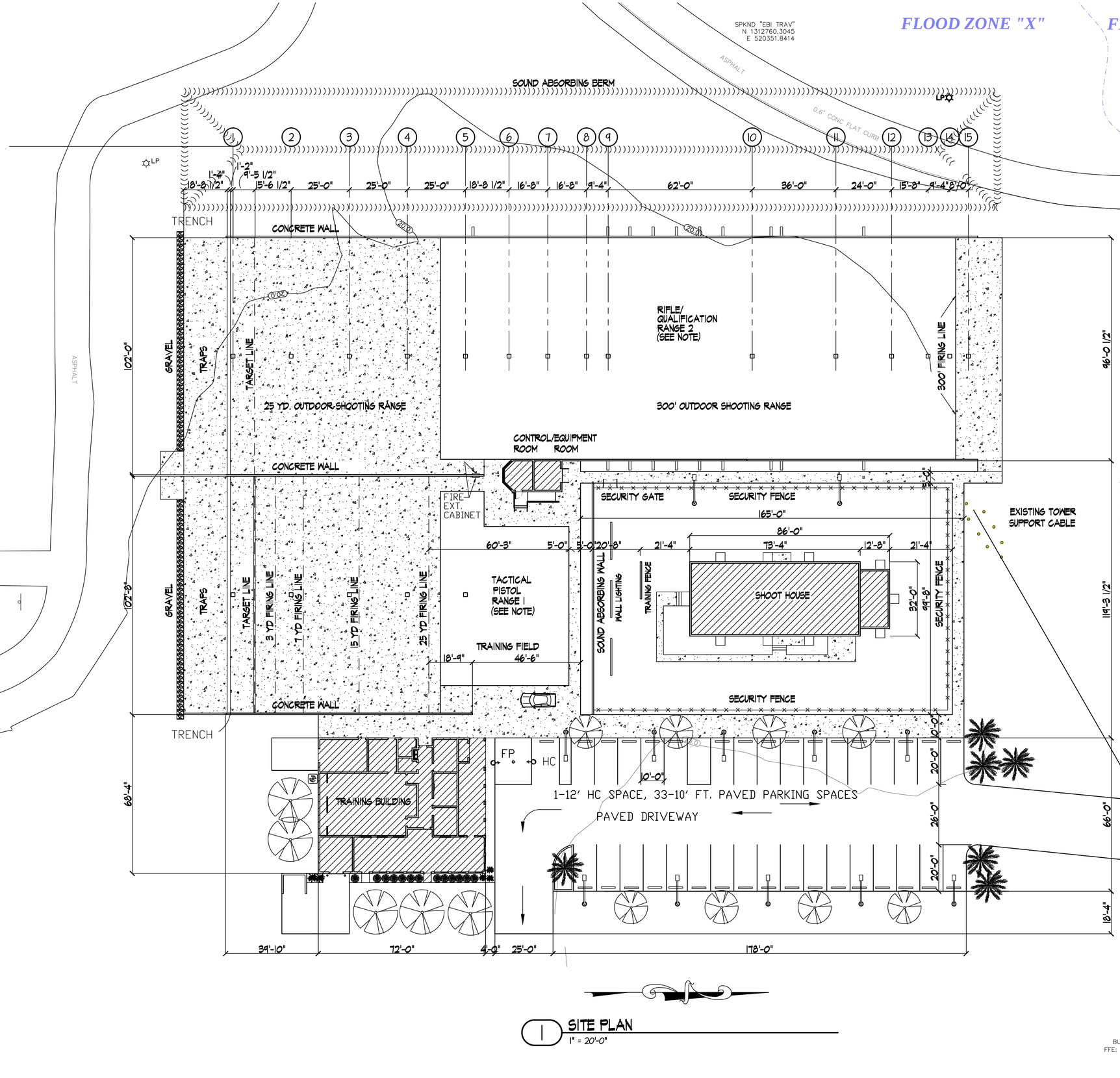
4.21 The classroom facility in the training building is large enough to provide each student receiving handgun, rifle, or shotgun training a chair and table work surface sufficient to handle the current and near future projections of students requiring training. The administrative area includes space for the training instructors and provides for the normal amounts of desk, files and bookcases.

4.22 The weapons and ammunition storage room is designed to provide a secure storage for all weapons and ammunition that the training personnel are responsible for. All construction elements and aspects of the weapons and ammunition storage room should provide a minimum 10 minutes of forced entry delay protection. This is primarily in the form of extra strong locks and hinges and is considered an industry standard to allow time for security personnel to respond should an intruder ever try to break in and steal the supplies. The room is designed of concrete block with reinforcing steel and concrete poured in the walls and floor system. It is also recommended that this storage room be controlled by an appropriate form of electronic security to make security personnel aware of intruders trying to break in, as well as, allow the Tampa Police Department to be in control of entry at all times to this storage room.

4.23 Adequate restroom facilities are provided to handle the number of trainees projected to be trained in the facility now and in the near future. Facilities are provided for both men and women.

4.24 Miscellaneous range equipment and supply storage is also provided in the training building, control building and shoot house. These rooms and areas supply secure storage for miscellaneous range supplies, tools and equipment. Additional range rooms, storage closets and miscellaneous areas may need to be provided during the final design and construction documents throughout the site to assist in the complete, safe and secure training operations of the complex.

4.25 Construction materials for the range are selected based on the goal of achieving the longest lifecycle possible, considering frequency of use and other considerations including the location of the site and the mission of the Tampa Police Department.



SITE PLAN

1 SITE PLAN
1" = 20'-0"

NOTE:

TACTICAL PISTOL RANGE I
COMPLETE STEEL TOTAL CONTAINMENT HIGH POWER (T-1 AND B-1 TO BE HP) TRAP V2 PACKAGE W/ ACCESSORIES. PACKAGE INCLUDES ALL PLATES, JOINT STRIPS, CHAMBERS, LEGS, ROOF, SCREW CONVEYOR COLLECTION METHOD, INSTALLATION MATERIALS AND FACTORY INSTALLATION.. TRAP TO BE 100 FEET WIDE.

RIFLE/QUALIFICATION RANGE 2
COMLETE STEEL TOTAL CONTAINMENT HIGH POWER (T-1 AND B-1 TO BE HP) TRAP V2 PACKAGE W/ ACCESSORIES. PACKAGE INCLUDES ALL PLATES, JOINT STRIPS, CHAMBERS, LEGS, ROOF, SCREW CONVEYOR COLLECTION METHOD, INSTALLATION MATERIALS AND FACTORY INSTALLATION, COMPLETE POWER 90 TURNING TARGETRY PACKAGE.

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STATE CERTIFIED ARCHITECTS NO. AA 26002166

CITY OF TAMPA
TAMPA POLICE DEPARTMENT
OUTDOOR SHOOTING RANGE

3420 E. CLARK ST.,
TAMPA, FLORIDA
33605

DRAWN BY: JWM

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PAGE 1 OF 3

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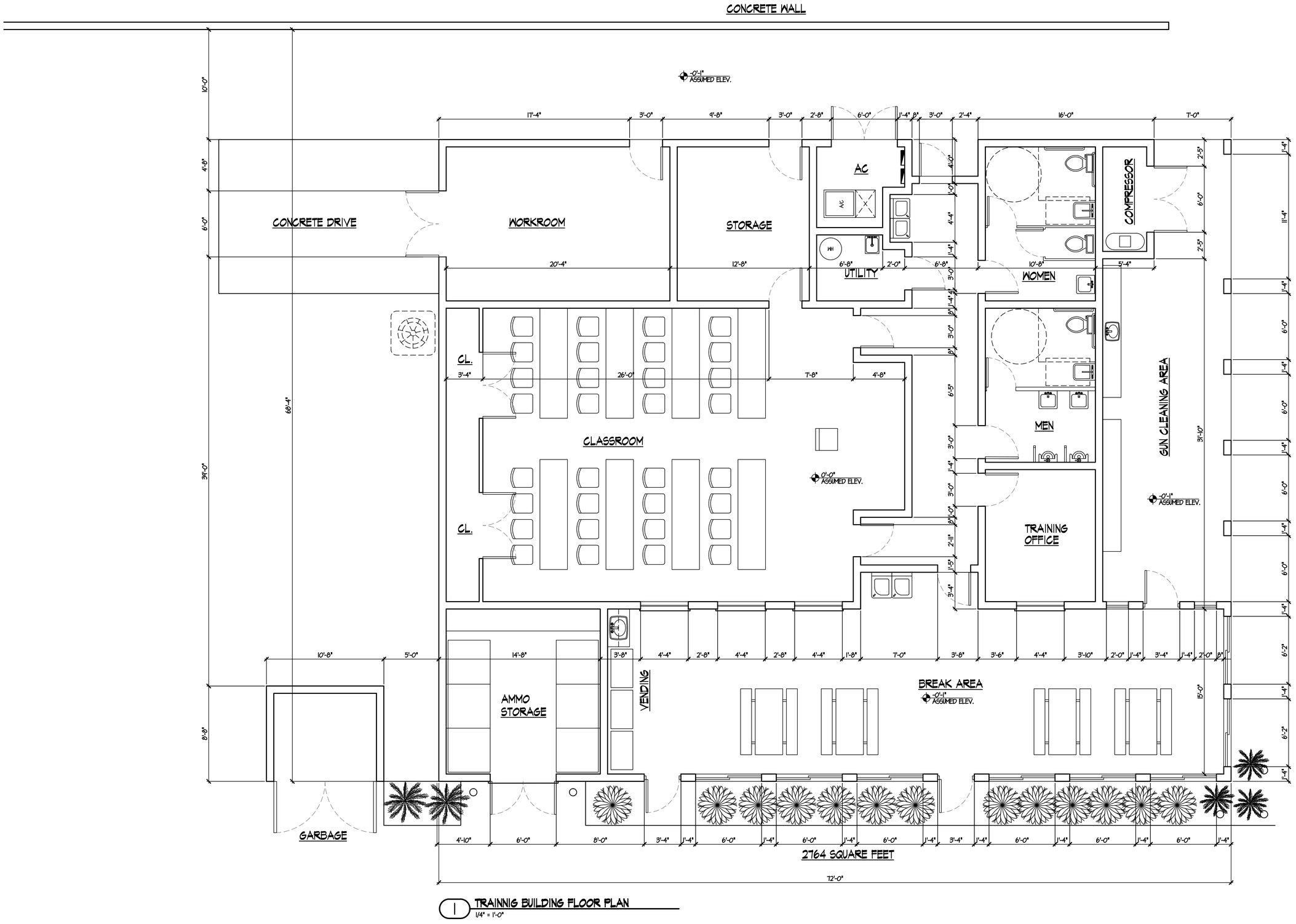

TRAINNIG BUILDING FLOOR PLAN
1/4" = 1'-0"

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TRAINING BUILDING

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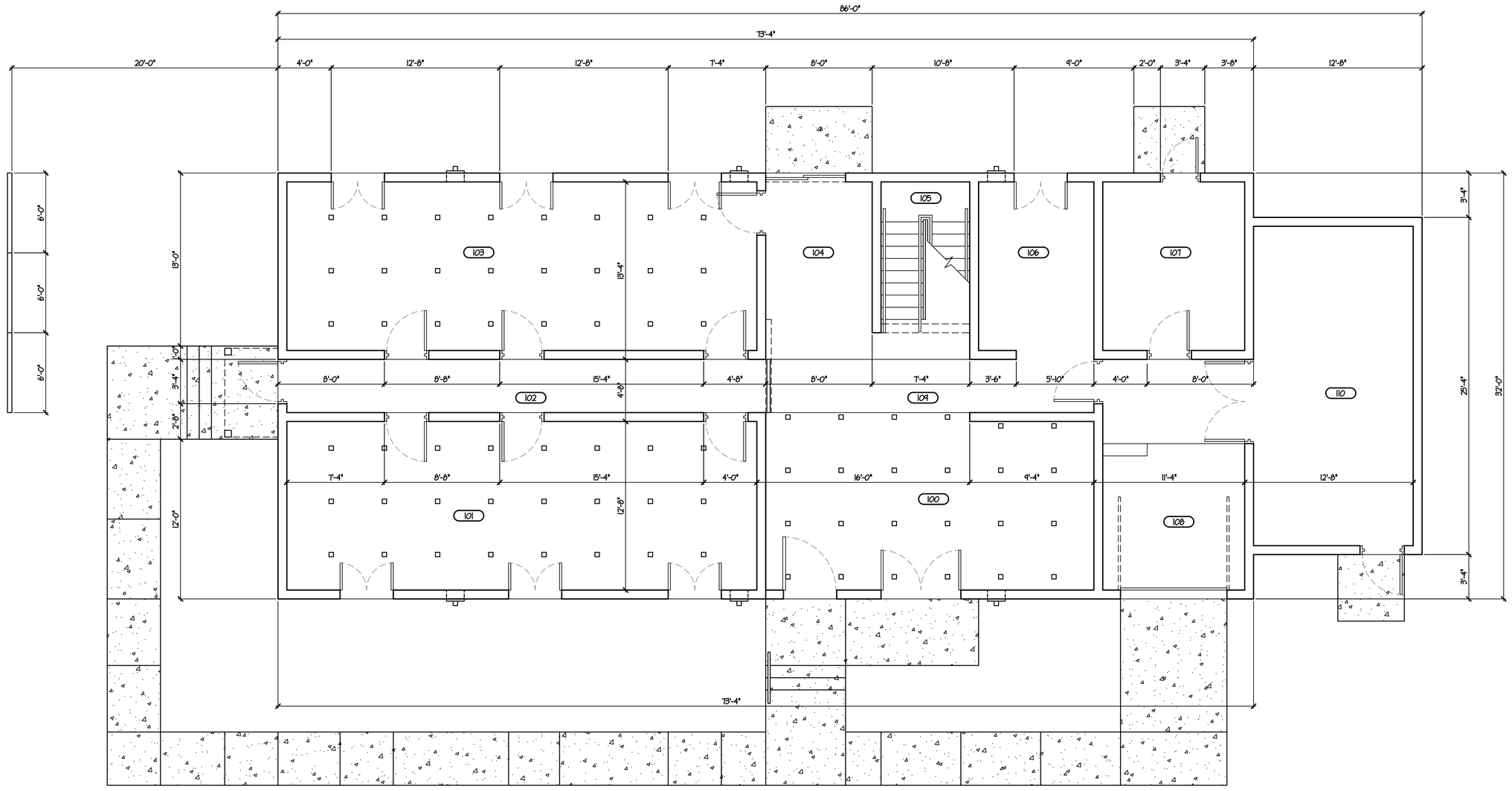
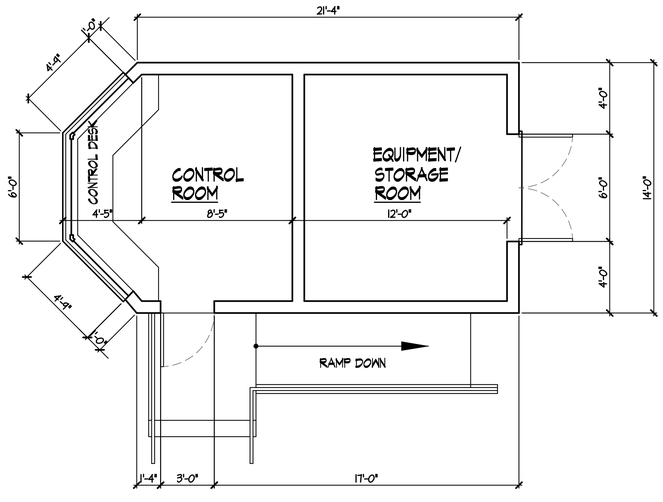


1 SHOOT HOUSE FLOOR PLAN
1/4" = 1'-0"



2 RANGE MASTER CONTROL BLDG. FLOOR PLAN
1/4" = 1'-0"

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SHOOT HOUSE & RANGE MASTER CONTROL BUILDING

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