Volume 1 of 1
Pre-Design Study

Reconstruct State Police Firing Range
Final Report
100 Nod Road
Simsbury, CT
Project No.: BI-N-357

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SECTION 1 - EXECUTIVE SUMMARY

1.0 EXECUTIVE SUMMARY

This report presents an evaluation of the existing conditions and design improvements to the State Police Firing Range Facility including its buildings, utilities, pistol deck berm, rifle range canopy, timber berm along the southwestern portion of the site, wetlands, and external flood hazards located at 100 Nod Road, Simsbury, Connecticut. Based on the results of this evaluation the report confirms that the existing Firing Range Training Facility (Facility) and Structures are past their useful life expectancy and the existing buildings, equipment and firing range facilities are exposed to flooding and are in disrepair. Therefore, several elements of the Facility will need to be reconstructed to provide a better training environment and to raise the facility above the regulatory flood elevation. The results of the existing conditions evaluation were used in the development of three Pre-Design building options to improve the Facility.

All three Pre-Design Options are feasible alternatives for the Reconstruction of the Connecticut State Police Firing Range. Each Option utilizes the site in a different manner with varying advantages and disadvantages, however, all three options are faced with difficult design constraints driven by the limitations of the floodplain which will be resolved by elevating the building above the floodplain. Our evaluation of the three Pre-Design Options leads us to strongly recommend Option 1. This selection is predicated by the proposed design's proximity and orientation to the Pistol Deck. Unlike Option 2, Option 1 minimizes the building's profile to sound generated by the Range and does not require the separate Range Tower shown in Option 3.

1.1 COST ESTIMATE SUMMARY

We estimate the total construction costs of Pre-Design Option 1 including site and range improvements to be $8,543,000, with an overall project budget of $10,764,000 based on construction commencing in 2023. It is understood that this projected total greatly exceeds the State of Connecticut's stated budget of approximately $2,000,000 and that additional funds will need to be secured to construct the project. The estimate of probable cost contained in this report is presented in Uniformat Level I which is a highly schematic and basic method of estimating, suitable for conceptual level projects. It is important to note that the current level of design evaluation (Pre-Design), there is not enough information to accurately predict with confidence the realistic project cost. Additionally, material, labor and supply chain fluctuations driven by the pandemic have created an incredibly unstable environment for accurate cost estimation. A more accurate and detailed assessment (Uniformat Level II and III) cannot be attempted until additional explorations and evaluations are completed as part future design phases.

1.2 PRE-DESIGN METHODOLOGY

Three options for location and orientation of the proposed building were considered as part of the pre-design study. For each of the three options, Option 1, Option 2 and Option 3, conceptual site plans were prepared showing the general location and layout of the building, vehicular parking and circulation, and stormwater management areas. For all three options, the general programs, are similar, with differences predicated on the location and/or orientation of the proposed Building.

All three options will meet FEMA NFIP regulations, State floodplain management regulations and standards, and local and State building code requirements. Based on the effective FEMA Flood Insurance Study (FIS) (dated May 16, 2017) for the Site, the proposed first floor elevation for all three options is 166.2'NAVD88 which is one foot above the current 500 Year Peak Flood Elevation as required by DEEP. The lowest horizontal structural member for these options will also be above the 100-Year Floodway elevation of 161.2' NAVD88. Each of the three options will be supported on piles to allow for the passing of flood waters under the building. We understand that FEMA is up-dating the flood mapping for this area of the Farmington River which will likely result in increased flood elevations of approximately one foot; therefore, the design will accommodate these pend-ing changes. Further clarification is needed from FEMA to define the actual elevations that will be instituted.

The proposed list of building program elements for each of the three options for the conceptual design of the proposed Facility included: Ammunition Storage; Armory; Dining/Kitchenette; Classroom Spare; Electrical; Laundry; loading dock; mechanical room; observation spate; office space; open office; record storage; restrooms; storage and the weapon vault.

The proposed building program was created with the goal of addressing the following three objec-tives:

1. Modernize the Facility and provide habitable spaces that are not vulnerable to site flooding;
2. Restore spaces which were eliminated by the demolition of the original instruction building and that are currently being housed in temporary structures or the current outdated facility ; and
3. Provide new program elements that are required for the safe and proper function of the Firing Range.

EXISTING BUILDING PROGRAM		
LOCATION	**EXIST (SF)**	**NOTES:**
Ammunition Storage	255	
Armory	290	Includes tool and machine shop
Dining/Kitchenette	165	Armory bench located within kitchen
Classroom	715	
Observation	100	
Open Office	420	
Record Storage	290	
Restroom (Staff)	101	
Restroom (Trainees)	75	Portable toilets
Storage (Ground)	1995	Misc. storage in trailers, Connex boxes and buildings
Weapon Storage	263	See below
Weapon Vault	53	Incorporates existing weapon storage space
TOTAL (SF):	4722	

Figure 1-1: Existing Building Program

PROPOSED BUILDING PROGRAM		
LOCATION	**PROP (SF)**	**NOTES:**
Ammunition Storage	450	
Armory	400	Includes existing reloading space and 3 stations
Dining/Kitchenette	175	
Classroom	1200	50 Trainees
Electrical	100	
Elevator	64	Assume no machine room
Laundry	40	Commercial washer and dryer
Loading Dock	60	
Mechanical Room	100	
Observation	100	
Office	120	One 10' x 12' office
Open Office	240	Benching work spaces for 6 instructors
Record Storage	300	
Restroom (Staff)	225	Includes shower and locker area
Restroom (Trainees)	360	Mens and Womens, three fixtures each
Storage (Elevated)	200	
Weapon Vault	300	Incorporates existing weapon storage space
Subtotal (SF):	4434	
Circulation Factor (30%)	1330	
TOTAL (SF):	**5764**	

Figure 1-2: Proposed Building Program

A summary of the existing and new programmatic elements can be seen in the figures below and are expanded upon in Section 5 of this report.

1.3 PRE-DESIGN OPTION 1 SUMMARY

Pre-Design Option 1 consists of an approximately 6,200 SF, single story building located directly adjacent to the west end of the Pistol Deck portion of the Firing Range. Option 1 orients the building in an east to west direction with the eastern face consisting of an observation room overlooking the Pistol Deck. Moving towards the west from the Observation Room the Option's

Option 1	
Advantages	**Disadvantages**
• Provides direct observation of the Pistol and Rifle Deck without the need for a second 'Range Tower' with its own elevator, stair and restroom. • Weapons and Ammunition Storage are conveniently located adjacent to the Pistol Deck via the exterior hoist-way and Stair B. • Minimizes the building exposure to the active sound generated by weapon fire and the reflected sound from the hillside to the east. • Building program is organized to have the least noise sensitive elements closest to the Pistol Deck and the most sound sensitive spaces in the West. • Major facades (North and South) are presented perpendicular to the road, maximizing the building's presence for vehicular traffic. • Roof orientation maximizes potential of photovoltaic installation. • Direct access for emergency response vehicles is provided from Nod Road to the Pistol Deck area via the northern drive aisle. • All parking is in close proximity to the proposed Building and the Pistol Deck area. • Open space (landscaped area) is maintained around the majority of the paved area, providing for enhanced stormwater management (shorter flow-paths from paved areas to adjacent vegetated management areas). • Provides 2,100 square feet of net improve-ments in overall state regulated wetland soil benefits which is the most of any option.	• Proximity to Pistol Deck will require that building envelope assemblies account for higher levels of sound attenuation. • Proximity to Pistol Deck prohibits expansion of Deck length to accommodate longer shooting distances. • Turning movements for large vehicles may require operation within the Pistol Deck area.

Figure 1-3: Pre-Design Option 1 Summary

layout places the least noise sensitive spaces (Weapons and Ammunition Storage, Record Storage and the Armory) closest to the Pistol Range with the most sensitive space, the classroom, located at the farthest point away from active shooting. Refer to Section 5 of this report for more detailed information regarding the proposed building programming and descriptions of the spaces. Listed below are the advantages and disadvantages of Option #1 that also addresses the site layout, vehicular parking and circulation, net improvements in overall floodplain benefits and stormwater management areas for each Option.

1.4 PRE-DESIGN OPTION 2 SUMMARY

Pre-Design Option 2 consists of an approximately 6,700 SF, single story building located directly adjacent to the west end of the Pistol Deck portion of the Firing Range. Option #2 orients the building in an North to South direction with a central Observation Room overlooking the Pistol Deck. West of the Observation Room, behind a mass wall extending down to grade are office spaces for the Range Instructors and Administrator. The North end of Pre- Design Option #2 is

Option 2	
Advantages	**Disadvantages**
• Provides direct observation of the Pistol and Rifle Deck without the need for a second 'Range Tower' with its own elevator, stair and restroom. • Building orientation along the length of the Pistol Deck accommodates larger Observation Room. • Major facade (West) is presented to the road, maximizing the building's presence as visitors arrive at the site. • Bus staging location does not interfere with pedestrian walking paths from vehicle parking area. • All parking is in close proximity to the proposed Building. • Provides 50 square feet of net improve-ments in overall state-regulated wetland soil benefits which is the second most of any option.	• Parallel orientation of the building to the Pistol Deck will require a larger portion of the building envelope to have enhanced sound attenuation. • Parallel orientation of the building to the Pistol Deck means a larger portion of the building is vulnerable to potential ricochets. • Building orientation and roof planes are not optimal for photovoltaic installation. • Indirect access for emergency response vehicles is provided from Nod Road to the Pistol Deck area via the southern drive aisle. • Access to Pistol Deck area is narrow, requires alternating one-way traffic. • Parking area is separated from the Pistol Deck area by the proposed Building. • Turning movements for large vehicles requires operation in the parking area. Delivery trucks and busses may be required to make multi-point turning movements to access the loading/ passenger discharge areas. • Longer flow paths from the new BUILDING and pavements to stormwater management areas may result in increased potential for ponding during rainfall events.

Figure 1-4: Pre-Design Option 2 Summary

occupied by the Staff Restroom and Locker Rooms as well as the Kitchenette and a Conference Room that can be utilized as a meeting or dining space for recruits. The South end of the proposed building contains the Weapon, Ammunition and Document Storage along with the Armory. Moving west across the main corridor is the Classroom. Refer to Section 5 of this report for more detailed information regarding the proposed building programming and descriptions of the spaces. Listed below are the advantages and disadvantages of Pre-Design Option #2 that also addresses the site layout, vehicular parking and circulation, net improvements in overall floodplain soil benefits, and stormwater management areas for each Option.

1.5 PRE-DESIGN OPTION 3 SUMMARY

Pre-Design Option #3 consists of an approximately 6,500 SF, single story, primary building located in the northwest corner of the Site and includes a separate 600 SF Range Tower located directly adjacent to the west end of the Pistol Deck portion of the Firing Range. This option orients the building in an east to west direction with the eastern face comprised of an observation room overlooking the Pistol Deck. Moving towards the west from the Observation Room the Option's layout places the least noise sensitive spaces (Weapons and Ammunition Storage, Record Storage and the Armory) closest to the Pistol Range with the most sensitive space, the classroom, located at the farthest point away from active shooting. Refer to Section 5 of this report for more detailed information regarding the proposed building programming and descriptions of the spaces. Listed below are the advantages and disadvantages of Pre-Design Option #3 that also addresses the site layout, vehicular parking and circulation, net improvements in overall floodplain soil benefits, and stormwater management areas for each Option.

Option 3	
Advantages	**Disadvantages**
• Defines the edge of the property and provides a street presence to Nod Road. • Increased distance from the Pistol Deck provides a slight reduction in the need for sound attenuation in the building envelope. • Roof orientation maximizes potential of photovoltaic installation. • Existing site grades are higher in the northwest corner of the property, slightly reducing the distance between grade and of the first floor above the building. • Increased distance from the Pistol Deck reduces vulnerability of the structure to ricochets. • Direct access for emergency response vehicles is provided from Nod Road to the Pistol Deck area via the northern drive aisle. • Bus staging location does not interfere with pedestrian walking paths from vehicle parking area. • Parking is located in close proximity to the Pistol Deck.	• Remote location of the primary building from the Pistol Deck dictates that a second building be built for observation. • Range Tower will require its own stair, passenger elevator, restroom and utility connections. • Ammunition Storage, Weapon Storage and restrooms are remote from Pistol Deck. • Building location requires the removal of many existing trees. • The proposed Building is located almost entirely within an area of previously undisturbed existing vegetated floodplain soils. • Removal of existing mature trees in the northwestern portion of the site will be required for siting the proposed Building. • Parking area is located father from the proposed Building compared to Options 1 and 2. No direct access from building entrances to parking area. • Turning movements for large vehicles requires operation in the parking area or Pistol Deck. Delivery trucks and busses may be required to make multi-point turning movements to access the loading/ passenger discharge areas. • Delivery vehicles may block the entrance drive when off-loading ammunition or other supplies. • Provides 750 square feet of net loss in over-all state-regulated wetland benefits which is the least of any option.

Figure 1-5: Pre-Design Option 3 Summary

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SECTION 2 - EXISTING CONDITIONS

2.0 EXISTING CONDITIONS SUMMARY

This Pre-Design Study Report is based on the scope of services outlined in Task No. 1 per GZA GeoEnvironmental Inc.'s Contract No. OC-DCS-EPA-0028 with the Connecticut Department of Administrative Services (DAS). The report was prepared in general accordance with Exhibit 3.5A of the Consultant Procedure Manual, the limitations outlined in Appendix A and the terms and conditions of our Contract No. OC-DCS-EPA-0028 with DAS. This report presents the results of the pre-design study conducted by GZA and Maier Design Group for the Connecticut Department of Emergency Services and Public Protection (DESPP) State Police Firing Range located at 100 Nod Road, Simsbury, CT. The existing Firing Range Training Facility (Facility) and Structures are past their useful life expectancy and the existing buildings, equipment and firing range facilities are exposed to flooding and are in disrepair. Therefore, several elements of the Facility will need to be reconstructed to provide a better training environment and to raise the Facility's classroom building and range tower above flood elevation. The purpose of this report is to provide a Pre-Design Study of the Site from the rifle range deck west to Nod Road to support the preparation of the Final Engineering and Design, Permitting and other supporting services in the next phases of the project.

The existing Firing Range Training Facility (Facility) Site consists of two temporary trailers, a two-story Range House (including the Range Tower), two firing ranges, two Conex boxes, three portlets, and approximately 40 parking spots. The existing Facility is past it's useful life. The existing structures are in disrepair and are highly exposed to flooding. Flooding is also responsible for the loss of training hours and supplies and equipment due to water damage.

The total gross area of building space on the western portion of the Site from Nod Road to the rifle range deck including the Conex boxes and portlets, is 4,762 square feet. The existing programming for the first floor of the Range House includes general storage, weapons storage, ammunition storage, a weapons vault, and restroom. The observation area on the 2nd floor serves as the Range Tower. Both temporary trailers are used as training rooms and each one can accommodate approximately 15 to 20 trainees at a time.

The Site is located within the watershed of the Farmington River and is approximately 40 feet east of the west bank of the Farmington River. The exterior site grades in the vicinity of the Site (see Figure 2-1) range from about Elevation 150 feet NAVD88 to the west of the Pistol Range in the

paved areas to about Elevation 156 feet NAVD88 at the western edge of the Site along Nod Road (at the western Site property boundary. The Site experienced damages caused by flooding on numerous occasions including flood events in 1984, 2006, 2007, 2008, 2010, 2011. Flooding from many of these events resulted in floodwaters at elevations up to and over the doorways at the Range House buildings.

The Site does not have on-site stormwater infrastructure (catch basins, manholes and piping) to assist in draining the Site during heavy rainfall events. Rainfall runoff in the vicinity of the three buildings is collected within the low-lying areas west of the Pistol Range. A single pump located on the southwestern portion of the Pistol Firing Range collects and discharges water off site.

Utilities on the Site include an on-site wastewater collection system and a well. Electrical and telecommunications are provided via overhead lines from Nod Road. There is no fire suppression system on the Site.

The Site is located within a FEMA Zone AE due to its presence within the 1% annual chance (100-year recurrence interval) flood (see Figure 2-2). The FEMA flood elevations in the vicinity of the Site range from Elevation 155.9 feet NAVD (10% annual chance flood) to 160.6 feet NAVD (1% annual chance flood) to 165.2 feet NAVD88 (0.2% annual chance flood). The western portion of the site is within the FEMA floodway.

58,548 square feet of state-regulated wetlands exist within the grassed areas on the east end and west end of the Site. There are minimal federally-regulated wetlands on the Site and these will not be impacted by the project.

Each of the three buildings, Conex boxes and portlets and range decks are also within the FEMA Zone AE making these buildings and structures especially vulnerable to flooding and likely to incur future flood damages at the Site. Based on these results, the Facility needs to be reconstructed to provide a better training environment for the State Police and to raise the facility above the flood elevation.

2.1 BACKGROUND AND PURPOSE

This report presents the results of an existing conditions evaluation conducted by GZA and Maier Design Group for the Connecticut Department of Emergency Services and Public Protection State Police Firing Range located at 100 Nod Road, Simsbury, Connecticut (Site). The existing Firing Range Training Facility (Facility) and Structures are past their useful life expectancy and the existing buildings, equipment and firing range facilities are exposed to flooding and are in disrepair. Therefore, several elements of the Facility will need to be reconstructed to provide a better training environment and to raise the facility above flood elevation.

The purpose of this report is to provide a current existing conditions evaluation of the Site to support the preparation of the Pre-Design Study. To complete this Existing Conditions Report, GZA performed the following:

1. A review of the site and building information provided by the Client:
    A. 2008 Topographic Plan prepared by Dewberry and Goodkind, Inc.
    B. 2018 State Police Training Facility Relocation Project CEPA Scoping Meeting Presentation (2018 Presentation).
2. A site reconnaissance, conducted by Maier Design Group on July 27 and August 2, 2021, to:
    A. collect field measurements and documentation of the existing layout and general exterior configuration of existing structures on the Site; and
    B. inventory the existing furniture, equipment and major building components that are to be reused or replaced in the proposed design;
3. A meeting with the stakeholders and DAS on August 9, 2021, to:
    A. discuss design objectives, budget and schedule.
    B. visually inspect the existing pistol backstop earthen berm.
    C. visually inspect the existing rifle range backstop earthen berm.
4. A site reconnaissance, conducted by GZA on August 3, 2021, to collect of limited topographic and feature data for use in the preparation of the Concept Plans as a part of the Pre-Design Study;
5. A site reconnaissance, conducted by GZA on July 29 and August 16, 2021, to delineate the wetlands boundaries within and adjacent to the proposed limits of work; and
6. Preparation of this Existing Conditions Report including an existing conditions plan of buildings and structures, wetland boundaries and updated topographic and feature data on the Site.

GZA prepared this Existing Conditions Report in conformance with the limitations presented in **Appendix A** and the terms and conditions of our Contract No.: OC-DCS-EPA-0028 with DAS.

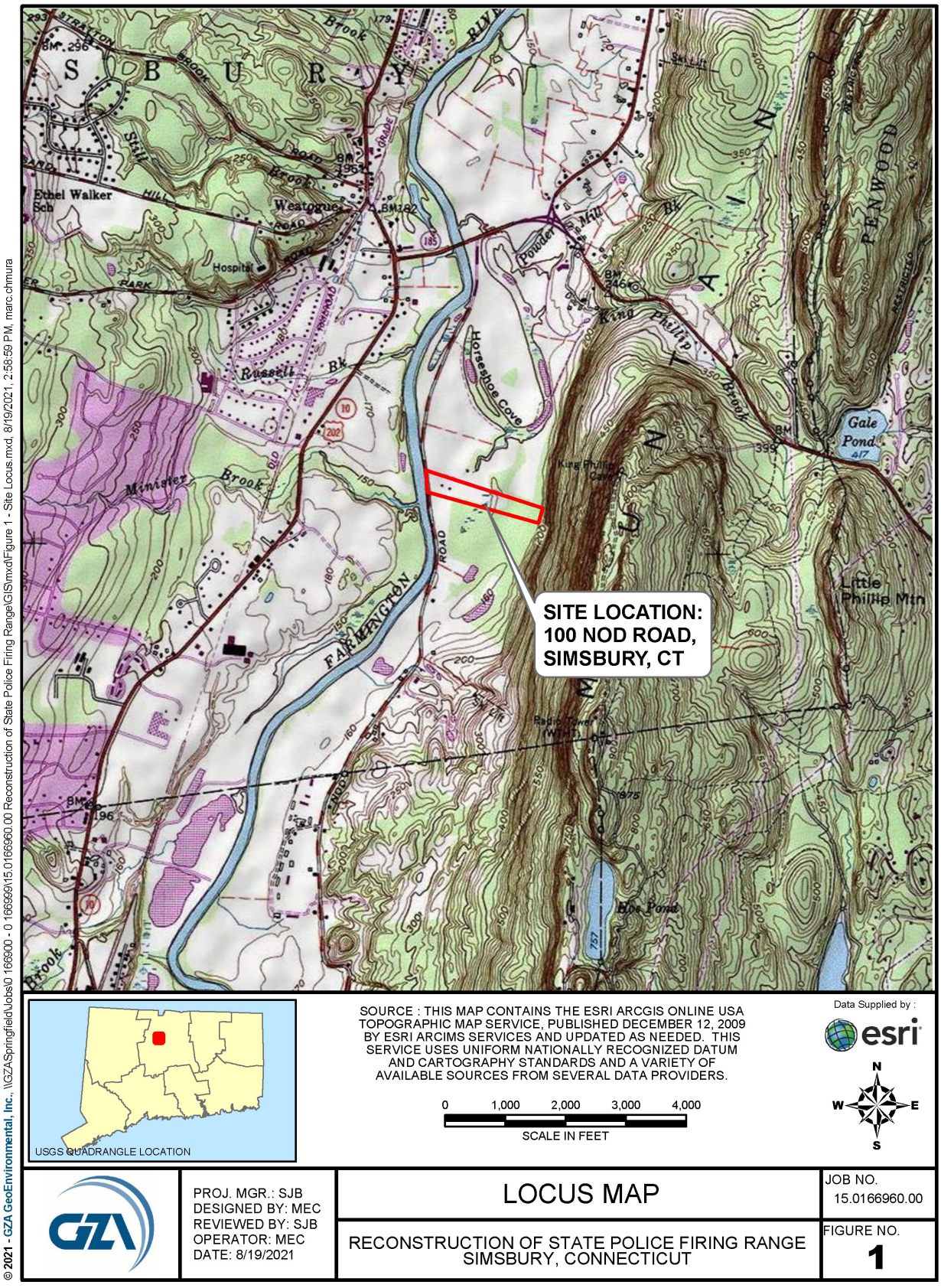

Figure 2-1: Locus Map

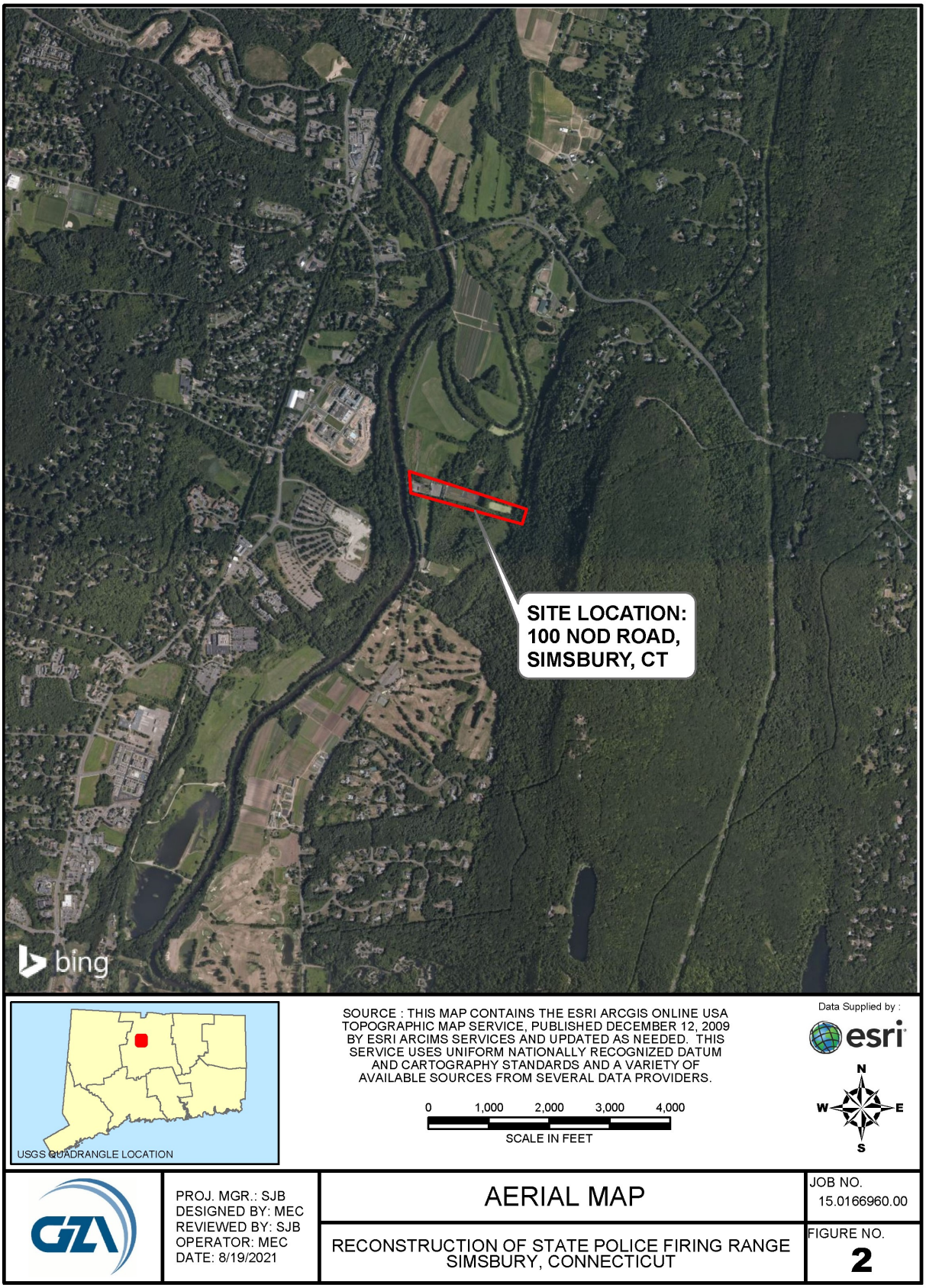

Figure 2-2: Aerial Map

2.2 SITE DESCRIPTION AND BUILDING INFORMATION

The following was developed based on GZA's review of information provided by the Client, publicly-available information, GZA's site reconnaissance, and interviews with people knowledgeable about the Site and its operations. Photographs depicting the conditions observed during GZA's site reconnaissance and Maier Design Group's field work are presented in **Appendix B and C** respectively.

2.3 SITE LOCATION

The Site is located at 100 Nod Road in Simsbury, Connecticut (latitude 41°50'10.37" N and longitude 72°48'27.27" W) along Nod Road which is adjacent to the Farmington River to the west. The temporary training trailer nearest the western property boundary is approximately 130 feet from the road. The Range Tower located to the east of the two (2) temporary training trailers is approximately 340 feet from the road. See the site Locus Plan on the next page, Figure 2-1. Figure 2-2, which follows, is an aerial view of the Site .

2.4 SITE AND BUILDING INFORMATION

Building data for 100 Nod Road, including building floor elevations and system locations, were developed based on plans provided by DAS and spot elevations and measurements made by Maier and GZA during site reconnaissance visits. Exterior site grades were based on:

- 2016 LiDAR published by the Connecticut Department of Energy and Environmental Protection (DEEP) and obtained from the Connecticut Environmental Conditions Online;
- 2008 Topographic Plan prepared by Dewberry and Goodkind, Inc.; and
- Spot elevations and measurements made by GZA during the site reconnaissance using a Leica differential GPS survey instrument.

Site elevations of openings, entrances, and critical systems are based on the survey spot elevations conducted by GZA in July 2021. All elevations in this report refer to the North American Vertical Datum 1988 (NAVD88), unless noted otherwise.

2.5 SITE DESCRIPTION

The 12.5-acre site abuts Nod Road to the west which is adjacent to the Farmington River. The length of the property along the southern boundary is approximately 1927 feet and 1992 feet along the northern boundary. The width of the property on the eastern boundary is 289.5 feet and 299.1 along the western boundary. The property is in a low-lying area with developed areas

ranging in elevation from approximately 150 feet to 154 feet. The ground slopes upward to the west to about Elevation 157 feet along Nod Road on the northwestern part of the Site and 156 feet on the southwestern portion of the Site. The paved parking area east of the entrance from Nod Road where the two training trailers are located is at approximately elevation 153 feet. The area to the north of the parking area is largely grassed areas. There is a continuous concrete wall that extends from the northwestern portion of the Site into a berm at the western portion of the pistol firing range near the portlets. The pistol firing range to east of the Range Tower includes largely paved areas at an elevation of 150 feet with a shooting deck at elevation 154 feet. South and slightly east of the Range Tower is a pump at elevation 150 feet that is the primary mechanism for draining the pistol range area during flood events. There is berm on the southern portion of the Site that extends from the road to the east and into a concrete wall near the pump. The concrete wall then extends to the east into the pistol range deck area.

An earthen berm that rises to about 160 feet connects the pistol range and rifle firing range to the east. The area east of the rifle range deck largely consists of wetlands and gravel areas at an elevation of 150 feet. On the eastern portion of the rifle range the land slopes steeply up to about 170 feet forming an approximately 25-foot-high berm that serves as a backstop for rifle training. The berm slopes down to the east to about an elevation of 150 feet. More wetlands and wooded areas exist to the east of the 25-foot-high berm. The ground slopes up to over 170 feet on the eastern boundary of the property. **Appendix D** presents the Existing Conditions Plan that includes additional Site details including the results of the wetlands delineation performed by GZA.

2.6 BUILDING AND STRUCTURE DESCRIPTIONS

The Site includes one permanent structure and two temporary structures. The permanent structure is the 2-story Range House which is located east of the paved parking lot approximately 340 feet from Nod Road. This building has a gross floor area of 2,912 square feet. The first floor includes two separate building areas with one building area to the north and the other to the south connected by breezeway between both areas. Both 1st floor building areas have stairways connecting to the 2nd floor because there are also two separate unconnected spaces on the 2nd floor.

The total gross area of the 1st floor of the Range house is 1,632 square feet. The first-floor elevation (FFE) of the building space located to the north is 150.42 and the second-floor elevation (SFE) is 161.71 feet.

The total gross area of the 2nd floor of the Range House is 1,280 square feet. The FFE of the building space located to the south is 150.72 and the SFE is 159.27 feet. There is a restroom on the 1st floor of the building area to the south.

The two temporary structures are trailers located in the paved parking area approximately 130 and 142 feet, respectively, east of Nod Road. Neither trailer has a restroom. Both trailers are 715 square feet each with two elevated entrances located on the northwestern side of each structure. **Appendix D** includes floor plans for each of the three (3) buildings.

The Site also has two Conex boxes located directly north of the Range House and three portlets located north and east of the Range House. The total gross area of the two Conex boxes is 312 square feet. The total gross area of the three portlets is 108 square feet.

The total gross area of all building space, minus the Conex boxes and portlets, is 4,342 square feet. With these additional features the total gross area is 4,762 square feet.

Note that the original training building was demolished in 2013 due to damages caused by repetitive flooding from numerous flooding events dating back to 1984.

2.7 BUILDING USES

The Range House building is currently occupied by the Connecticut State Police (CSP). The building used by the CSP training staff for training purposes. Building uses on the first floor of the building to the north include:

- General storage (716 sf)
- Weapons storage (263 sf)
- Ammunition storage (255 sf)
- Weapons vault (53 sf)

Building uses on the first floor of the building to the south include:

- Restroom (101 sf)
- General storage (244 sf)
- Ammunition storage (255 sf)

The 2nd floor of the Range House also includes two separate spaces that are not interconnected. Building uses on the 2nd floor of the building to the north include:

- Tool Shop (500 sf)

Building uses on the 2nd floor of the building to the south include:

- Offices (155 sf)
- Offices (265 sf)
- Work Area (165 sf)
- Observation (100 sf)

The Observation area on the 2nd floor serves as a Range Tower. This area provides line of sight capabilities to assist the CSP training staff during pistol range trainings. **Appendix D** includes the floor plans that include the location and square footage of the building uses outlined above for the Range House.

Both trailers are used as training rooms for trainings conducted by the CSP training staff. Each trailer can accommodate approximately 15 to 20 trainees at a time. The tables located in the rear of the trailers are also occasionally used for the maintenance and cleaning of firearms for training purposes.

These facilities typically operate Monday through Friday from 7 am to 10:30 pm.

2.8 UTILITIES

Major utilities and systems were identified to the GZA Team by building personnel during the site reconnaissance and follow-up correspondence.

2.8.1 Electrical

Electrical services to the site are provided via an aboveground route from Nod Road to the Range House Building from a temporary mounted panel utility pole on the southwest side of the 50-Yard near the sump pump to the building. The Range House Building has an electrical panel located in the lower-level bathroom where the electrical components enter the building. The two Training trailers also appear to be wired overhead from a temporary mounted panel utility pole.

2.8.2 Water

Water is provided by a private well located in the grassed area between the training trailers and Range House Building at approximately 152 feet NAVD88. Based on correspondence with the Town of Simsbury on October 6, 2021, the Town confirmed that it has no record of a permit for the well on site because State land does not fall under the jurisdiction of the Town. No other details on the well were available at the time of this report.

Based on information provided by the Town of Simsbury's Project Engineer on August 19, 2021, there are no signs of public water mains on Nod Road and public water is not available for this Site.

2.8.3 Fire Suppressant Water

A wet and/or dry fire suppressant system does not exist in the Range House Building and/or the two temporary training trailers. No other details on the fire suppressant water were available at the time of this report.

2.8.4 Sanitary Sewer

The entrance to the septic tank is located south of the Range House Building and north of the wood platform located on the 50 Yard Firing Range sidewall (see the Existing Conditions Site Plan in **Appendix C**). The septic tank penetration elevation was not determined during the site reconnaissance. Based on correspondence with the Town of Simsbury on October 6, 2021, the Town confirmed that it has no record of a permit for the septic tank on site because State land does not fall under the jurisdiction of the Town. No other details on the septic tank were available at the time of this report.

Based on information provided by the Town of Simsbury's Project Engineer on August 19, 2021, there are no signs of sanitary sewer on Nod Road. Therefore, public sanitary sewer service is not available for this Site.

2.8.5 Communications

This Site is supported by voice and data routing for telecommunication purposes; however, the existing DSL connection is often slow. Also, the site currently has black and white cameras tied to hard drives on site; however, the scope of these cameras is limited to a few select areas of the Site. No other details on the communications for the Site were available at the time of this report.

2.8.6 Heating, Ventilation, and Air Conditioning (HVAC) Systems

The Range Office Building has wall mounted AC Units and there appear to be electric panels that provides heating to the building. The Training trailers have heating/cooling units on the tow side of each trailer. No other details on the HVAC Systems were available at the time of this report.

2.9 PISTOL AND RIFLE FIRING RANGE BERMS

The Connecticut State Police Firearms Training Facility's two existing backstops at the Site include the 50 Yard Pistol Range Backstop earthen berm (50 Yard Range Backstop) and the 200 Yard Rifle Range backstop earthen berm (200 Yard Range Backstop).

2.9.1 50 Yard Range Backstop and Sidewalls

The 50 Yard Range Backstop is located on the eastern end of the Pistol Deck. The backdrop is approximately 195 feet wide and based on the DAS 2018 Presentation, can accommodate up to 42 lanes. The backstop at the 50 Yard Range is in very poor condition. The composition of the 50 Yard Range backstop berm surface and subsurface appears to be sand, but this is not conclusively known, and is heavily rutted from use and possibly some weathering. The last mining of the berm is unknown. The 50 Yard Range backstop berm is covered by a wooden overhang constructed of dimensional lumber with no acoustic or ballistic treatments. The overhang, like the berm, is heavily deteriorated from use and the elements. It is our opinion that the overhang offers no ballistic containment and provides minimal protection from elements for the berm.

The Connecticut State Police Firearms Training facility 50 Yard Range Sidewalls appear to consist of earth but the composition of the surface and sub-surface materials is unknown. The height of the sidewalls appears to be 6-10' high. The ballistic protection characteristics of the sidewalls are unknown.

2.9.2 200 Yard Range Canopy Backstop

The 200 Yard Range canopy consists of a concrete deck, steel posts, wooden joists, and an angled plywood roof. The roof is in poor conditions due to weathering with many penetrations noted during our observation. The wooden structural elements are in fair to poor condition as are the steel posts. It is recommended that this structure be replaced in full. The earthen berm that separates this structure from the pistol backstop appears to be stable but heavily

vegetated and difficult to maintain. Concrete stairs along this berm are overgrown with vegetation.

Although outside the scope of work for this project, a general evaluation of the 200 Yard Range Backstop was conducted. The 200 Yard Range Backstop is located on the eastern end of the Rifle Range. As shown in photo 19 in **Appendix B**, the 200 Yard Range Backstop consists of a front berm and higher secondary berm. It appears the front berm composition is sand, and the secondary berm is earth but both the surface and subsurface compositions are not conclusively known. The height of the first berm appears to be seven to eight feet, and the secondary berm appears to be approximately 20' high. Both berms are deteriorated from use and weathering. The last mining of these berms is unknown, and it appears the secondary berm would be extremely difficult to mine due to it being heavily covered in roots and vegetation. The berms do not extend across the entire width of the range. These berms likely only provide ballistic protection directly behind the range and do not prevent skips. Additionally, there appears to be no drainage of the berms or filtering of water coming off these berms.

The Connecticut State Police Firearms Training facility 200 Yard Range Sidewalls appear to be minimal or non-existent.

2.10 WETLANDS DELINEATION

GZA completed a wetland delineation of the Site including the placement of sequentially-labeled surveyors flagging along the wetland boundary. Our delineation methodology is consistent with definitions of wetlands described in the Connecticut Inland Wetlands and Watercourses Act (sections 22a-36 to 22a-45). We also reviewed the wetlands in a manner that is consistent with the 2012 *Regional Supplement to the 1987 Army Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)*.

The results of the wetlands delineation are presented on the Existing Conditions Map presented in **Appendix D**. The State of Connecticut definitions of inland wetlands and watercourses are presented below:

Inland Wetlands "means land, including submerged land, not regulated pursuant to sections 22a-28 to 22a-35, inclusive, which consists of any of the soil types designated as poorly drained,

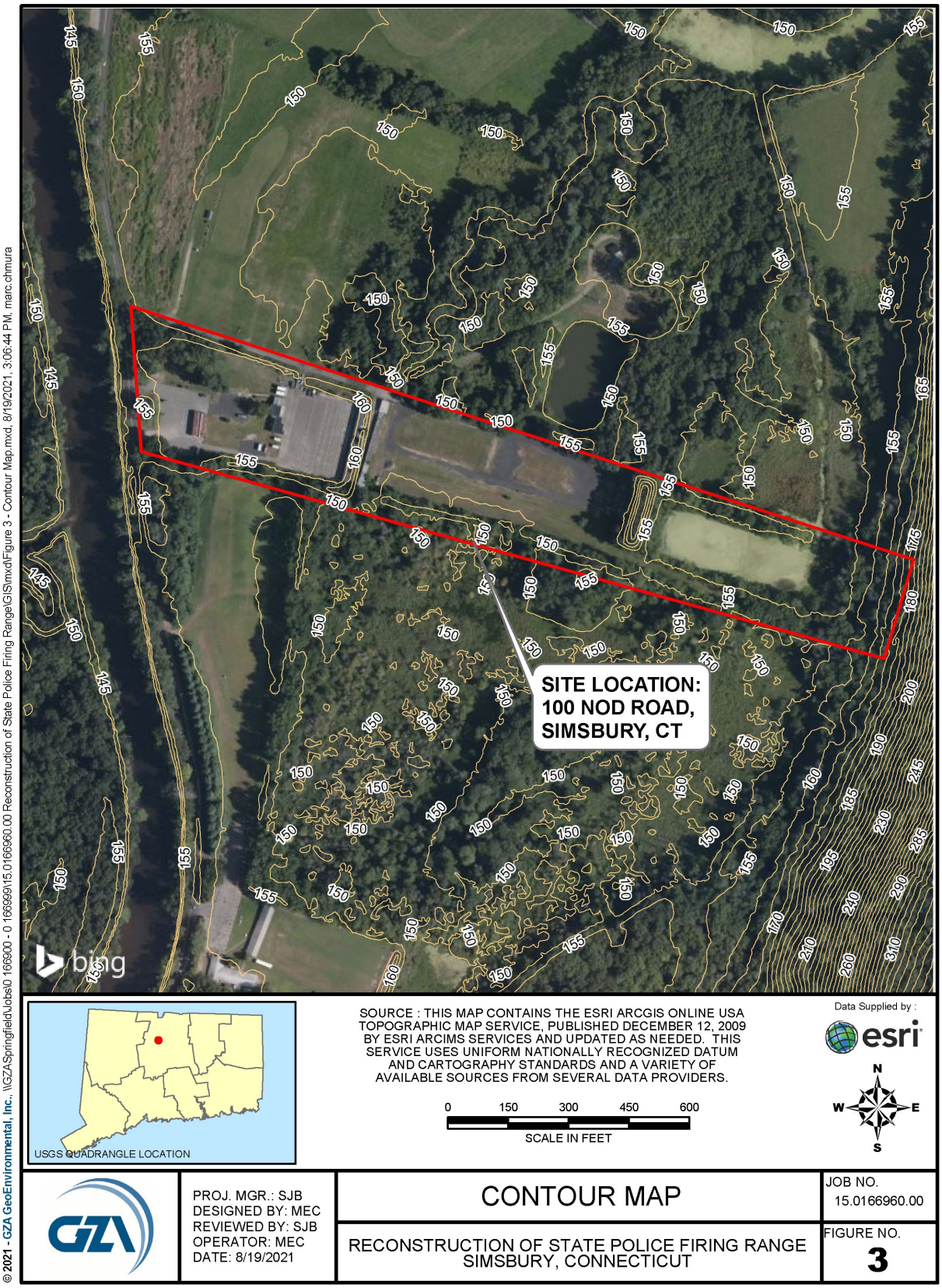

Figure 2-3: Contour Map

very poorly drained, alluvial, and floodplain by the National Cooperative Soils Survey, as may be amended from time to time, of the Natural Resources Conservation Service (NRCS) of the United States Department of Agriculture".

Watercourses "means rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private which are contained within, flow through or border upon this state or any portion thereof, not regulated pursuant to sections 22a-28 to 22a-35, inclusive. Intermittent watercourses shall be delineated by a defined permanent channel and bank and the occurrence of two or more of the following characteristics: (A) Evidence of scour or deposits of recent alluvium or detritus, (B) the presence of standing or flowing water for a duration longer than a particular storm incident, and (C) the presence of hydrophytic vegetation".

The federal definition of wetland and watercourses in similar to that of the State, the predominant difference being that alluvial and floodplain soils are not regulated. Furthermore, federal wetlands need to have satisfy three parameters – soils, hydrology, and vegetation to qualify as federal wetlands under Section 404 of the Clean Water Act.

At this Site there are State-regulated wetlands and Federally-regulated wetlands as described below and as shown on the Existing Conditions Map in **Appendix D**.

Following the completion of our review of wetlands immediately adjacent to or within 100 feet of the Site we observed several wetland areas including:

Wetland #1: This area is located between Nod Road to the west and the Pistol Firing Range to the east and consists of trailers, gravel parking areas and grassed areas. The undeveloped portions of this area contain s alluvial/floodplain soils that qualify as State-regulated inland wetland but not federal wetland. The developed portions of this area (paving, gravel, buildings) do not contain active alluvial/floodplain soils.

Wetland #2: This area is located east of the Rifle Firing Range and west of the 25-foot-high berm. This area is all alluvial soils and is therefore a State-regulated Inland Wetland except for those areas that contain gravel. Located north of this area and immediately off the property is an area that also undergoes flooding conditions, and the soil characteristics indicate this area would qualify as hydric soil area resulting in a designation of Inland Wetland.

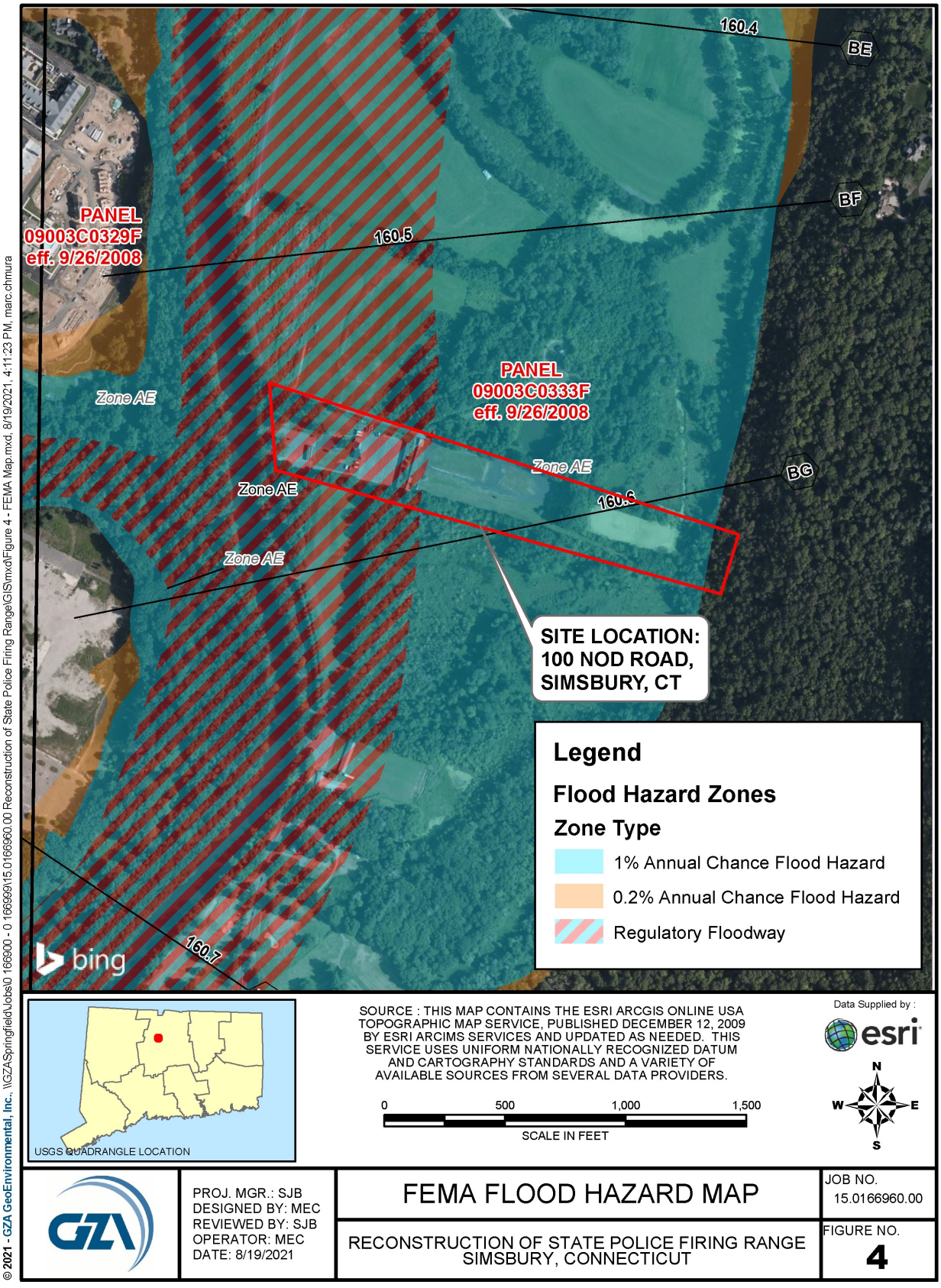

Figure 2-4: FEMA Flood Hazard Map

Wetlands #3: This area is located east of the 25-foot-high berm and along the southern property boundary. This area also contains floodplain soil and open water areas that would qualify as a Watercourse. Along the southern property boundary an open channel approximately 20 feet wide was observed and would qualify as a Watercourse.

2.11 ADJOINING PROPERTIES AND LAND USE

The Site is adjacent to commercial land owned by The Aquarion Water Company to the north; residential land owned by Robert E. Patricelli to the north; and residential land owned by Metacon Gun Club, Inc. to the east and south. The Site does not directly abut the Farmington River.

2.12 EXTERNAL FLOOD HAZARDS

Potential external flood hazards include: 1) flooding of the Farmington River during low probability events (<1% annual chance flood), resulting in flooding of the Site and vicinity; and 2) local intense precipitation exceeding the capacity of the limited Site stormwater infrastructure.

2.12.1 HYDROLOGIC SETTING

The description of the general physical and hydrologic setting of the Site is based on GZA's review of topographic data (U.S. Geologic Survey (USGS) topography maps), and other information obtained from the State of Connecticut Environmental Conditions Online (ECO) (see CT ECO 2016 Imagery & Elevation (uconn.edu)).

The Site and vicinity are located within the Town of Simsbury. Interpolated ground surface elevation contours for the vicinity of the Site are presented in Figure 2-3, based on 2016 Statewide LiDAR data collected by the State of Connecticut's contractor, Sanborn Map Company. The LiDAR dataset references the NAVD88 vertical datum in feet and has a horizontal resolution of 1 meter (per metadata provided by ECO).

The Site is located within the watershed of the Farmington River and is approximately 40 feet east of the west bank of the Farmington River. The exterior site grades in the vicinity of the Site (see Figure 2-3 and the Existing Conditions Map in **Appendix D**) range from about Elevation 150 feet NAVD88 to the west of the Pistol Range in the paved areas to about Elevation 156 feet NAVD88 at the western edge of the Site along Nod Road (at the western Site property boundary). As noted in the 2018 Presentation, the Site experienced damages caused by flooding from the Farmington River on numerous occasions including flood events in 1984, 2006,

2007, 2008, 2010, 2011. Damages from the flooding events resulted in the demolition of the original classroom in 2013. Flooding from many of these events resulted in floodwaters at elevations up to and over the doorways at the Range House buildings.

The Site does not have on-site stormwater infrastructure (catch basins, manholes and piping) to assist in draining the Site during heavy rainfall events. Rainfall runoff in the vicinity of the three buildings is collected within the low-lying areas west of the Pistol Range. A single pump located on the southwestern portion of the Pistol Firing Range collects and discharges water off site onto the adjacent property to the south. A culvert along the northwestern berm connects the Site to the adjoining property to the north; however, according to Anthony Sciarretto, the Range Supervisor, no flow has been observed in this pipe (see Photo 20 in **Appendix B**).

2.12.2 FEMA FLOOD INSURANCE MAP AND STUDY

The Federal Emergency Management Agency (FEMA) is responsible for defining the flood hazard for purposes of the National Flood Insurance Program (NFIP), including Flood Insurance Studies (FIS) and Flood Insurance Rate Maps (FIRMs). The following FEMA information pertinent to the Site was reviewed by GZA.

- FEMA Flood Insurance Study, Hartford County (all jurisdictions), Connecticut, Eleven Volumes, # 09003CV001C, Effective Date May 16, 2017.

- The effective FEMA Flood Insurance Rate Map, Hartford County (all jurisdictions), Connecticut, Panel 0654D (654 of 701), Map Number Panel # 09003C0333F, Effective Date September 26, 2008.

The effective (current) FEMA FIS incorporates analyses presented in previous FEMA flood studies. The hydrologic and hydraulic analysis for the Farmington River in the FIS report was completed in April 1976.

2.12.3 FEMA FLOOD HAZARD ZONES

The Site is located within FEMA Zone AE due to its presence within the 1% annual chance (100-year recurrence interval) flood (see Figure 2-4). In addition, the three buildings, Pistol Range and Rifle Range Deck are within the regulatory floodway. The floodway, as defined by FEMA in the FIS Report, is the channel of a stream plus any adjacent floodplain areas that must be kept

free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

The nearest riverine transect to the Site is transect BG. The Farmington River peak flood for the 100-year recurrence interval flood (1% annual chance flood) is shown on the FEMA FIRM (see Figure 2-4). Flood elevations at the Site are summarized on Figure 2-5. The FEMA river flood elevations in the vicinity of the Site range from Elevation 155.9 feet NAVD (10-year recurrence interval flood) flood to 165.2 feet NAVD88 (500-year recurrence interval flood). It is GZA's understanding that FEMA is updating the flood insurance rate maps (FIRMs) and flood insurance study (FIS) in the Farmington River watershed region. Based on a review of a draft FIRM panel number 0333 provided by State NFIP coordinator, the flood elevation for the 100-year recurrence interval flood will increase from 160.6 feet NAVD88 to 161.3 feet NAVD88. However, this panel does not include updated flood elevations for the 10-year, 50-year or 500-year recurrence interval floods. Elevations for those recurrence interval floods are historically presented in the preliminary FIS that was not available with the currently stated timeframe of this phase of the project. GZA is coordinating with the NFIP coordinator at DEEP to collect the preliminary FIS and will include any changes in elevations that would result in a change in the design flood elevations during the next phase of the project.

Return Interval	Peak Flood Elevation (NAVD88 feet)
10-year	155.9
50-year	158.9
100-year	160.6
500-year	165.2

Figure 2-5: Existing FEMA Farmington River Peak Elevations Near the Site

2.12.4 STRUCTURES IN THE FLOODPLAIN

The buildings and structures outlined in Section 2.6 are located within the FEMA special flood hazard area (SFHA). Figure 2-6 provides an overview of the total volume (cubic feet) of the buildings with first floor elevations below the 10-year, 50-year, 100-year, and 500-year recurrence interval floods. This total counts as existing displacement of flood storage for the Site. Appendix E includes tables for each of the structures including: the Range Office, two Training Trailers, two Connex Boxes and three Portlets.

Return Interval	Displacement Volume (cubic feet)
10-year	16,117.8
50-year	25,998.4
100-year	31,641.4
500-year	44,130.3

Figure 2-6: Total Building Displacement of Flood Storage at the Site

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SECTION 3 - STORM WATER

3.0 SITE/CIVIL DESIGN, VEHICULAR CIRCULATION

Site geometric design, grading/earthwork, stormwater management and utility design will be performed in accordance with industry-standard practice and applicate State regulations and guidelines including but not limited to CT DOT Drainage Manual and CT DEEP Stormwater Quality Manual. To the extent practicable, the design will also be done in accordance with the Town of Simsbury Planning and Zoning Regulations. Site design will include layout of driveways/access aisles, vehicular parking and staging areas, bus parking, loading zones, sidewalks and other pertinent site features. Layout of vehicular circulation paths will include provisions for access by emergency response vehicles, including fire apparatus and ambulance.

Accessible routes will be provided in general accordance with the requirements of the Americans with Disabilities Act (ADA).

Electrical and communications utilities will be designed in accordance with the requirements of the applicable utility company standards.

Potable water service will be provided from a new well installed on site in accordance with the State of Connecticut Department of Health (CTDPH) regulations. Provisions for fire water service will be provided as appropriate in accordance with the State of Connecticut Building Code.

Sanitary sewerage service will include provisions for a "tight tank" on site in accordance with the CTDPH regulations. Routine pumping of sewerage from the tank will be required.

Stormwater management facilities will be designed as described below.

3.1 STORMWATER, EROSION AND SEDIMENT CONTROL

There is no existing stormwater collection and conveyance system at the site. The existing topography separates the site into two general areas with regards to stormwater management. There is no direct off-site discharge of stormwater from the western portion of the site, which includes the existing paved parking, training buildings/trailer, storage containers and the "pistol deck". The western portion of the site is effectively surrounded by an earthen berm forming a "bowl" around the developed area. Ground surface elevations within the central portion of the site are generally several feet lower than the top of the berm to the north, south and east, and lower than Nod Road to the west.

Runoff from existing paved areas in the western portion of the site sheet flows to adjacent

landscaped (lawn) areas and is managed by infiltration. Similarly, runoff from roofs and other structures in this area is discharged onto the ground and sheet flows to adjacent landscaped areas prior to infiltration. There is no offsite discharge of stormwater from the western portion of the site.

Runoff from the eastern portion of the site (rifle range) flows by natural conveyance paths, generally consisting of sheet flow and shallow concentrated flow, to adjacent wetlands/ waterbodies to the north, south and east.

For the redevelopment, the proposed stormwater management strategy will be substantially similar to existing conditions. In the western portion of the site, runoff from pavements will be managed by sheet flow to adjacent landscaped areas (lawns, vegetated swales) and allowed to infiltrate. Roof runoff from the new training building will be routed to the landscaped areas and allowed to infiltrate. No major change to the runoff characteristics or drainage patterns is proposed for the eastern portion of the site.

Design of the new stormwater management system design will be in accordance with the Connecticut Stormwater Quality Manual, Connecticut DOT Drainage Manual and the Connecticut General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities. Note that any runoff that does not drain directly to the Farmington River, will maintain peak-flows at existing rates or below.

Erosion and sediment controls will be required to be installed, inspected and maintained for the duration of any ground disturbing activities. Additionally, a Stormwater Pollution Control Plan (SWPCP) will be required and followed during construction of the project. The SWPCP will be prepared in accordance with the CGP and consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended (the Guidelines), and the 2004 Connecticut Stormwater Quality Manual.

Because the project is being undertaken by a governmental agency, the SWPCP must be reviewed by a "Qualified Soil Erosion and Sediment Control Professional" or "Qualified Professional Engineer" (Qualified Professional), who may be employed by the same firm responsible for preparation of the SWPCP. The Qualified Professional must sign a certification statement as part of the registration.

3.2 PRE-DESIGN SITE PLANS (OPTIONS 1, 2 AND 3)

Three options for location and orientation of the proposed Building were considered as part of the pre-design study. For each of the three options, Option 1, Option 2 and Option 3, conceptual site

plans were prepared showing the general location and layout of the building, vehicular parking and circulation, and stormwater management areas.

For all three options, the general program, including the number of vehicle parking spaces and bus staging spaces required, site access (driveway/curb cut location), and stormwater management areas are similar, with differences predicated on the location and/or orientation of the proposed Building. The site layout for Options 1, 2, and 3 is shown on the figures and as described below.

3.2.1 Pre-Design Site Plan Option 1

Under Option 1, the proposed Building will be located within the central portion of the site, and oriented with the long dimension generally east to west. Access will be maintained from the existing permitted curb cut on Nod Road (northern existing driveway). Parking will be provided on the north, south and west sides of the building and vehicular access is provided to the pistol deck on the north and south sides of the building. Stormwater management areas would be provided on the western portion of the site, to the north and south of the driveway.

Advantages

Direct access for emergency response vehicles is provided from Nod Road to the Pistol Deck area via the northern drive aisle.

All parking is in close proximity to the proposed Building and the Pistol Deck area.

Open space (landscaped area) is maintained around the majority of the paved area, providing for enhanced stormwater management (shorter flow-paths from paved areas to adjacent vegetated management areas).

Disadvantages

Turning movements for large vehicles may require operation within the Pistol Deck area.

Access to the loading zone for the proposed Building for large delivery vehicles (e.g., tractor-trailers) will require traversing through the Pistol Deck area.

Busses transporting personnel to the site may need to use the Pistol Deck area as a turn-around or will be forced to make multi-point turning maneuvers within the parking area.

Bus staging along the north side of the proposed Building may interfere with pedestrian routes from the northern vehicle parking areas.

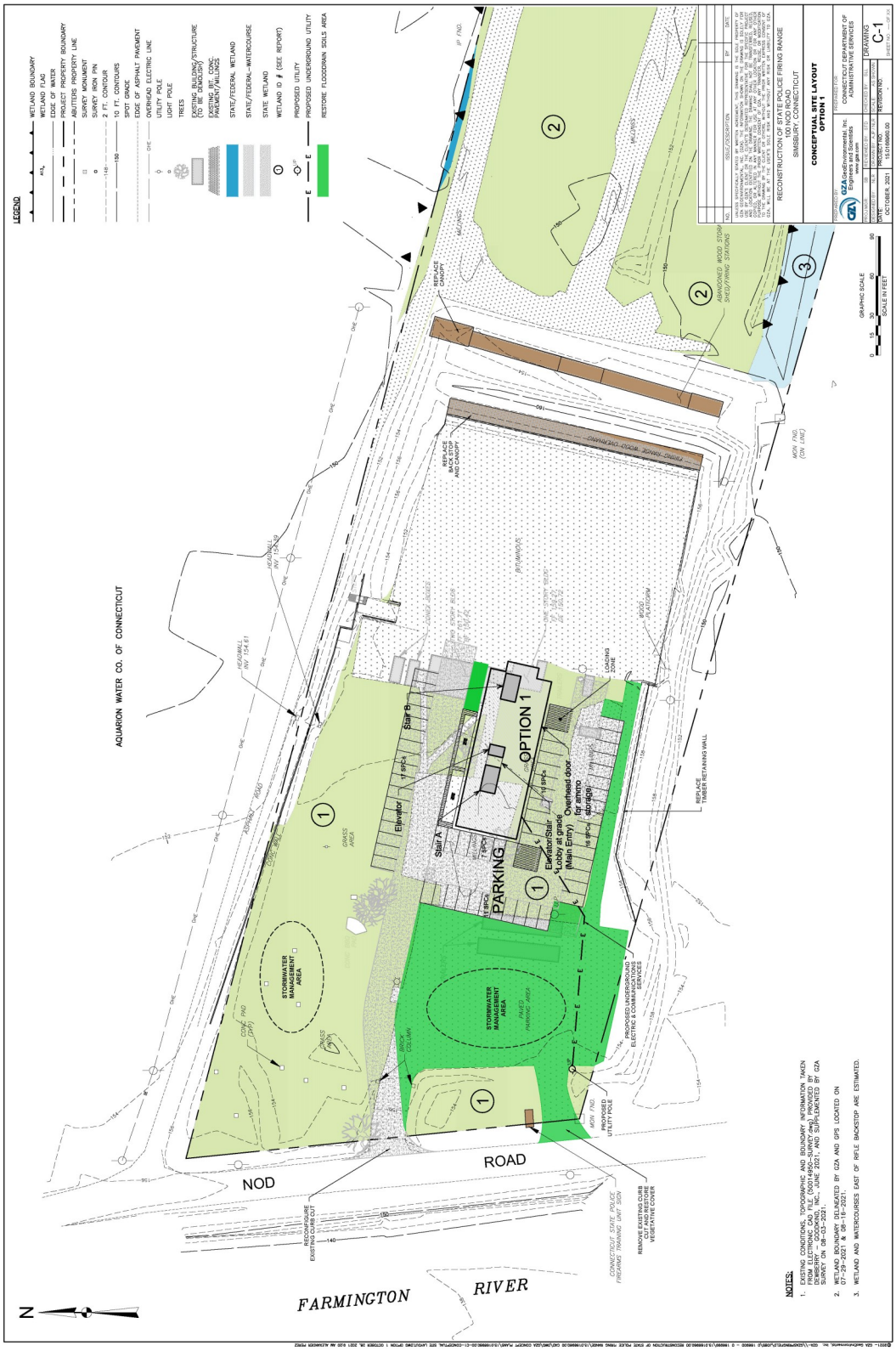

Figure 3-1: Pre-Design Site Plan Option 1

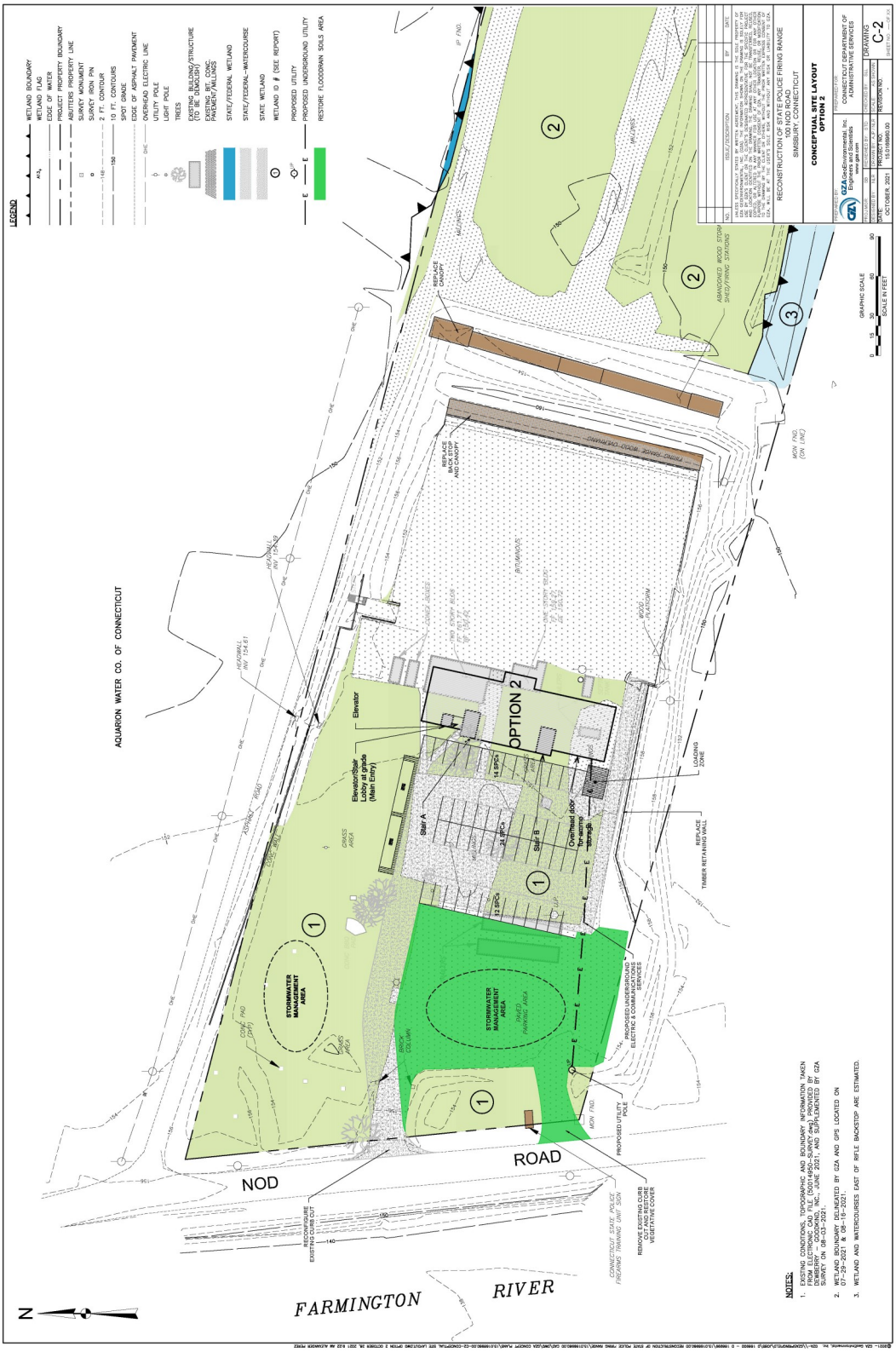

Figure 3-2: Pre-Design Site Plan Option 2

Providing vehicular access to the north and south sides of the proposed Building requires increased impervious surface.

3.2.2 Pre-Design Site Plan Option 2

Under Option 2, the proposed Building will be located within the central portion of the site, similar to Option 1, but oriented with the long dimension generally north to south. Access will be maintained from the existing permitted curb cut on Nod Road (northern existing driveway). Parking will be provided on the west side of the building and vehicular access is provided to the pistol deck on the south side of the building. Stormwater management areas are proposed on the western portion of the site, to the north and south of the driveway.

Advantages

Bus staging location does not interfere with pedestrian walking paths from vehicle parking area.

All parking is in close proximity to the proposed Building.

Disadvantages

Indirect access for emergency response vehicles is provided from Nod Road to the Pistol Deck area via the southern drive aisle.

Access to Pistol Deck area is narrow, requires alternating one-way traffic.

Parking area is separated from the Pistol Deck area by the proposed Building.

Turning movements for large vehicles requires operation in the parking area. Delivery trucks and busses may be required to make multi-point turning movements to access the loading/ passenger discharge areas.

Longer flow paths from the new BUILDING and pavements to stormwater management areas may result in increased potential for ponding during rainfall events.

3.2.3 Pre-Design Site Plan Option 3

Under Option 3, the proposed Building will be located in the northwestern corner of the site and oriented with the long dimension generally east to west. A second, smaller building (Observation Tower) is in the central portion of the site, adjacent to the Pistol Deck area. Access is maintained from the existing permitted curb cut on Nod Road (northern existing driveway). Parking is provided to the southeast of the proposed Building and vehicular access is

Figure 3-3: Pre-Design Site Plan Option 3

provided to the pistol deck via the drive aisle extending between the proposed Building and the parking area. Stormwater management areas are proposed in the southwest portion of the site, and the east of the proposed Building, between the building and the Pistol Deck area.

Advantages

Direct access for emergency response vehicles is provided from Nod Road to the Pistol Deck area via the northern drive aisle.

Bus staging location does not interfere with pedestrian walking paths from vehicle parking area.

Parking is located in close proximity to the Pistol Deck.

Disadvantages

The proposed Building is located almost entirely within an area of previously undisturbed

existing vegetated floodplain soils.

Removal of existing mature trees in the northwestern portion of the site will be required for siting the proposed Building.

Parking area is located father from the proposed Building compared to Options 1 and 2. No direct access from building entrances to parking area.

Turning movements for large vehicles requires operation in the parking area or Pistol Deck. Delivery trucks and busses may be required to make multi-point turning movements to access the loading/passenger discharge areas.

Delivery vehicles may block the entrance drive when off loading ammunition or other supplies.

3.3 WETLANDS

The wetlands on the western end of the Site consist of floodplain soils that are regulated by the State of Connecticut Department of Energy & Environmental Protection (DEEP). These wetlands, however, do not qualify as federally-regulated wetlands; therefore, the U.S. Army Corps of Engineers does not have jurisdiction.

Estimated impacts to floodplain soils and associated restoration are presented in the table below

and are based on the preliminary conceptual design alternatives (Options 1, 2 and 3), as depicted above. Impacts should be considered approximate and are provided for general information and preliminary numbers comparison of the three conceptual design options only. Actual impacts should be expected to vary, and may be higher or lower, based on the design option selected, changes to building shape/footprint, layout of site design elements, grading, operational requirements, and other factors not fully determined at this stage of design.

Scenario	Floodplain Soils		
	New Disturbed Area (sf)	Restored Area (sf)	Net Change (sf)
Option 1	20,250	22,350	+2,100
Option 2	19,450	19,500	+50
Option 3	22,700	21,950	-750

Figure 3-4: Wetlands Impact

3.4 FORM 3030 CHECKLIST FOR PERMITS, CERTIFCATIONS AND APPROVALS

Appendix G includes a completed Form 3030 Checklist Permits, Certifications, and Approvals. The following text includes supplemental supporting material for Appendix G in relation to the Phase 1 Site Assessment and CEPA Applicability.

Phase 1 Site Assessment

A Phase 1 ESA is not required because there is no transfer or land nor any requirement of such from a lender. However, during the SD phase, we will perform a due diligence review to identify potential contaminant sources in the project area to inform what, if any, extraordinary soil or groundwater management measures would need to be employed during construction.

CEPA Applicability

According to the Generic Environmental Classification Document (ECD) for Connecticut State Agencies, dated March 2, 2021, the project is not a typical action that would either: 1) always require public scoping and preparation of an Environmental Impact Evaluation; or 2) require public scoping to determine whether an Environmental Impact Evaluation is required. Therefore, the Connecticut Environmental Policy Act (CEPA) would not apply to this project. However, in the CEPA Manual for State Agencies, dated February 25, 2020, it is stated that "Even if an agency ultimately determines that public scoping is not necessary, as a matter of public record OPM highly recommends that the agency internally document its decision and its justification". Therefore, during the SD Phase of the project, GZA will prepare an Environmental Review Checklist to document specific reasons why CEPA does not apply.

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SECTION 4 - RANGE IMPROVEMENTS

4.0 OVERVIEW

Many features of the existing Firing Range are in need of upgrade and or repair. The Design Team evaluated the site in the presence of our Firing Range Consultant and identified items that should be addressed as part of the Facility renovation. Additionally, of the course of our interviews and meetings with Firing Range Staff, we received requests for new features that do not currently exist onsite. The following section outlines the combined list of items, both existing and requested.

4.1 ROAD SIDE SECURITY FENCING

The Department of Emergency Services and Public Protection has requested that fencing and a vehicle gate be installed at the property entrance. The Site is currently accessed at the western property line via two curb cuts from Nod Road. The southernmost curb cut is deemed 'unofficial' and consists of sand and gravel. It is the result of years of vehicular traffic cutting across the vegetation at the road side. The northern curb cut is paved and acts as the official entrance to the Facility. Flanking the drive aisle at the Northern curb cut are two brick masonry pillars, each adorned with signage which reads 'State Property No Trespassing'. These two signs are the only deterrent to unauthorized access to the Site. We recommend the installation of a 6' high, tubular, black aluminum security fence at the property line with perpendicular fencing at the main entrance, terminating at a vehicle gate located at the existing brick pillars.

4.2 SIGNAGE

The existing road-side signage is in fair condition but is obscured by vegetation and trees when approaching the Site from the North on Nod Road. We recommend that the existing sign be removed, set into new trim and reinstalled along the property line in a location were it is easily visible to both directions of travel on Nod Road.

4.3 EXTERIOR LIGHTING

The current parking lot is illuminated by several antiquated 'cobra-head' street lights, mounted on wooden utility poles. This existing lighting is well past is life expectancy and both the fixtures and poles should be removed. New exterior, energy efficient LED site lighting with photocells should be installed at the perimeter of the new paved parking area. The new fixtures should be mounted on 12' to 16' tall aluminum poles, anchored to precast concrete bases set into the ground.

4.4 PISTOL DECK

The Pistol Deck is currently in useable condition and has recently had its moving target system over-hauled. However, the items listed below are either in need of repair or maintenance to ensure the continued function of the Facility.

Paving

The Pistol Deck's existing bituminous paving is in poor condition. The surface has cracked and in many locations the cracking has advanced to the point of 'alligatoring' (a condition where each individual piece of paving cracks into smaller and smaller pieces, creating an alligator skin like texture). Sections of paving in this condition are close to failure and should be removed. Additionally the existing paving has been trenched and patched several times, further weakening its integrity. This deterioration is most likely due to settling of the paving sub-base which is exacerbated by the Site's frequent Flooding. We initially recommend that the paving and existing sub-base be completely removed, that new compacted gravel substrate be installed and that new 3" thick minimum (a 1.5" thick binding course with a 1.5" thick top wearing course), bituminous paving be installed with new line striping in the same footprint of the existing paving and sub-base. This will not result in any additional impervious surface. We will evaluate in the next phase of the project whether utilizing pervious pavement techniques could decrease the impervious area on Site.

Figure 4-1: Pistol Deck Paving

Lighting

The Pistol Deck is currently is illuminated by several flood lights, mounted on wooden utility poles. This existing lighting is well past is life expectancy and both the fixtures and poles should be removed. New exterior, energy efficient, bullet resistant, LED flood lighting with controls should be installed at the perimeter of the Pistol Deck. The new fixtures should be mounted on 12' to 16' tall aluminum poles, anchored to precast concrete bases set into the ground. Lighting controls should be accessible from both the ground level of the Deck as well as the Observation Room of the building to allow for Instructors to control the shooting visibility during night training.

Backstop

The existing Pistol Deck backstop is a heavy timber structure located over the Pistol Deck's berm. The backstop is covered by wood joists sheathed with plywood and asphalt shingles. The timber supports are wrapped with rubber tires to minimize ricochets . Set directly in front of the backstop is an armored barrier protecting the Deck's moving target system. The backstop roof is in a state of severe deterioration due to ricocheting rounds which have punched holes in the sheathing and roof membrane. These perforations allow for water to flow onto the berm, eroding the slope and increasing the amount of effort and frequency of berm maintenance. We recommend that the existing backstop structure be removed and replaced with a new steel backstop with ballis-

Figure 4-2: Pistol Deck Backstop

tic baffles on the underside of the roof and ballistic rubber ricochet material at the vertical posts. The armored barrier and moving target system can remain in place as is.

North Berm Stairs

Access from the Pistol Deck to the Rifle Range is achieved via a pair of precast concrete stairs, one ascending the south side of the Pistol Deck side berm and the second descending to the unpaved access road on the north side of the Pistol Deck side berm. Both set of stairs lack proper code compliant handrails and the concrete is cracked with some portions missing. Additionally the tread depths and riser heights of the existing stairs do not meet current building code. Overall the two assemblies are dangerous in their current state. We recommend that these two stair runs be removed and replaced with new precast concrete stairs with code compliant, galvanized, steel tube handrail and guard assemblies on each side of the ascending and descending flights.

Canopy and Secondary Berm

During our programming interviews two new items were requested for the Pistol Deck; a new canopy covering the entire 50-Yard depth and overall length of the Deck and a secondary berm perpendicular to the Deck's backstop.

A long span canopy would allow for training in inclement weather and would reduce the need for snow removal from the Deck during winter, however, we believe that the cost of a long span canopy with ballistic resistance would be cost prohibitive under the project's current stated budget. It is also important to note that a canopy of this nature would have its roof structure at a height equal to the elevated roof height of the proposed building to avoid interference with sight lines from the Observation Room. This increased height requirement adds additional cost to the proposed canopy. That being said, a new canopy as a stand alone structure can be constructed as a separate project in the future, should DESPP wish to proceed with this item.

A secondary berm, perpendicular to the Deck's backstop berm was requested to separate the three southern-most firing lanes from the northern portion of the Pistol Deck. This berm would provide an isolated space where trainees who are experiencing difficulty with a drill or test could receive assistance from an instructor in a more private setting. We do not recommend implementation of this request for two specific reasons. Primarily, this berm would constitute a significant addition of displacement volume (three yards high by six yards wide at the base by 50 yards long) within the 100-Year floodplain. DEEP has requested that we lower the current displacement in the floodplain to the greatest extent possible and this berm would impact the volume reduc-

tion gained by raising the building structures significantly. Secondly, the size of this berm would remove training space from the Pistol deck due to its width (see above).

4.5 RIFLE RANGE

The Rifle Range portion of the site sits between the Pistol Deck to the west and the wetlands at the eastern boundary of the property. It is accessed by a unpaved road which runs along the North edge of the site. The rifle range is largely unmanicured wetlands with a gravel access road running west to east in the middle of the range. An existing canopy attached a small storage outbuilding runs north to south at the 200-yard mark. Both canopy and storage building are in a state of serious disrepair.

Tree Trimming

The trees located along the north edge of the Rifle Range are overgrown and unpruned, with their branches extending into the access road. We recommend that an arborist services be included in the Facility renovation to manage the foliage and remove any dead or dying trees from the range perimeter.

Figure 4-3: Rifle Range Access Road

Access Road Improvement

The unpaved access road and gravel road along the north property line are in rough shape. We recommend that the access road be regraded and paved with compacted gravel or stone dust. Additionally the gravel access lane running west to east through the center of the Rifle Range and designated wetlands is much wider than required. We recommend that this lane be narrowed, regraded and paved with compacted stone dust or gravel. The reduction of this access road in width would create additional flood storage if needed to compensate for flood displacement in other areas of the Site.

Canopy and Storage Building

The existing canopy at the 200-yard mark consists of concrete filled lally columns set on concrete foundations and supports a flat roof. The roof membrane has failed and the canopy structure is no longer safe for use. A small outbuilding punctuates the southern end of the canopy and is currently filled with detritus and debris. We recommend that both the existing canopy and storage building be removed and replaced with a new heavy timber wood canopy with asphalt shingles and fenced in storage enclosure for targets and training props.

Figure 4-4: Rifle Range Canopy

SECTION 5 - BUILDING PROGRAM SUMMARY

5.0 METHODOLGY

Maier Design Group performed site work at the Range on July 27th, and August 2nd, 2021. Utilizing photography, measuring tapes and laser measuring devices MDG catalogued and documented the existing permanent (range house) and semi-permanent (trailers, Connex boxes and portable toilets) buildings located on the property with the goal of determining existing building volume within the floodplain and the building program located within. In addition to empirical documentation, Maier Design interviewed the Firing Range Administrator, Sergeant Anthony Sciaretto, both in person and via telephone to gain an understanding the functionality of the current Range structures and to determine the programmatic elements desired in the proposed Pre-Design Options. The results of the aforementioned field work and interviews can be found in **Appendix D** as architectural plans and elevations and in Figure 5-1 below. The volumetric calculations are available for review in **Appendix F**.

5.1 EXISTING BUILDING PROGRAM

Figure 5-1 below lists the existing spaces documented during our field work and interviews. Following the table is a brief description of each space identified.

EXISTING BUILDING PROGRAM		
LOCATION	**EXISTING (SF)**	**NOTES:**
Ammunition Storage	255	
Armory	290	Includes tool and machine shop
Dining/Kitchenette	165	Armory bench located within kitchen
Classroom	715	
Observation	100	
Open Office	420	
Record Storage	290	
Restroom (Staff)	101	
Restroom (Trainees)	75	Portable toilets
Storage (Ground)	1995	Misc. storage in trailers, Connex boxes and buildings
Weapon Storage	263	See below
Weapon Vault	53	Incorporates existing weapon storage space
TOTAL (SF):	4722	

Figure 5-1: Existing Building Program

Ammunition Storage: The existing ammunition storage room is approximately 255 SF and contains assorted pistol, shotgun and rifle rounds. The ammunition is stored in boxes stacked on pallets and wood shelving. The exterior walls of the room are concrete masonry units and the space is separated from the Weapon Storage Room by a wood stud wall faced with plywood.

Armory: The existing armory is currently split between two spaces, a machine and tool shop where reloading is performed and an armorer's bench located in the kitchenette of the Range House. The two separate spaces occupy 290 SF within the building and should be combined to remove the work area from the food preparation and consumption areas.

Figure 5-2: Armory

Dining/Kitchenette: The existing kitchenette is located within a multipurpose room that also accommodates an armorer's bench, record storage and miscellaneous bulk storage of office supplies. The kitchen is comprised of a long counter with sink and upper/lower cabinets.

Classroom: The existing classroom is located within one of the two temporary trailers located on the site after the demolition of the instruction building in 2013. The proportions and size of the trailer space is not conducive to the a number of students and manner of instruction.

Observation: The observation space in the existing Range House is a small single occupant space located in the south east corner of the second story of the building.

Figure 5-3: Dining/Kitchenette

Figure 5-4: Observation Room

Open Office: The southern half of the second floor of the Range House primarily consists of open office space characterized by free standing metal desks intermixed with bookshelves, filing cabinets and office equipment. The existing office space inhabits approximately 420 SF.

Record Storage: The north western portion of the second floor of the Range House contains paper records required to be stored onsite. The current the DSL communication system in the Range House prohibits digitization and storage of these documents offsite. Proposed changes to the internet and telephone systems will provide a potential means of reducing record storage which current occupies 290 SF.

Figure 5-5: Open Office

Figure 5-6: Record Storage

Restroom (Staff): A 100 SF staff restroom is located on the ground level of the Range House, opening directly onto the Pistol Deck. The existing restroom contains plumbing for a single user and is not handicapped accessible. The staff restroom also contains the Range House electrical panel, hot water heater and mop sink.

Restroom (Trainees): Restroom facilities for visitors, officers and trainees are currently provided in the form of three portable toilets and a portable wash station set on the northwestern corner of the Pistol Deck.

Weapon Storage: The existing weapon storage room is approximately 263 SF and houses wooden racks containing shotguns and pistols. The exterior walls of the room are concrete masonry units and the space is separated from the Ammunition Storage Room by a wood stud wall faced with plywood.

Weapon Vault: The existing weapon vault is approximately 53 SF and contains the range's rifles and semi-automatic machine guns. All four walls of the room are concrete masonry units and the space is accessible from the weapon storage room via a reinforced metal door. Neither the door nor the concrete block walls appear to be built to any recognizable secure vault standard.

Figure 5-7: Weapon Vault

5.2 PROPOSED BUILDING PROGRAM

In August and September of 2021 Maier Design Group interviewed the Firing Range Administrator, Sergeant Anthony Sciaretto, on multiple occasions and developed a proposed building program for the new Facility. This program was created with the understanding that the goal of this study was threefold:

Modernize the Facility and provide habitable spaces that are not vulnerable to site flooding.

Restore spaces which were eliminated by the demolition of the original instruction building and that are currently being housed in temporary structures.

Provide new program elements that are required for the safe and proper function of the Firing Range.

The list of identified program elements and projected space allocations are shown in Figure 5-8 below. A twenty percent add-on has been added to the space allocation sub-total to account for circulation (corridors and pathways) and minor spaces (closets, vertical chases, etc.) to provide a realistic approximation of the proposed new building area.

PROPOSED BUILDING PROGRAM		
LOCATION	**PROPOSED (SF)**	**NOTES:**
Ammunition Storage	450	
Armory	400	Includes existing reloading space and 3 stations
Dining/Kitchenette	175	
Classroom	1200	50 Trainees
Electrical	100	
Elevator	64	Assume no machine room
Laundry	40	Commercial washer and dryer
Loading Dock	60	
Mechanical Room	100	
Observation	100	
Office	120	One 10' x 12' office
Open Office	240	Benching work spaces for 6 instructors
Record Storage	300	
Restroom (Staff)	225	Includes shower and locker area
Restroom (Trainees)	360	Mens and Womens, three fixtures each
Storage (Elevated)	200	
Weapon Vault	300	Incorporates existing weapon storage space
Subtotal (SF):	4434	
Circulation Factor (30%)	1330	
TOTAL (SF):	**5764**	

Figure 5-8: Proposed Building Program

Ammunition Storage: The proposed ammunition storage room has been increased from 255 SF to 450 SF to address the need for fewer deliveries and reduce offsite storage. The bulk of the site's required ammunition is currently stored at the State Police Academy in Meriden, CT and is periodically transferred from the Academy to the Firing Range. Ammunition will be loaded into

the building through an exterior secure door via an exterior hoist. The Ammunition Storage Room will be designed as a vault space both for security and the hazardous nature of the material. The weight of the increased storage will be a factor in determining the structural floor system for this portion of the proposed structure.

Armory: The proposed armory will combine the existing functions of tool/machine shop, armorer's work area and ammunition reloading. Gun powder required for reloading will be stored in the ammunition storage space for security and hazard concerns. The room will contain three workstations for weapon evaluation, inspection and repair. The space will also accommodate workbenches for facility maintenance and reloading.

Dining/Kitchenette: The proposed kitchenette will contain a counter and a sink with upper and lower base cabinets. Accommodations for appliances including a microwave, refrigerator, dishwasher and garbage disposal will be provided as well as seating space for 4 to 6 individuals.

Classroom: The proposed classroom will be suitable for fifty trainees and five instructors and will include an operable partition to allow for division of the room into two spaces. The classroom will include a motorized screen, audio/visual equipment, a ceiling mounted projector and room darkening shades.

Electrical: A fire rated, dedicated electrical room housing the building electrical service, meter, sub panels, photovoltaic panel and shutoff will be provided.

Elevator (Passenger): A pitless, side traction or overhead hoist passenger elevator will provide accessibility to the elevated building. The elevator will be programmed to return to the upper floor when not in use to minimize damage to the cab during flooding.

Laundry: A space for a commercial grade washer and dryer will be provided. Instructirs currently are required to launder their uniforms and equipment at their residences, creating a scenario where lead particulates are transferred to their vehicles and private homes.

Loading Dock: An exterior hoist-way for the loading of ammunition, equipment and supplies will be provided on the exterior of the building with a secure overhead door allowing for access into the envelope.

Mechanical: A dedicated mechanical room housing the building plumbing and fire suppression service will be provided. The space will also house controls and building management equipment, hot water heaters and the main fire alarm panel (an annunciator panel will be provided at grade in the passenger elevator lobby).

Observation: The proposed observation room will overlook the Pistol Deck and provide stations for three spectators/instructors. The room will contain observation equipment (scopes and visual displays linked to cameras), a work surface and equipment to communicate with instructors on the Pistol/Rifle Decks and off site emergency services. Observation room windows will be bullet resistant and designed to minimize sound transmission.

Office: A private office for the Firing Range Instructor will be provided. The room will accommodate a workstation and side table suitable for 2 people.

Open Office: Furniture benching stations (unassigned workstations suitable for deployment o desktop or laptop computers) for 6 instructors or visitors will be provided. A work area containing copier/printer, office supply storage and light file storage will be provided as well.

Record Storage: A fire rated file storage room for documents that are required to be maintained on site will be provided. The room will also contain a workstation for digitization of the stored documents.

Restroom (Staff): A single gender neutral restroom with shower will be provided for the Range Instructors. Separate male and female changing areas with lockers will support this facility.

Restroom (Trainees): Restroom facilities for visitors and trainees will be comprised of two (male and female) multi-user restrooms with three toilets and sinks per room.

Storage: Storage closets for office supplies, classroom training materials and miscellaneous equipment will be provided throughout the proposed building.

Weapon Vault: Weapon storage will occur in a secure vault room large enough to accommodate all firearms stored onsite.

SECTION 6 - PRE-DESIGN BUILDING STUDIES

6.0 INTRODUCTION

Maier Design Group (MDG) has been tasked with the development of three Pre-Design building options to rebuild the Facility. The three options explore different siting and orientation on the portions of the site that are available for construction. This buildable area is restricted to the western third of the site located between Nod Road at the site's western boundary and the existing Pistol Deck. This portion of the site is currently occupied by the existing Range House, Connex boxes, temporary trailers and parking lot. It is also the site of the former instruction building which was demolished in 2013.

6.1 PRE-DESIGN CONSTANTS

While all three Pre-Design Options differ in site location and orientation, all three share many characteristics determined by building code, design criteria and practicality.

6.1.1 Building Elevation

To minimize disturbance in the floodplain and protect the structure from damage do to frequent flooding, The State of Connecticut and DEEP has determined that the new Range Instruction Building shall be built in such a manner that the main level of the building is set at one foot above the 500 Year FEMA Peak Floor Elevation of 165.2'. Furthermore, DEEP has stated that the new Facility (buildings and site grading) cannot exceed the existing displacement of the 100-year floodplain, therefore the lowest horizontal structural member will also be above the 100-Year Floodway elevation of 161.2 NAVD8.8. Site grades in the western portion of the property vary from 150' to 154' with the majority of the buildable area being located at approximately 152' above sea level. Based on the differential between the site grade and the required building elevation of 166.2' and our mandate to eliminate disturbance within the flood plain, all three Pre-Design Options are shown as buildings elevated above the site on piers.

6.1.2 Building Construction Type

The nature of the building and proposed program within, primarily the high explosive hazard of stored ammunition and gun powder, will require that all three Pre-Design Options be built utilizing Type 2B Construction. Type 2B Construction is defined in the Connecticut State Building Code as construction where all major elements are built using non-combustible materials. Structural elements, floors, walls, roof trusses and their sheathings will be non-combustible materials such as concrete, concrete block, metal studs and trusses and gypsum. Additionally

with a Code Modification from the State, the building will be required to be at least partially sprinklered, once again due to the explosive nature of the materials stored within and the assembly function of the training classroom.

6.1.3 Building Structure

In conjunction with their site survey GZA commissioned test bores at the potential locations for the three Pre-Design Options. The boring logs are included in **Appendix H** of this study and indicate that the site soils consist of loose sands and particulates consistent with flood plains. As a result, the proposed building will require deep pile foundations, driven into the ground to bedrock or the point of refusal. This foundation system along with the need for piers that are resistant to frequent flooding and the high floor loading factor from ammunition storage, dictates that the Pre-Design Options will all have a composite steel and concrete column and floor slab system supporting a steel superstructure above.

6.1.4 Building Exterior Materials

Nod Road is a relatively rural and pastoral route connecting the suburban communities of Avon to the South and Simsbury to the North. The road is flanked by wetlands and the Farmington River on the West and agricultural buildings, a golf course and other outdoor uses such as a model plane/drone venue, water retention ponds and a public shooting range. We recommend that the exterior treatment of the three Pre-Design Options be sensitive to this rural/suburban context and use materials that are appropriate to the vernacular found on Nod Road. The exterior walls will be faced with a wood or composite material siding or paneling system. Roof structures will be clad in either standing seam metal panels or asphalt shingles.

6.1.5 Accessibility and Egress

All three Pre-Design Options include provisions for two stair towers and a passenger elevator to provide access to the elevated building. As these three structures will be placed in the flood plain, these portions of the building will be constructed from water resistant materials such as concrete and or masonry block. The passenger elevator will be a pit-less side traction or top hoist unit, programmed to return to the upper floor when not in use. Due to the excessive height above grade and Code Modification may be required to allow for the elevator to serve as the sole means of handicapped accessibility to the structure.

6.1.6 Building Utilities

Major Utilities to the three Pre-Design Options will require a complete replacement and overhaul to support the new proposed Facility

Electrical

Electrical services to the site are currently provided via an aboveground route from Nod Road to the Range House Building from a temporary mounted panel utility pole on the southwest side of the 50-Yard near the sump pump to the building. The Range House Building is fed from this pole to a panel located within the Range House Staff Restroom. This pole and temporary service will be removed and the existing Range House will be demolished. A new above ground electrical service will be pulled from the street and fed to the proposed new building above the 500 Year Peak Flood Level. This service will power the building, elevator and exterior hoist-way. A diesel generator will be located above the flood level to serve as backup power for communications, security and emergency lighting. All three of the Pre-Design Options will be designed such that the roof slopes, materials and orientation can accommodate the installation of solar panels to supplement the options' electrical services.

Water

Water is currently provided by a private well located in the grassed area between the training trailers and Range House Building at approximately 152 feet NAVD88. Based on information provided by the Town of Simsbury's Project Engineer on August 19, 2021, there are no signs of public water mains on Nod Road and public water is not available for this Site. The existing well will need to be tested to determine its efficacy and available capacity. The Pre-Design program for all three options include a significant increase in number of plumbing fixtures and water demand. The existing well will either require augmentation or a new well will be required to meet plumbing demand.

Fire Suppressant Water

A wet and/or dry fire suppressant system does not exist in the Range House Building and/or the two temporary training trailers. The lack of a sprinkler system is due to the age of the Range

House and functional changes to the building program over time. All three Pre-Design Options will require that the building be at least partly sprinklered to protect the ammunition storage and reloading functions. Additionally, the assembly use of the training classroom may require sprinkler coverage. Due to the lack of publicly available water on the site, a fire suppression water storage tank may be required. Depending on the extents of the required sprinkler system, the weight of this tank may be prohibitive for location within the building's attic spaces and would most likely be located below the elevated structure of the building. Alternately a chemical fire suppression system could be utilized for low occupancy spaces such as the Ammunition Storage, reducing the size and weight of the water storage tank.

Sanitary Sewer

The existing septic tank is located south of the Range House Building and north of the wood platform located on the 50 Yard Firing Range sidewall. The septic tank is small and sized for the staff restroom only. Based on correspondence with the Town of Simsbury on October 6, 2021, and information provided by the Town of Simsbury's Project Engineer on August 19, 2021, there are no signs of sanitary sewer on Nod Road. Therefore, public sanitary sewer service is not available for this Site. Lacking available public sanitary sewer and the inability to provide a subsurface septic system, all three Pre-Design Options will require an above ground septic tank that will require periodic pumping. Similar to the fire suppression water storage, this tank will most likely be located at grade due to weight and accessibility to be emptied.

Communications and Security

This Site is supported by voice and data routing for telecommunication purposes; however, the existing DSL connection is insufficient for the Facility's operation. Additionally fiber optic and coaxial cable are not available on Nod Road. The existing DSL system will be upgraded in all three Pre-Design Options as a backup communications system, however, primary communications for internet and telephone will be achieved via a satellite internet device. Both systems will be connected to the emergency generator in case of power loss.

The existing security and camera system is past its life expectancy and records in black and white only. The existing system is also not on emergency power and requires a local Simsbury Police Officer to report to the site when the Range is unoccupied during a loss of power. The

existing system will be removed with the demolition of the current Range House and will be replaced with a new camera and security system that covers the Pre-Design Options and the surrounding site features (parking lot, Pistol Deck, ground storage).

Heating, Ventilation, and Air Conditioning (HVAC) Systems

The three Pre-Design Options will utilize electric heating and cooling due to the lack of public natural gas in Nod Road. The HVAC systems will consist of a rooftop unit screened by the building's sloped roofs. Within the building heating and cooling will be controlled by zoned VAV boxes located in the ceiling plenum. Alternately the design may consist of 10 to 15 geothermal wells located beneath the building.

6.2 PRE-DESIGN OPTION #1

Pre-Design Option #1 consists of an approximately 6,200 SF, single story building located directly adjacent to the west end of the Pistol Deck portion of the Firing Range. The main floor of the building is located at elevation 166.2' which is one foot above the 500 Year Peak Flood Elevation as dictated by FEMA and DEEP. The grade below the building varies from approximately 152.0' at the western end of the structure to 150.0' at the eastern building face.

Figure 6-1: Pre-Design Building Option 1 - Partial Site Plan

Pre-Design Option #1 orients the building in an east to west direction with the eastern face comprised of an observation room overlooking the Pistol Deck. Moving towards the west from the Observation Room the Option's layout places the least noise sensitive spaces (Weapons and Ammunition Storage, Record Storage and the Armory) closest to the Pistol Range with the most sensitive space, the classroom, located at the farthest point away from active shooting. Refer to Section 5 of this report for more detailed information regarding the proposed building programming and descriptions of the spaces. Listed below are the advantages and disadvantages of Pre-Design Option #1. The list below repeats the site related items described in Section 3 of this report for the sake of clarity.

Pre-Design Option #1

Advantages

Provides direct observation of the Pistol and Rifle Deck without the need for a second 'Range Tower' with its own elevator, stair and restroom.

Weapons and Ammunition Storage are conveniently located adjacent to the Pistol Deck via the exterior hoist-way and Stair B.

Minimizes the building exposure to the active sound generated by weapon fire and the reflected sound from the hillside to the east.

Building program is organized to have the least noise sensitive elements closest to the Pistol Deck and the most sound sensitive spaces in the West.

Major facades (North and South) are presented perpendicular to the road, maximizing the building's presence for vehicular traffic.

Roof orientation maximizes potential of photovoltaic installation.

Direct access for emergency response vehicles is provided from Nod Road to the Pistol Deck area via the northern drive aisle.

All parking is in close proximity to the proposed Building and the Pistol Deck area.

Open space (landscaped area) is maintained around the majority of the paved area, providing for enhanced stormwater management (shorter flow-paths from paved areas to adjacent vegetated management areas).

Provides 2,100 square feet of net improvements in overall floodplain benefits which is the most of any option.

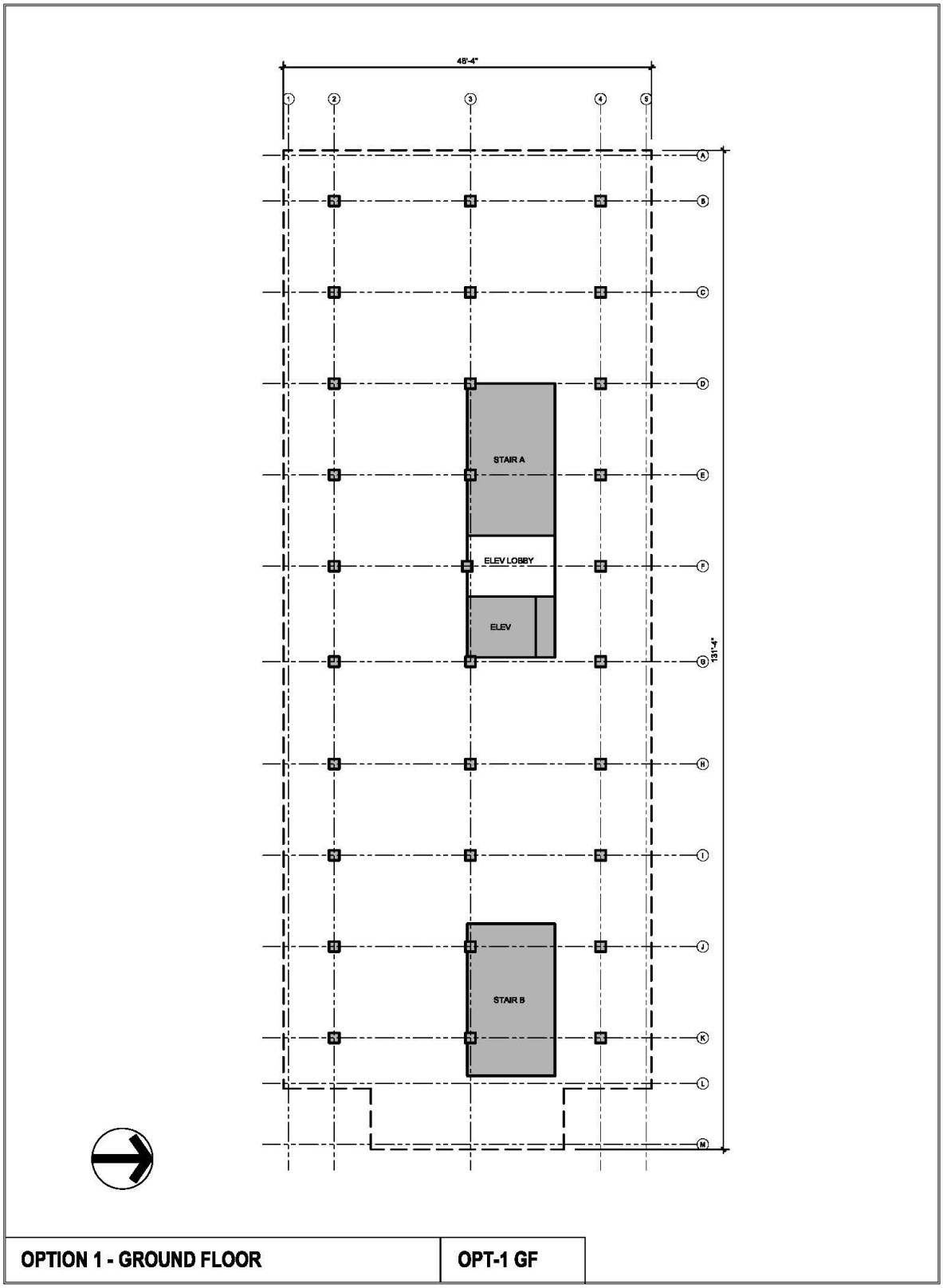

Figure 6-2: Pre-Design Building Option 1 - Ground Floor

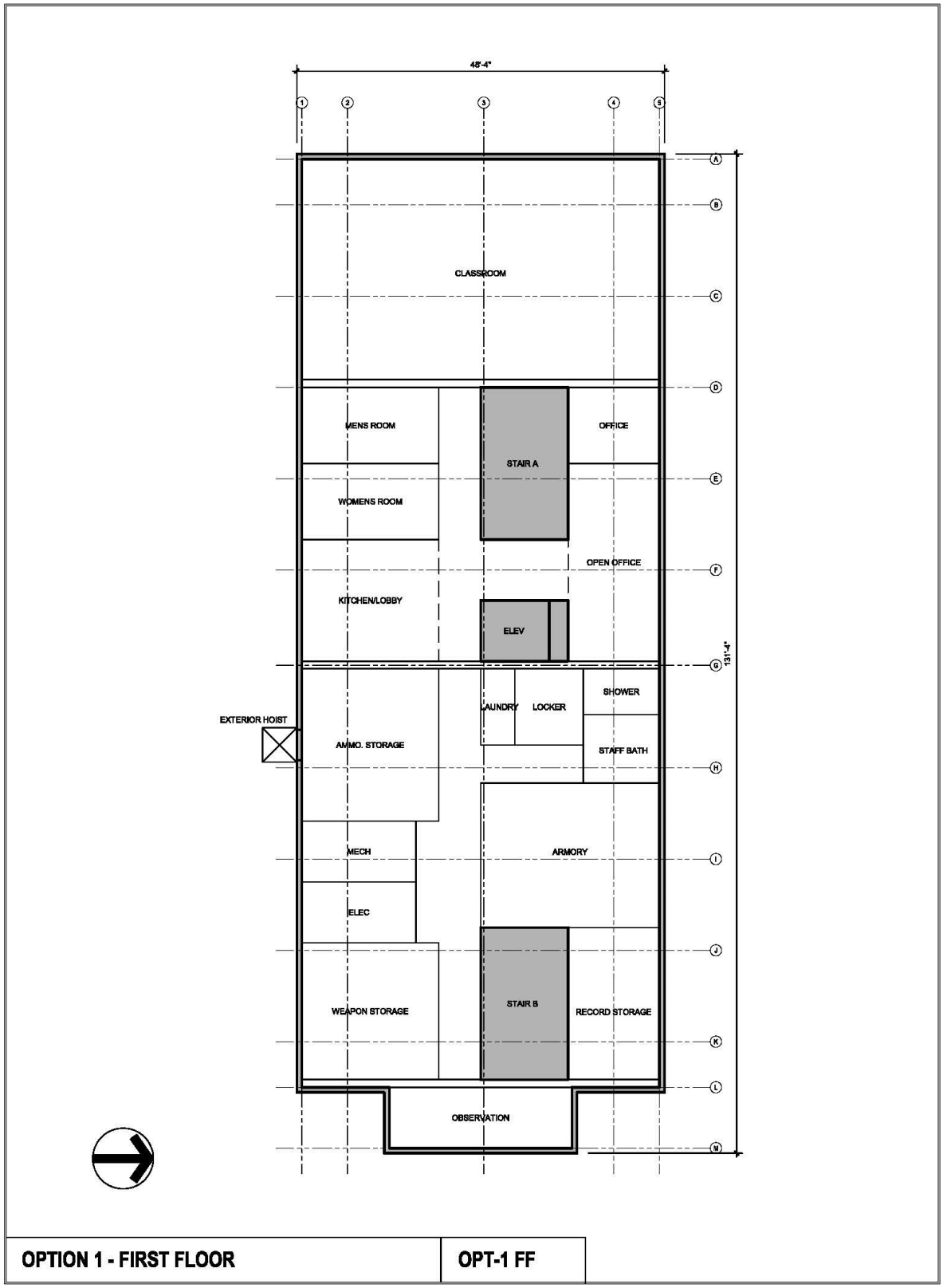

Figure 6-3: Pre-Design Building Option 1 - First Floor

Disadvantages

Proximity to Pistol Deck will require that building envelope assemblies account for higher levels of sound attenuation.

Proximity to Pistol Deck prohibits expansion of Deck length to accommodate longer shooting distances.

Turning movements for large vehicles may require operation within the Pistol Deck area.

Access to the loading zone for the proposed Building for large delivery vehicles (e.g., tractor-trailers) will require traversing through the Pistol Deck area.

Busses transporting personnel to the site may need to use the Pistol Deck area as a turn-around or will be forced to make multi-point turning maneuvers within the parking area.

Bus staging along the north side of the proposed Building may interfere with pedestrian routes from the northern vehicle parking areas.

Providing vehicular access to the north and south sides of the proposed Building requires increased impervious surface.

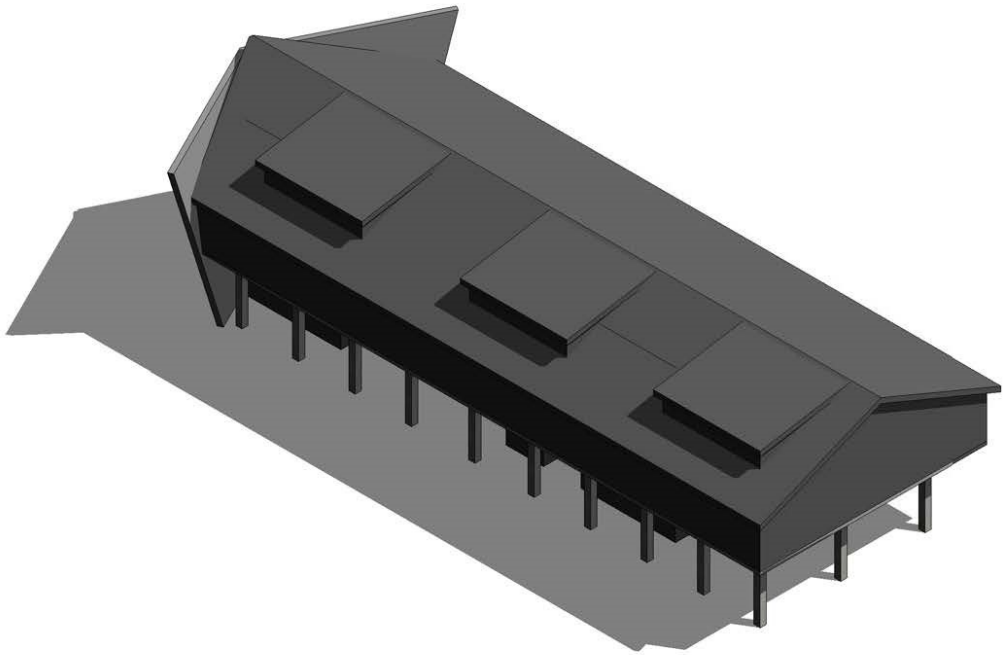

Figure 6-4: Pre-Design Building Option 1—Northwest

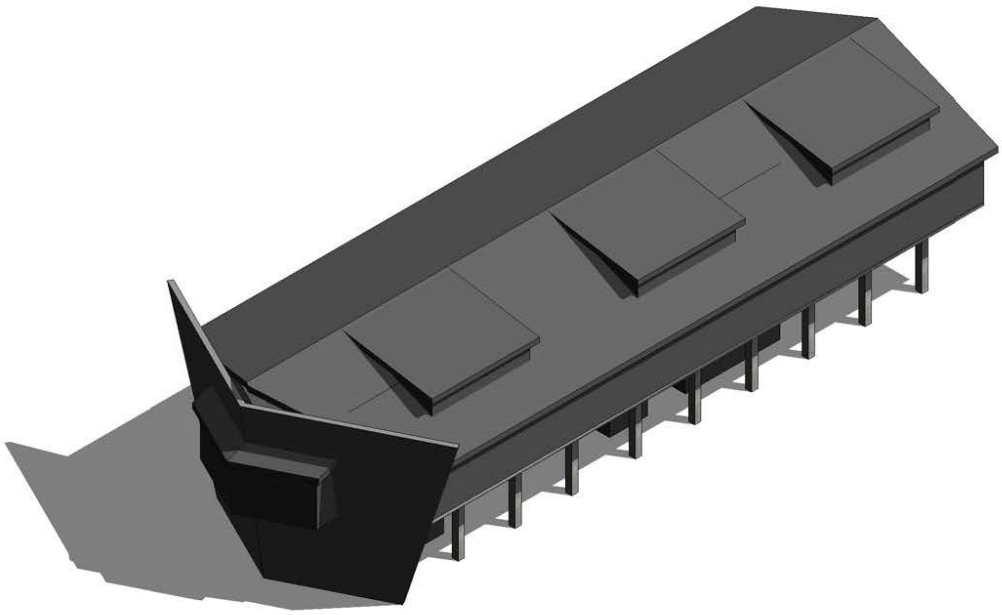

Figure 6-5: Pre-Design Building Option 1—Northeast

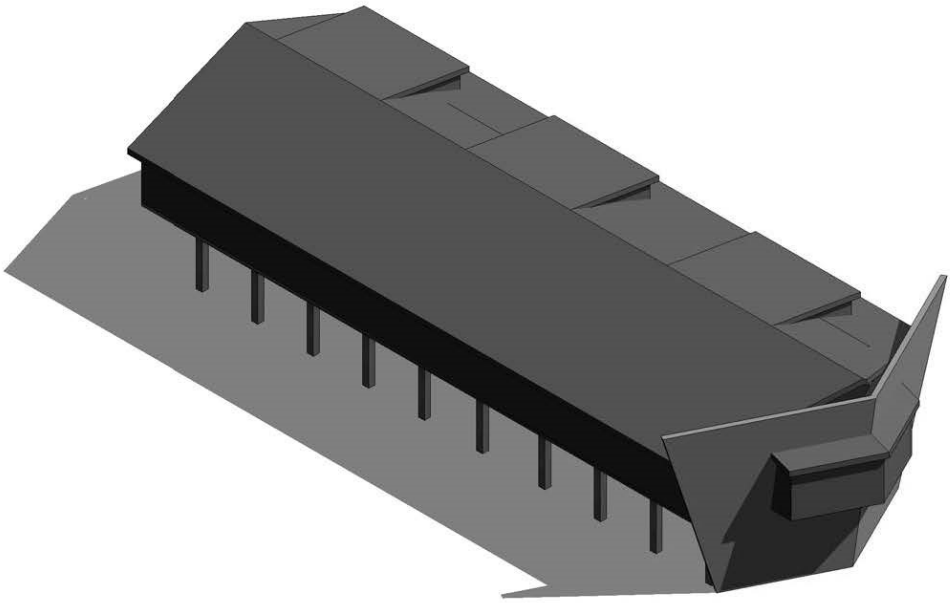

Figure 6-6: Pre-Design Building Option 1—Southeast

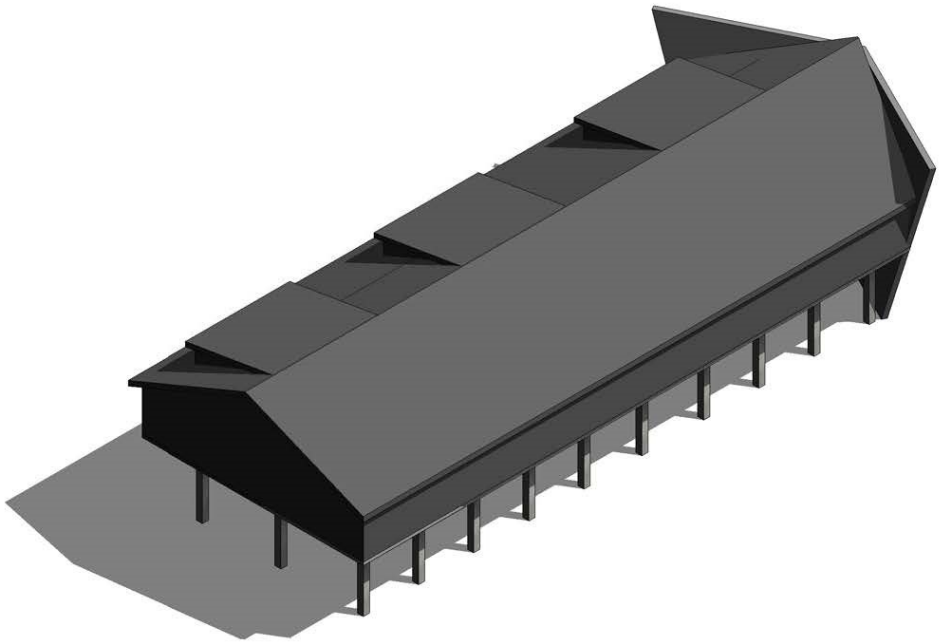

Figure 6-7: Pre-Design Building Option 1—Southwest

Pre-Design Option #1 Massing Study

The massing study for Pre-Design Option #1 utilizes a 'prow' shaped mass wall penetrated by the Observation Room to provide a sound shadow behind which the majority of the structure is shielded. This prow concept attempts to blend a modern looking expression at the East end with a simple, utilitarian structure reminiscent of the agricultural out buildings located along Nod Road. The stripped-down nature of the main building presented in this concept is ideal for modular and/or panelized construction which could potentially offset a portion of the construction costs predicated by the poor soil conditions and building's elevated design.

6.3 PRE-DESIGN OPTION #2

Pre-Design Option #2 is comprised of an approximately 6,700 SF, single story building located directly adjacent to the west end of the Pistol Deck portion of the Firing Range. The main floor of the building is located at elevation 166.2' which is one foot above the 500 Year Peak Flood

Figure 6-8: Pre-Design Building Option 2 - Partial Site Plan

Elevation as dictated by FEMA and DEEP. The grade below the building is approximately 150.0' along the entire North and South run of the building.

Pre-Design Option #2 orients the building in an North to South direction with a central Observation Room overlooking the Pistol Deck. West of the Observation Room, behind a mass wall extending down to grade are office spaces for the Range Instructors and Administrator. The North end of Pre-Design Option #2 is occupied by the Staff Restroom and Locker Rooms as well as the Kitchenette and a Conference Room that can be utilized as a meeting or dining space for recruits. The South end of the proposed building contains the Weapon, Ammunition and Document Storage along with the Armory. Moving west across the main corridor is the Classroom. Refer to Section 5 of this report for more detailed information regarding the proposed building programming and descriptions of the spaces.

Listed below are the advantages and disadvantages of Pre-Design Option #2. The list below repeats the site related items described in Section 3 of this report for the sake of clarity.

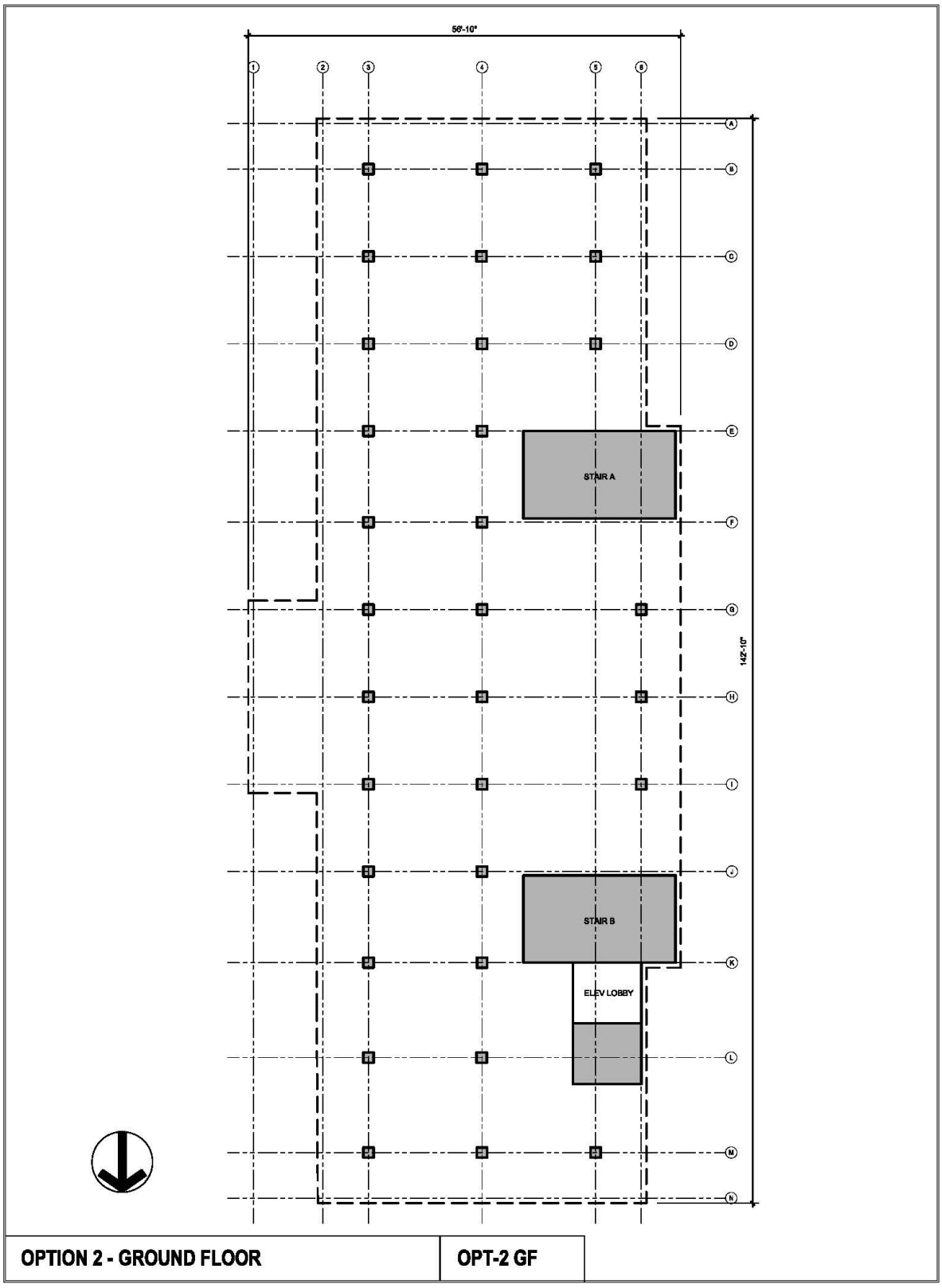

Figure 6-9: Pre-Design Building Option 2 - Ground Floor

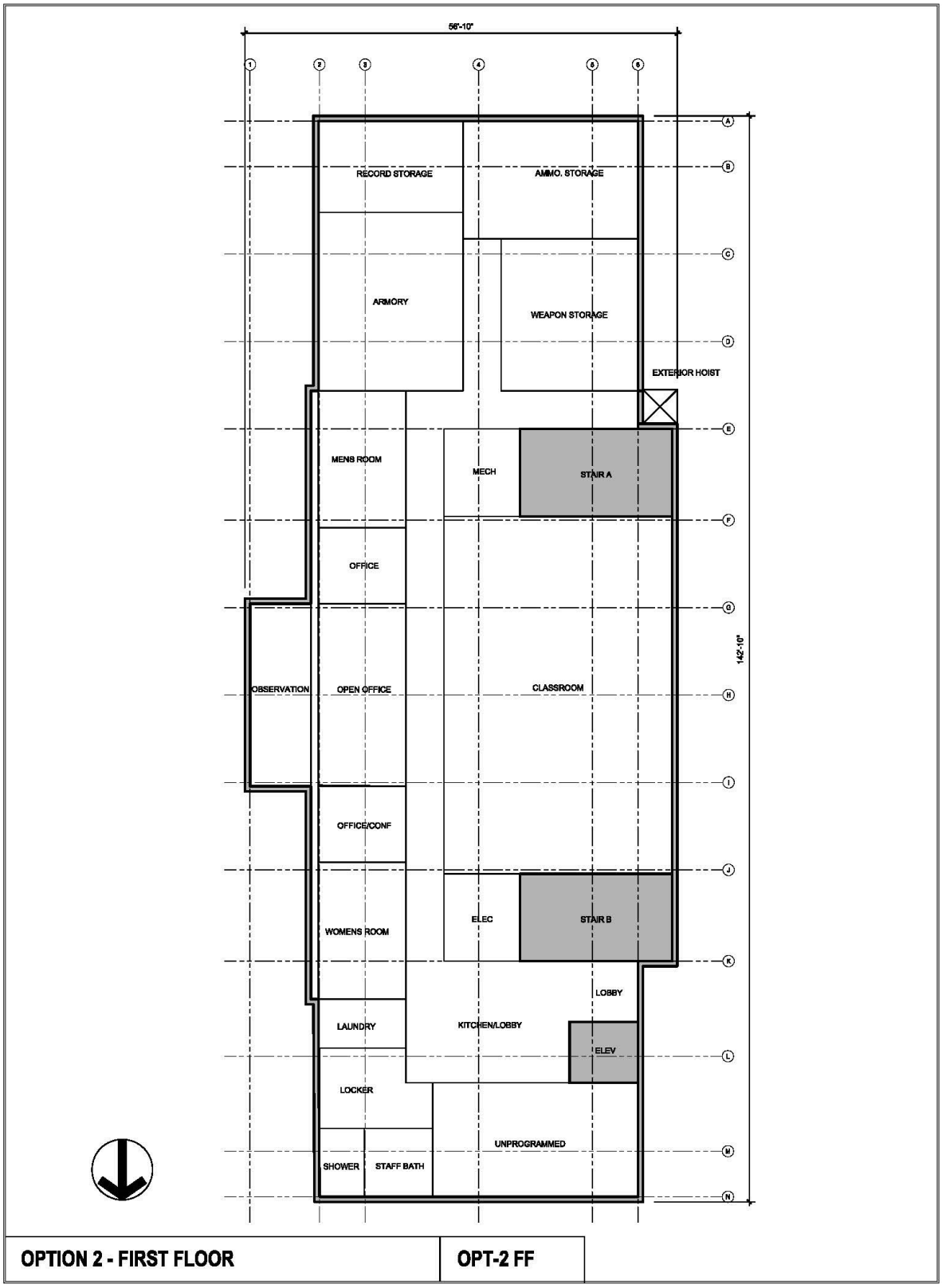

Figure 6-10: Pre-Design Building Option 2 - First Floor

Pre-Design Option #2

Advantages

Provides direct observation of the Pistol and Rifle Deck without the need for a second 'Range Tower' with its own elevator, stair and restroom.

Building orientation along the length of the Pistol Deck accommodates larger Observation Room.

Major facade (West) is presented to the road, maximizing the building's presence as visitors arrive at the site.

Bus staging location does not interfere with pedestrian walking paths from vehicle parking area.

All parking is in close proximity to the proposed Building.

Provides 50 square feet of net improvements in overall floodplain benefits.

Disadvantages

Parallel orientation of the building to the Pistol Deck will require a larger portion of the building envelope to have enhanced sound attenuation.

Parallel orientation of the building to the Pistol Deck means a larger portion of the building is vulnerable to potential ricochets.

Building orientation and roof planes are not optimal for photovoltaic installation.

Indirect access for emergency response vehicles is provided from Nod Road to the Pistol Deck area via the southern drive aisle.

Access to Pistol Deck area is narrow, requires alternating one-way traffic.

Parking area is separated from the Pistol Deck area by the proposed Building.

Turning movements for large vehicles requires operation in the parking area. Delivery trucks and busses may be required to make multi-point turning movements to access the loading/ passenger discharge areas.

Longer flow paths from the new BUILDING and pavements to stormwater management areas may result in increased potential for ponding during rainfall events.

Pre-Design Option #2 Massing Study

The massing study for Pre-Design Option #2 utilizes a central mass wall penetrated by the

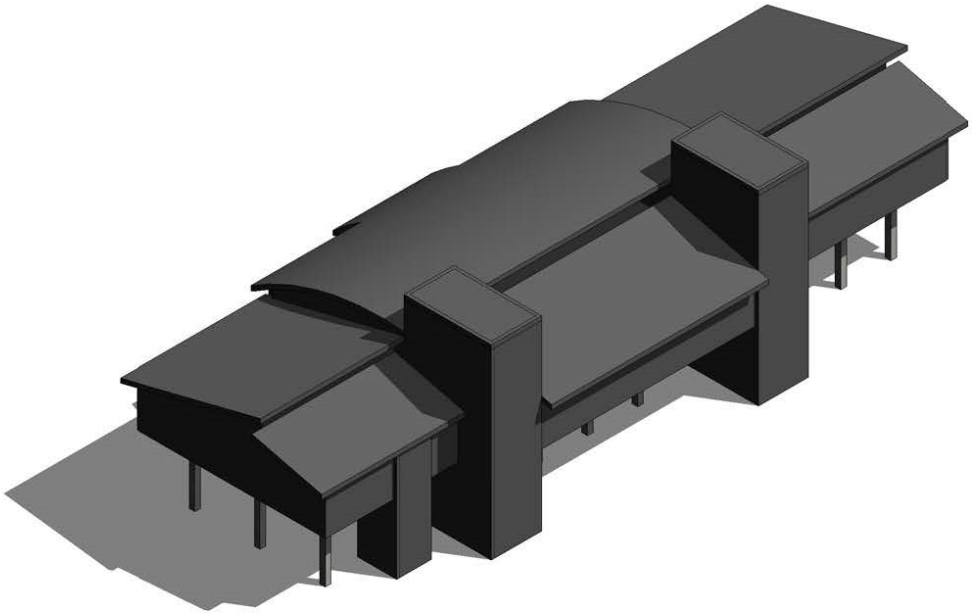

Figure 6-11: Pre-Design Building Option 2—Northwest

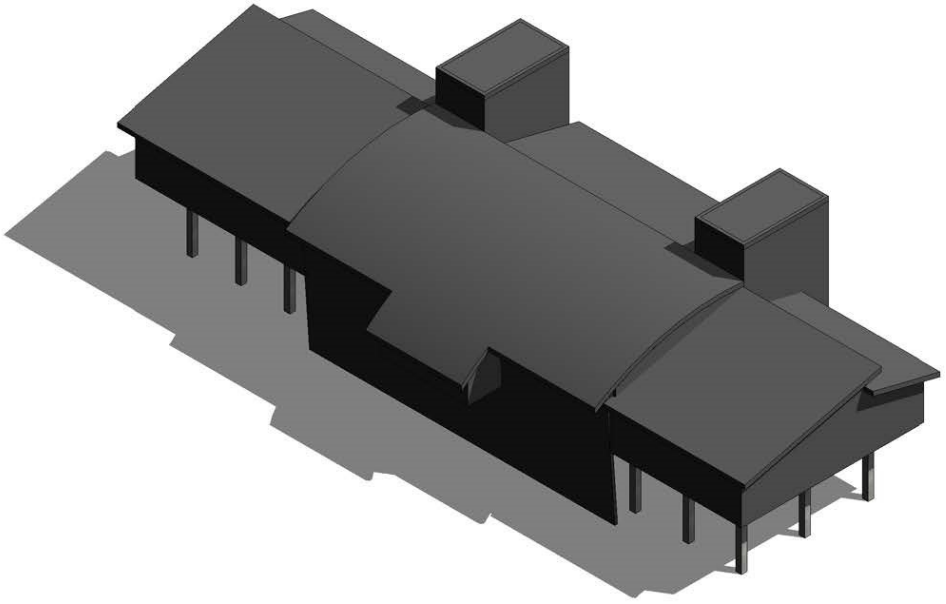

Figure 6-12: Pre-Design Building Option 2—Northeast

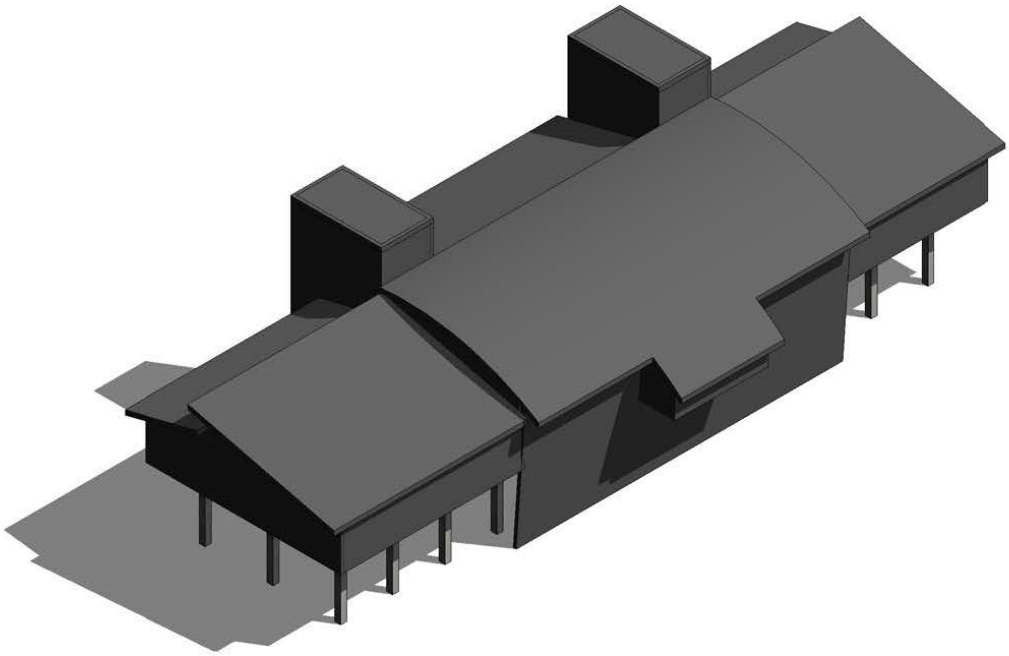

Figure 6-13: Pre-Design Building Option 2—Southeast

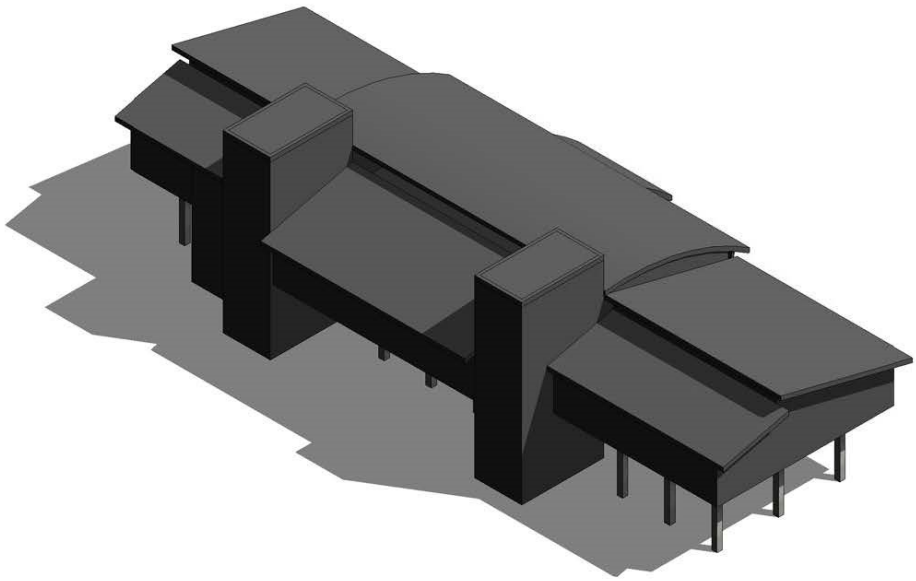

Figure 6-14: Pre-Design Building Option 2—Southwest

Observation Room to provide a sound shadow behind which the Offices and Classroom spaces are shielded. This design concept is an attempt at a classical architectural expression, containing sloped roofs whose peaks are offset to create opportunities for clerestory windows to bring light to the central spaces. Location of the Classroom at the western façade of the building allows for additional windows out of the direct line of firearm generated sound and creates a visible connection for Instructors to the parking lot and property entrance.

6.4 PRE-DESIGN OPTION #3

Pre-Design Option #3 consists of an approximately 6,500 SF, single story, primary building located in the northwest corner of the Site and includes a separate 600 SF Range Tower located directly adjacent to the west end of the Pistol Deck portion of the Firing Range. The main floors of both buildings are located at elevation 166.2' which is one foot above the 500 Year Peak Flood Elevation as dictated by FEMA The grade below the two buildings are approximately 153.0' at the primary building to 150.0' at the Range Tower.

Pre-Design Option #3 orients the building in an east to west direction in the northwestern corner of

Figure 6-15: Pre-Design Building Option 3 - Partial Site Plan

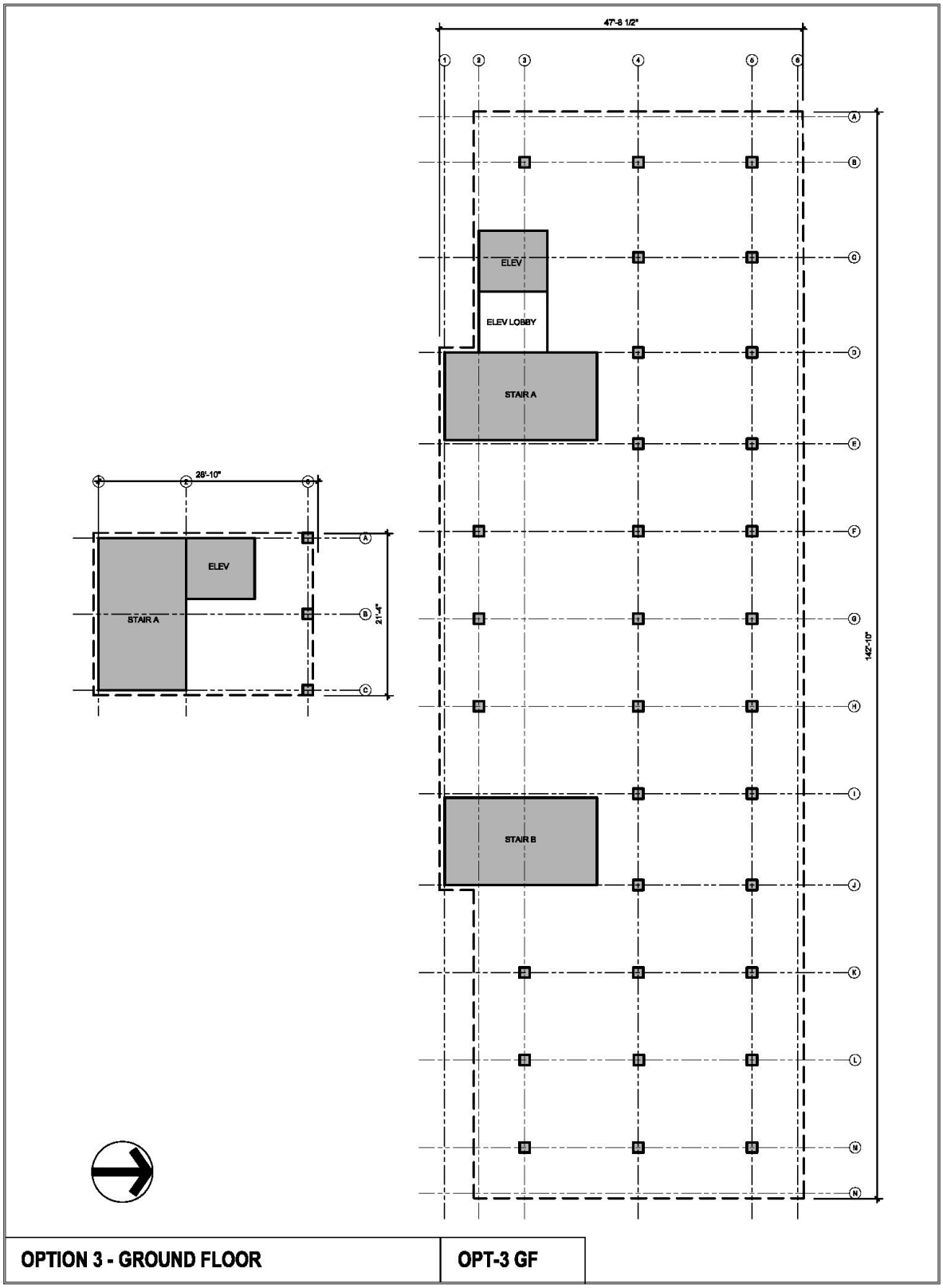

Figure 6-16: Pre-Design Building Option 3 - Ground Floor

the Site adjacent to Nod Road and the property's entrance, providing a distinct presence to the street. The northern face of the proposed building houses office spaces for the Range Instructors and Administrator. The West end of Pre-Design Option #3 is occupied by the Staff Restroom and Locker Rooms as well as the Kitchenette and a Conference Room that can be utilized as a meeting or dining space for recruits. The eastern end of the proposed building contains the Weapon, Ammunition and Document Storage along with the Armory. Facing South across the main corridor is the Classroom with a view overlooking the parking area. Refer to Section 5 of this report for more detailed information regarding the proposed building programming and descriptions of the spaces.

Listed below are the advantages and disadvantages of Pre-Design Option #2. The list below repeats the site related items described in Section 3 of this report for the sake of clarity.

Pre-Design Option #3

Advantages

Defines the edge of the property and provides a street presence to Nod Road.

Increased distance from the Pistol Deck provides a slight reduction in the need for sound attenuation in the building envelope.

Roof orientation maximizes potential of photovoltaic installation.

Existing site grades are higher in the northwest corner of the property, slightly reducing the distance between grade and of the first floor above the building.

Increased distance from the Pistol Deck reduces vulnerability of the structure to ricochets.

Direct access for emergency response vehicles is provided from Nod Road to the Pistol Deck area via the northern drive aisle.

Bus staging location does not interfere with pedestrian walking paths from vehicle parking area.

Parking is located in close proximity to the Pistol Deck.

Disadvantages

Remote location of the primary building from the Pistol Deck dictates that a second building be built for observation.

Range Tower will require its own stair, passenger elevator, restroom and utility connections.

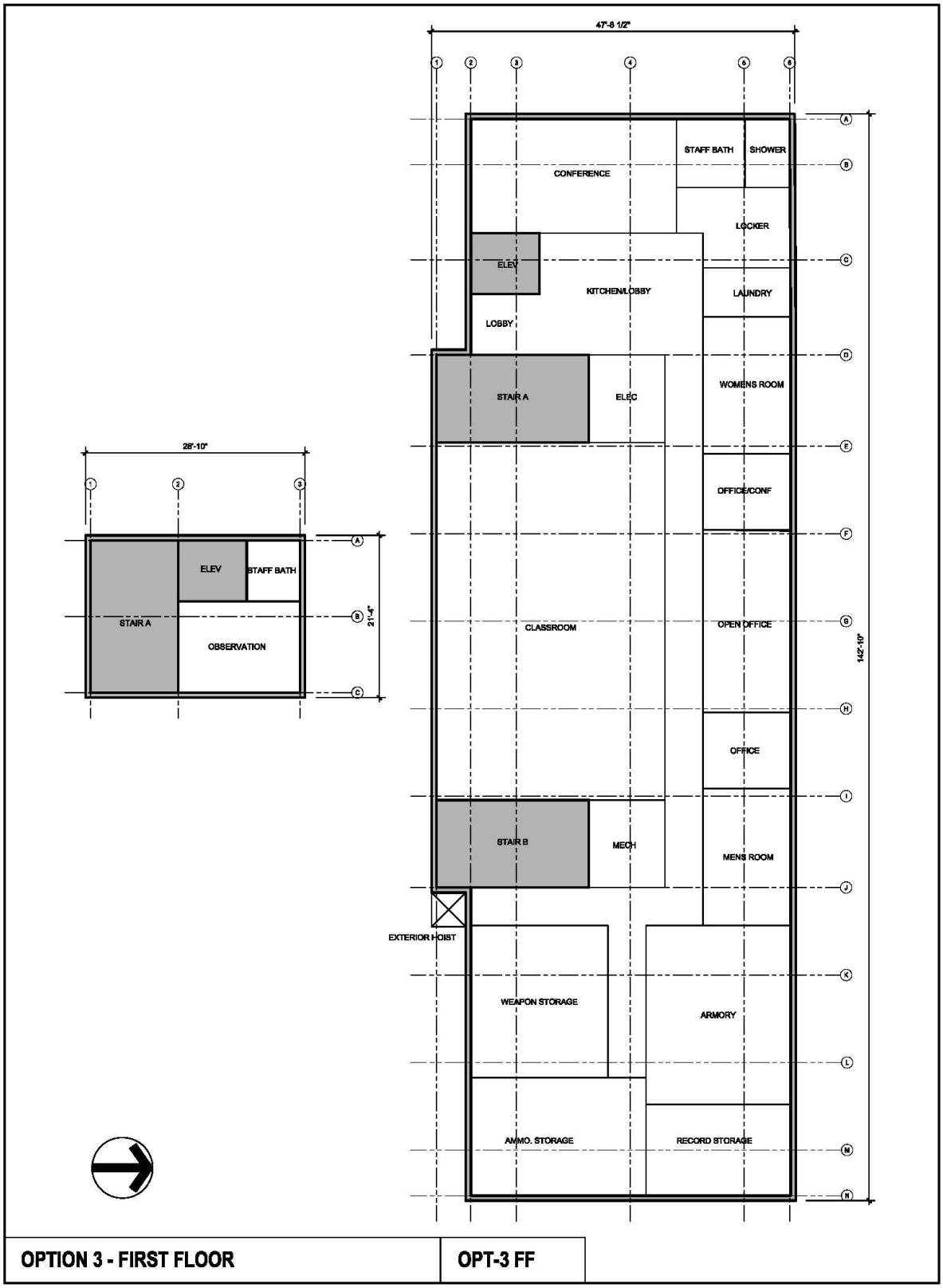

Figure 6-17: Pre-Design Building Option 3 - First Floor

Ammunition Storage, Weapon Storage and restrooms are remote from Pistol Deck.

Building location requires the removal of many existing trees.

The proposed Building is located almost entirely within an area of previously undisturbed existing vegetated floodplain soils.

Removal of existing mature trees in the northwestern portion of the site will be required for siting the proposed Building.

Parking area is located father from the proposed Building compared to Options 1 and 2. No direct access from building entrances to parking area.

Turning movements for large vehicles requires operation in the parking area or Pistol Deck. Delivery trucks and busses may be required to make multi-point turning movements to access the loading/passenger discharge areas.

Delivery vehicles may block the entrance drive when off loading ammunition or other supplies.

Results in 750 square feet of net loss in overall floodplain benefits which is the least of any option.

Pre-Design Option #3 Massing Study

The massing study for Pre-Design Option #3 consists of a single story elevated building on piers with shed roofs facing the four cardinal directions. This design concept is a simplified iteration of Pre-Design Option #3, eliminating the mass wall, observation room and barrel vault roof structure. The simple shed sloped roof peaks are offset to create opportunities for clerestory windows to bring light to the central spaces. Location of the Classroom at the southern façade of the building allows for additional windows with southern exposure and creates a visible connection for Instructors to the parking lot.

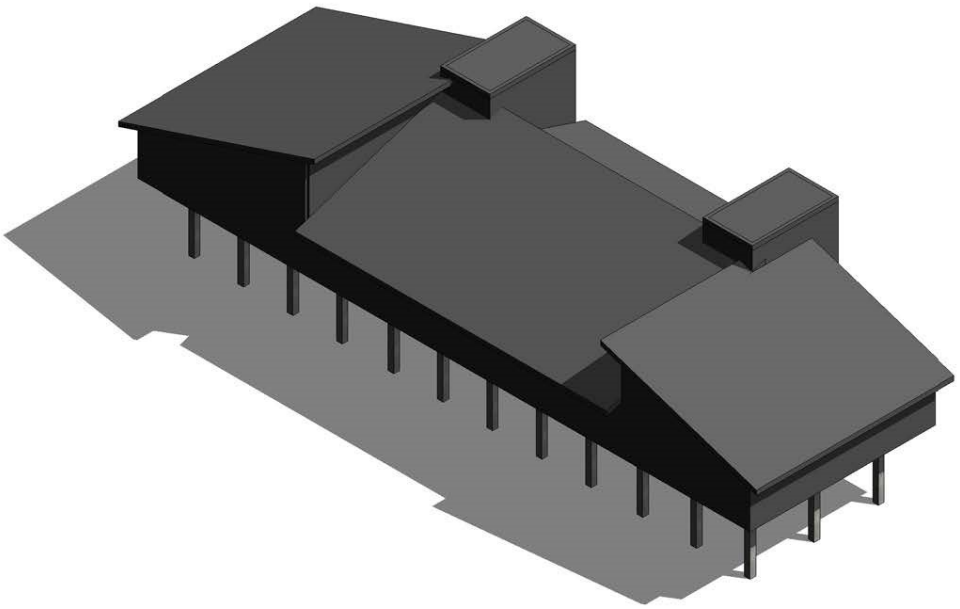

Figure 6-18: Pre-Design Building Option 3—Northwest

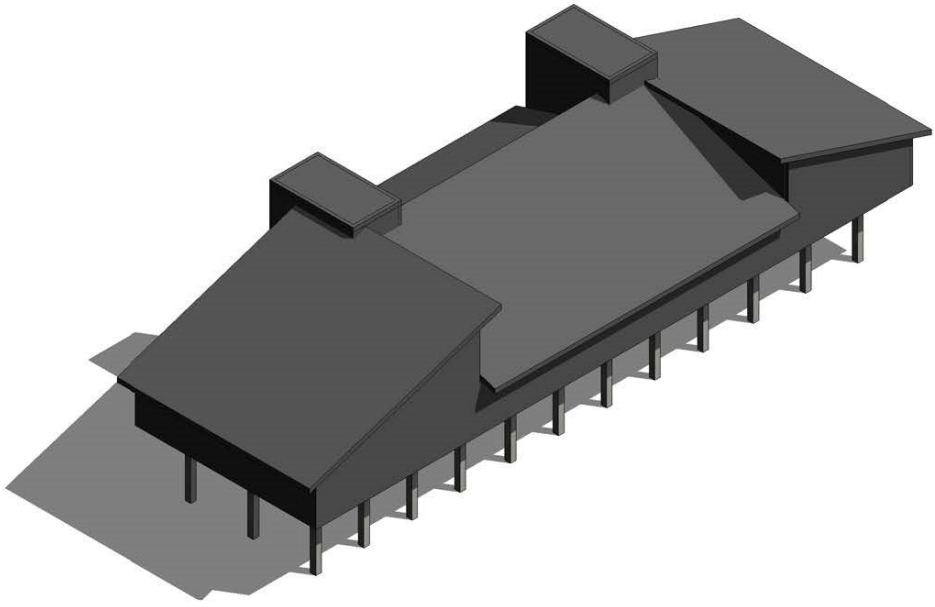

Figure 6-19: Pre-Design Building Option 3—Northeast

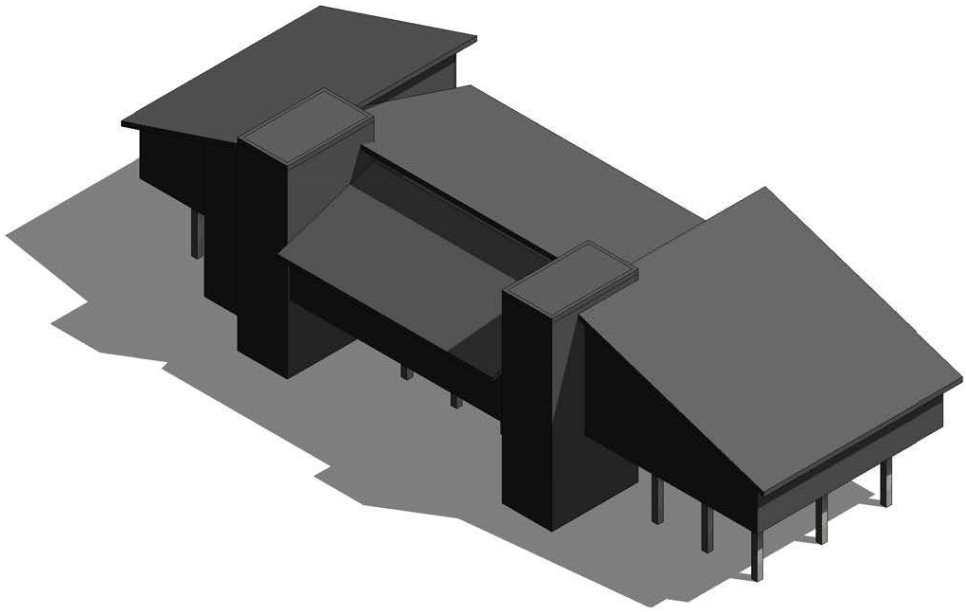

Figure 6-20: Pre-Design Building Option 3—Southeast

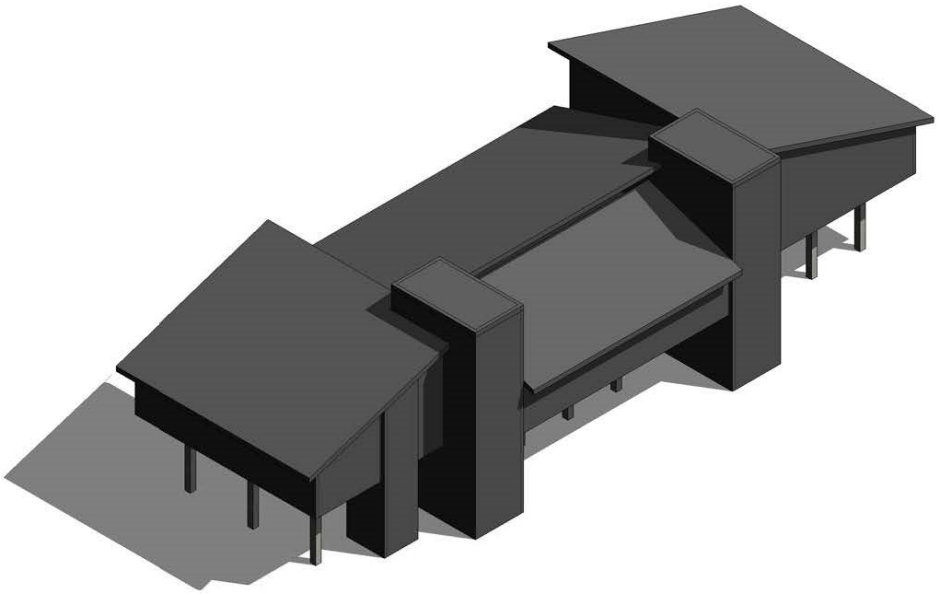

Figure 6-21: Pre-Design Building Option 3—Southwest

SECTION 7 - COST ESTIMATE

7.0 METHODOLOGY

We estimate the total construction costs of Pre-Design Option 1 including site and range improvements to be $8,543,000, with an overall project budget of $10,764,000 based on construction commencing in 2023. It is understood that this projected total greatly exceeds the State of Connecticut's stated budget of approximately $2,000,000 and that additional funds will need to be secured to construct the project. The estimate of probable cost contained in this report is presented in Uniformat Level I which is a highly schematic and basic method of estimating, suitable for conceptual level projects. It is important to note that the current level of design evaluation (Pre-Design), there is not enough information to accurately predict with confidence the realistic project cost. Additionally, material, labor and supply chain fluctuations driven by the pandemic have created an incredibly unstable environment for accurate cost estimation. A more accurate and detailed assessment (Uniformat Level II and III) cannot be attempted until additional explorations and evaluations are completed as part future design phases.

7.1 BUILDING SYSTEMS DESCRIPTIONS

A. SUBSTRUCTURE

A10. Foundations

A1010: Standard Foundations

Structural steel elevated podium.

A1020: Special Foundations

Timber piles driven to 40 feet with concrete cap. If the depth to suitable bearing strata result in pile embedment depths greater than 40 feet or if difficult driving conditions are encountered, longer timber or steel piles may be required with a significant increase in cost.

B. SHELL

B10. Superstructure

B1010: Floor Construction

Composite, insulated concrete slab with metal decking.

B1020: Roof Construction

Metal trusses sheathed with plywood.

B20. Exterior Enclosures

B2010: Exterior Walls

Metal studs with rigid and batt insulation, insulated concrete block with rigid insulation, moisture barrier, exterior composite siding or paneling.

B2020: Exterior Windows

Thermally broken, aluminum extrusion windows with 1" thick insulated glazing.

B2030: Exterior Doors

Aluminum storefront doors and frames with 1" thick insulated glazing, overhead roll-down security doors.

B30. Roofing

B3010: Roof Coverings

Ice and water shield with architectural asphalt shingles at sloped roof locations. Tapered rigid insulation, protection board and EPDM roof membrane at low slope roofs.

C. INTERIORS

C10. Interior Construction

C1010: Partitions

Metal stud partitions with gypsum wall board sheathing.

C1020: Interior Doors

Painted hollow metal frames with paint grade architectural flush wood doors.

C20. Stairs

C2010: Stair Construction

Concrete filled metal pan stairs with painted steel pipe handrails and guards.

C2020: Stair Finishes

Polished concrete, painted walls, painted steel pans, handrails and guards.

C30. Interior Finishes

C3010: Wall Finishes

Painted gypsum board with vinyl wall base at all locations except restrooms, wall tile with sanitary cove base in restrooms.

C3020: Floor Finishes

Modular carpet tile at office and classroom locations, luxury vinyl tile in corridors and kitchenettes, polished concrete at storage areas and armory, floor tile at restrooms.

C3030: Ceiling Finishes

Suspended acoustical ceiling tile and grid with gypsum board metal framed soffits at all locations except restrooms, gypsum board ceilings on concealed grid at restrooms.

D. SERVICES

D10. Conveying

D1010: Elevators and Lifts

Two stop, Side traction, pit-less passenger elevator, exterior equipment hoist.

D20. Plumbing

D2010: Plumbing Fixtures

Porcelain wall mount toilets, urinals and sinks with automatic flush valves and faucets. Solid surface roll in shower enclosures, stainless steel drop in kitchen sink with ADA faucet.

D2020: Domestic Water Distribution

Electric hot water heater with recirculation pump, copper hot and cold water piping.

D2030: Sanitary Waste

Cast iron sanitary waste piping, septic storage tank.

D2040: Rain Water Drainage

Exterior aluminum gutters and downspouts, interior PVC roof leaders.

D30. HVAC

D3020: Heat Generating Systems

Electric roof top unit with makeup air, radiant floor panels. Carbon neutral allowance for geothermal wells.

D3030: Cooling Generating Systems

Electric roof top unit with makeup air. Carbon neutral allowance for geothermal wells.

D3040: Distribution Systems

Stainless steel insulated ductwork with zoned VAV boxes and aluminum diffusers, return air plenum.

D3060: Controls and Instrumentation

Building management software, zone thermostats.

D40. Fire Protection

D4010: Sprinklers

Fire suppression water storage tank fed from onsite well, sprinkler pump, wet sprinkler system with concealed heads.

D50. Electrical

D5010: Electrical Service and Distribution

Main building electrical panel, emergency power diesel generator, electrical subpanels, photovoltaic rooftop system with shutoff and subpanel.

D5020: Lighting and Branch Wiring

Copper feeder and branch wiring in rigid conduit, grid mounted and recessed LED lighting, emergency lighting.

D5030: Communications and Security

DSL backup service from road, satellite internet and cable via rooftop dish and or mast, color tilt/pan/zoom cameras with DVR recording, door and window alarm contacts, motion sensors, building alarm panel.

E. EQUIPMENT AND FURNISHINGS

E10. Equipment

E1010: Commercial Equipment

Dishwasher, microwave, clothes washer, clothes dryer, electric hand-dryers.

F. SPECIAL CONSTRUCTION AND DEMOLITION

F20. Selective Building Demolition

F2010: Building Elements Demolition

Removal of existing Range House, decks and foundations, Connex boxes and supporting wood structure, temporary trailers, Pistol Deck backstop, concrete stairs at berm, Rifle Range canopy and storage building.

G. SITEWORK

G1010: Site Clearing

Removal of trees and vegetation, tree maintenance and removal.

G1020: Site Demolition and Relocating

Removal of existing parking area, gravel/stone dust drives and Pistol Deck paving.

G1030: Site Earthwork

Re-grading for stormwater management.

G2010: Roadways

Regrading, compaction and paving with gravel or stone dust.

G2020: Parking (Paving)

Bituminous paving and curbs with striping for parking lot, drive aisle and Pistol Deck.

G2050: Landscaping

Repair of site disturbances and vegetative planting.

G3010: Water Supply

New site well with pump.

G4010: Electrical Distribution

Underground wiring in sealed conduit to site lighting and Pistol Deck.

G4020: Site Lighting

Aluminum pole mounted LED site lighting with precast concrete bases.

S. FF&E

S1010: FF&E

Office workstations, classroom tables and chairs, dining seating, work benches, work tables, shelving, window blinds, file and material storage.

S2010: Technology

Data rack with server and UPS power, CAT 6 cabling with data jacks, computer workstations, overhead projector and motorized screen, presentation TV and A/V podium.

X. GENERAL CONDITIONS OH&P

X10. General Conditions

X1010: General Conditions

General Contractor's general conditions including bond, insurance and permit fees, safety, supervision.

X20. Overhead and Profit

X2020: Overhead and Profit

Contractor's office overhead and profit.

7.2 BASIS OF ESTIMATE

This estimate is based upon:

- Pre-Design Study prepared by GZA Geoenvironmental, Inc and Maier Design Group, LLC dated 11/7/2021.
- Cost estimating is based on the measurement and quantities from the drawings wherever possible.
- Costs are formulated from current and historical cost data on products and materials.
- An estimate contingency is utilized as a budgetary tool to allow for details not thoroughly designed in this iteration of the documents. As the scope and documentation is developed the contingency will be reduced to ultimately zero at 100% construction documents are achieved. The estimate contingency is not included to cover additional scope over and above the intentions of the documents.
- Escalation is derived from a 25-year cost escalation index from Design Cost Data.

Mark-Up Costs included in this cost estimate:

1. General Conditions and General Requirements:	12%
2. SubGuard Insurance:	0%
3. Site Logistics Factor:	0%
4. Construction Cost Escalation:	3.52%
5. Cost Estimate Contingency:	10%
6. Building Permit Fee (Exempt):	0%
7. Builders Risk Insurance (Not Included, to be carried by Owner):	0%
8. Contractor General & Professional Liability Insurance:	1.1%
9. Contractor Overhead and Profit / CM Management Fee:	6.5%
10. Connecticut State Tax:	0%
11. Payment and Performance Bond:	1%

Allowances included in this cost estimate:

1. FFE Allowance: Shelving/Storage systems, AV Systems, Furniture, etc:	$165,000
2. Technology:	$80,000
3. Weapons Vault & Vault Doors - Allowance:	$9,000
4. Landscaping Allowance:	$30,000
5. Arborist Allowance:	$18,000
6. Carbon Neutral Design and Construction Allowance:	$250,000
7. Hazmat - Building Demo:	$20,000
8. Hazmat - Soils:	$20,000

Clarifications:

- General conditions costs can vary widely depending upon the sophistication of the selected contractor. This estimate accounts for a contractor that is appropriate for the type and size of the construction project.
- Specific inclusions and exclusions are as per the line items included in the detailed estimate.
- The construction costs in this estimate represent the fair market value and are not intended to be a prediction of the lowest bid.
- The costs include: labor, material, equipment, and the subcontractor's overhead and profit.
- Pricing assumes competitive bidding on all elements of the construction work, assuming a minimum of three competitive bidders for all general contractors, subcontractors, materials, and vendors.
- Prices can be expected to be higher due to the lack of competition if fewer bids are received or solicited.
- Regular work hours are included.
- Prevailing wage is included.
- CMU Perimeter walls are included at the perimeter and interior walls at the Weapons Storage Vault and the Ammunition Storage Room.

Exclusions:

- Design and engineering fees are not included.
- Removal and replacement of unsuitable soil materials.
- Extra materials over and above industry standards.
- Unforeseen conditions.
- Additional liability insurance is not included.
- Off hour/premium time is not included.
- Premium costs for "quick ship" of materials and/or equipment are not included.
- Removal, storage, and reinstallation of Owner contents.
- Removal, replacement, and/or repairs to the existing armored barrier and moving target system is not included.
- Soft costs are not included including but not limited to: furniture, AV equipment, workstations, side tables, chairs, desks, etc.
- Observation equipment, monitors, displays, scopes, cameras and all associated raceways, wiring, and terminations are not included.
- Observation equipment, monitors, displays, scopes, cameras and all associated raceways, wiring, and terminations are not included.

- Removal and replacement of site retaining walls is not included.
- Deep dynamic compaction (DDC) is not included.
- Temporary heat or hot water is not included.
- Spray foam insulation is not included.
- Intumescent paint is not included.
- Bullet resistant windows and glazing is not included.
- Graphics branding is not included.
- Storage shelving is assumed to part of the FFE allowance.
- Modifications, repairs, and/or replacement of the 50 yard range sidewalls is not included.
- Painting the 50yd Pistol Range Canopy Steel is not included. Galvanized steel is assumed.
- An engineered dewatering and/or well point dewatering system is not included.
- Utility fees are not included.
- A structural steel superstructure is not included.
- Remediation or reconstruction of the existing trap (earth berm) is not included.
- Providing a concrete pad under the existing trap (earth berm) is not included.
- Controlling run off at the trap (earth berm) is not included.
- Tactical baffles are not included.
- Targets are not included.
- Range equipment is not included.

7.3 UNIFORMAT LEVEL I - CONSTRUCTION COST ESTIMATE

The table below contains the Uniformat Level I Estimate. Backup information on how these numbers were derived can be found in **Appendix J.** We estimate the total construction costs of Pre-Design Option 1 including site and range improvements to be $8,543,000, with an overall project budget of $10,764,000 based on construction commencing in 2023.

#	Description	Quantity	Unit	Unit Cost	Total Cost	12/30/2021
ESCALATION MATRIX (based on 25-yr standard construction escalation)						
#	Description	2022	2023	2024	2025	2026
1	Total Construction Costs	$8,285,989	$8,543,014	$8,800,039	$8,959,149	$9,216,174
2	Design Fees and Owner Contingency					
3	Architectural Fee	$828,599	$854,301	$880,004	$895,915	$921,617
4	DAS Fees	$248,580	$256,290	$264,001	$268,774	$276,485
5	CA Fees	$248,580	$256,290	$264,001	$268,774	$276,485
6	Owner Contingency	$828,599	$854,301	$880,004	$895,915	$921,617
7	Sub Total Soft Costs	$2,154,357	$2,221,184	$2,288,010	$2,329,379	$2,396,205
8	TOTAL PROBABLE PROJECT COST	$10,440,347	$10,764,198	$11,088,049	$11,288,528	$11,612,380

Figure 7-1: Escalation Table

Project	RECONSTRUCT STATE POLICE FIRING RANGE - NEW BUILDING		GFA	6,775 SF	
			Element	Cost per Unit GFA	%
Input C	Description		Cost		
A	SUBSTRUCTURE		622,000	92	9.67%
	A10	FOUNDATIONS	622,000	92	9.67%
	A20	BASEMENT CONSTRUCTION	-	-	0.00%
B	SHELL		1,496,000	221	23.27%
	B10	SUPERSTRUCTURE	671,000	99	10.44%
	B20	EXTERIOR ENCLOSURE	641,000	95	9.97%
	B30	ROOFING	184,000	27	2.86%
C	INTERIORS		968,000	143	15.05%
	C10	INTERIOR CONSTRUCTION	612,000	90	9.52%
	C20	STAIRS	161,000	24	2.50%
	C30	INTERIOR FINISHES	195,000	29	3.03%
D	SERVICES		1,159,000	171	18.02%
	D10	CONVEYING	108,000	16	1.68%
	D20	PLUMBING	131,000	19	2.04%
	D30	HVAC	327,000	48	5.09%
	D40	FIRE PROTECTION	157,000	23	2.44%
	D50	ELECTRICAL	436,000	64	6.78%
E	EQUIPMENT & FURNISHINGS		20,000	3	0.31%
	E10	EQUIPMENT	15,000	2	0.23%
	E20	FURNISHINGS	5,000	1	0.08%
F	SPECIAL CONSTRUCTION & DEMOLITION		188,000	28	2.92%
	F10	SPECIAL CONSTRUCTION	188,000	28	2.92%
	F20	SELECTIVE BUILDING CONSTRUCTION	42,000	6	0.65%
S	FF&E		245,000	36	3.81%
	S20	FF&E	245,000	36	3.81%
	SUBTOTAL	Building Elemental Trade Cost	4,698,000	693.43	73.06%
Z	GENERAL REQUIREMENTS		493,334	73	7.67%
Z	CONTINGENCIES / PERMITS / INSURANCE / FEE/ TAX / BONDS		1,238,000	183	19.25%
		SUB TOTAL BUILDING COSTS	6,430,000	949	100.00%
		ADD Carbon Neutral Design & Construction Allowance	250,000		
		TOTAL BUILDING COSTS	6,680,000		

Figure 7-2: Uniformat Building Cost Estimate

Project	RECONSTRUCT STATE POLICE FIRING RANGE - SITEWORK ELEM		NSA	12.50 SF	
			Element	Cost per Unit NSA	%
Input C	Description		Cost		
G	BUILDING SITEWORK		1,303,000	104,240	81.13%
	G10	Site Preparation	222,000	17,760	13.82%
	G20	Site Improvements	690,000	55,200	42.96%
	G30	Site Mechanical Utilities	105,000	8,400	6.54%
	G40	Site Electrical Utilities	286,000	22,880	17.81%
	G90	Other Site Construction	-	-	0.00%
Z	GENERAL REQUIREMENTS		1,303,000	104,240	81.13%
Z	CONTINGENCIES / PERMITS / INSURANCE / FEE/ TAX / BONDS		303,000	24,240	18.87%
	Z2060	TOTAL BUILDING COSTS	1,606,000	128,480	100.00%

Figure 7-3: Uniformat Site Cost Estimate

APPENDIX A
EXISTING CONDITIONS LIMITATIONS

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APPENDIX A - EXISTING CONDITIONS LIMITATIONS

A.1 USE OF REPORT

GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of the Client for the stated purpose(s) and location(s) identified in the Report. Use of this Report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

A.2 STANDARD OF CARE

Our findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Report and/or proposal, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. Conditions other than described in this report may be found at the subject location(s).

The interpretations and conclusions presented in the Report were based solely upon the services described therein, and not on scientific tasks or procedures beyond the scope of the described services. The work described in this report was carried out in accordance with the agreed upon Terms and Conditions of Engagement.

GZA's Existing Conditions Report was performed in accordance with generally accepted practices of qualified professionals performing the same type of services at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made. The findings of the presented in this Existing Conditions Report are not an absolute characterization of actual risks, but rather serve to highlight potential sources of risk at the site(s).

The Existing Conditions Report included review/analysis of information contained in current FEMA reports developed using the data and methodologies available when the study was completed. The development of flood elevations by FEMA relied on readably available historical flow data. More recent data or future floods that impact the project area may result in changes to the flood -frequency curves.

Unless specifically stated otherwise, the flood evaluations performed by GZA and associated results and conclusions are based upon evaluation of historic data, trends, references, and guidance with respect to the current climate and sea level conditions. Future climate change may result in alterations to inputs which influence flooding at the site (*e.g.*, rainfall totals, storm intensities, mean sea level, *etc*.). Such changes may have implications on the estimated flood elevations, wave heights, flood frequencies and/or other parameters contained in this report.

A.3 RELIANCE ON INFORMATION FROM OTHERS

In conducting our work, GZA has relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Any inconsistencies in this information which we have noted are discussed in the Report.

A.4 COMPLIANCE WITH CODES AND REGULATIONS

We used reasonable care in identifying and interpreting applicable codes and regulations necessary to execute our scope of work. These codes and regulations are subject to various, and possibly contradictory, interpretations. Interpretations with codes and regulations by other parties are beyond our control.

A.5 ADDITIONAL INFORMATION

In the event that the Client or others authorized to use this report obtain information on conditions at the site(s) not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this evaluation, may modify the opinions stated in this report.

Additional analyses are required to refine the flood-frequency curves at the project site(s) and to include wave effects and to define flood hydrographs and flow velocities.

A.6 ADDITIONAL SERVICES

GZA recommends that we be retained to provide services during any future investigations, design, implementation activities, construction, and/or property development/ redevelopment at the Site. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

A.7 ADDITIONAL LIMITATIONS

GZA's Existing Conditions Report considered only external flood hazards due to natural events. Internal flooding due to tank failures, plumbing failures, etc. was not considered in this Assessment.

GZA's Existing Conditions Report included a limited site reconnaissance to observed major building systems and exterior openings and penetrations. A detailed inventory of all building systems and penetrations was not performed as part of this Assessment.

Certain building systems (identified in the text of this Report) were not observed during the site reconnaissance.

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APPENDIX B
EXISTING SITE CONDITION PHOTOS

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Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Photo No. 1	**Date:** 08/09/21
Direction Photo Taken: East	
Description: View of existing Range Tower from front parking lot	

Photo No. 2	**Date:** 08/09/21
Direction Photo Taken: East	
Description: Image of the two Conex boxes near the northern boundary of the property and the northern portion of the Firing Range Tower Buildings.	

Appendix B
Existing Site Condition Photos

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Photo No. 3	**Date:** 8/18/21
Direction Photo Taken: Northeast	
Description: Image of the main parking area and temporary trailers	

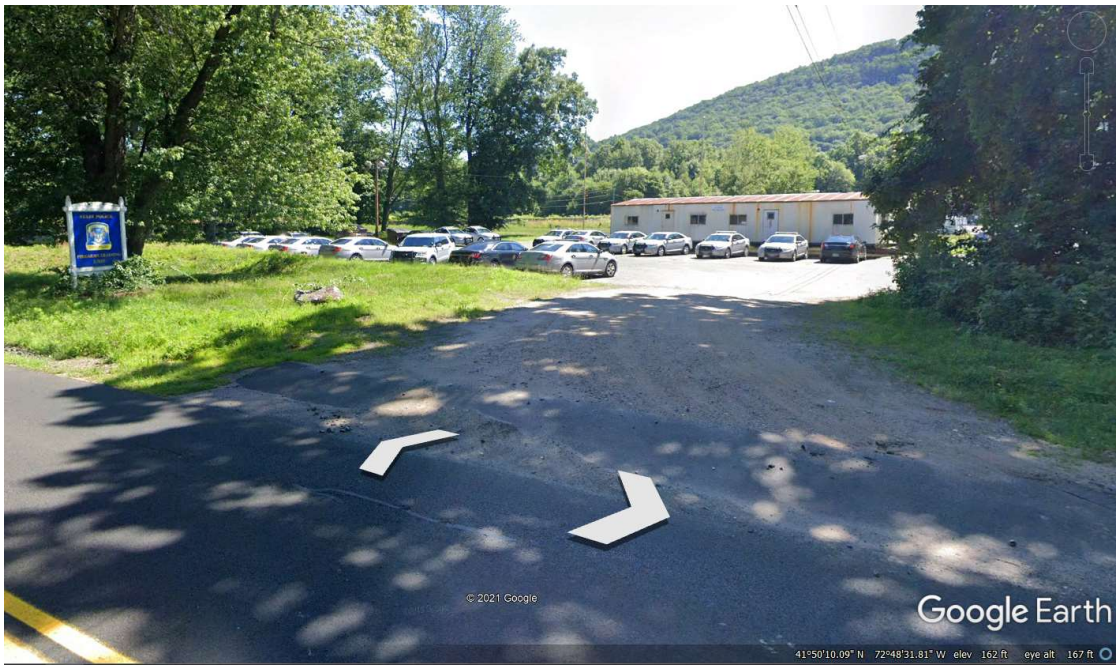

Photo No. 4	**Date:** 08/09/21
Direction Photo Taken: West	
Image of the breezeway that provides access between the two building spaces located on the 1st floor.	

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Photo No. 5	**Date:** 08/09/21

Direction Photo Taken: Southwest

Description: Image of the gravel parking areas, mobile support storage trailers, equipment, and berm located on the southern side of the Site that extends to the Pistol Range Shooting Deck.

Photo No. 6	**Date:** 08/09/21

Direction Photo Taken: East

Description: Image of the Pistol Firing Range and concrete wall located on the southwestern portion of the Site

Appendix B
Existing Site Condition Photos

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Photo No. 7	**Date:** 08/09/21
Direction Photo Taken: West	
Description: Image of the pump, mobile support trailers and roadway that slopes upward to access Nod Road.	

Photo No. 8	**Date:** 08/09/21
Direction Photo Taken: South	
Description: Pump used to drain the Site after flooding events and the berm located on the southern side of the Site.	

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Photo No. 9	**Date:** 08/09/21
Direction Photo Taken: North	
Description: Image of the berm located on the northern portion of the Site at the Pistol Firing Range	

Photo No. 10	**Date:** 08/09/21
Direction Photo Taken: North	
Description: View of Range House, two Conex Containers, Portlets and berm located on the northern portion of the Site at the Pistol Firing Range	

Appendix B
Existing Site Condition Photos

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Photo No. 11	**Date:** 08/09/21

Direction Photo Taken: Southeast

Description: View of the elevated deck and shooting deck at the Rifle Range.

Photo No. 12	**Date:** 08/09/21

Direction Photo Taken: East

Description: View of the gravel road and 200-yard Rifle Range grounds extending to the 25-foot-high berm to the east of the open wetlands and gravel areas.

Photo No. 13	**Date:** 08/09/21

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Direction Photo Taken: West

Description: Image of the first stairway and berm on the northern side of the Site connecting the Pistol and Rifle Ranges

Photo No.	**Date:**
14	08/09/21

Direction Photo Taken: West

Description: Image of the second stairway and berm on the southern side of the Site connecting the Pistol and Rifle Ranges

Appendix B
Existing Site Condition Photos

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Photo No. 15	**Date:** 08/09/21
Direction Photo Taken: South	
Description: Image of shooting deck at the Rifle Firing Range and storage room	

Photo No. 16	**Date:** 08/09/21
Direction Photo Taken: East	
Description: Image of the wetlands and gravel areas located on the Rifle Range to the east	

Photo No. 17	**Date:** 08/09/21

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Direction Photo Taken: West

Description: Image of the wetlands and gravel areas located on the Rifle Range to the west

Photo No. 18	**Date:** 08/09/21

Direction Photo Taken: East

Description: Image of the low-lying area south of the 25-foot-high berm located at the end of the Rifle Range

Photo No. 19	**Date:** 08/09/21

Appendix B
Existing Site Condition Photos

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Direction Photo Taken: Northeast

Description: Image of the 25-foot-high earthen berm at the eastern end of the Rifle Range

Photo No.	**Date:**
20	08/09/21

Direction Photo Taken: North

Description: Equalizer culvert located north of the grass and parking areas on the western portion of the Site

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Photo No. 21	**Date:** 08/09/21
Direction Photo Taken: East	
Description: View of existing 50 Yard Range Backstop located west of the Firing Range Tower.	

Photo No. 22	**Date:** 08/09/21
Direction Photo Taken: East	
Description: Image of secondary berm at the 200 Yard Range Backstop located on the eastern portion of the site.	

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APPENDIX C
EXISTING BUILDING CONDITION PHOTOS

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Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Photo No. 1	**Date:** 7/27/21
Direction Photo Taken: Southwest	
Description: View of existing portable trailers.	

Photo No. 2	**Date:** 7/27/21
Direction Photo Taken: South	
Description: View of existing portable trailers.	

Appendix C
Existing Building Condition Photos

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Photo No. 3	**Date:** 7/27/21
Direction Photo Taken: West	
Description: View of existing conex boxes and wood platform	

Photo No. 4	**Date:** 7/27/21
Direction Photo Taken: East	
View of existing conex boxes and wood platform	

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Photo No. 5	**Date:** 7/27/21

Direction Photo Taken: Southeast

Description: View of existing range house

Photo No. 6	**Date:** 7/27/21

Direction Photo Taken: West

Description: View of existing range house storage garage

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Photo No. 7	**Date:** 7/27/21
Direction Photo Taken: West	
Description: View of existing range house storage and upper floor tool shop	

Photo No. 8	**Date:** 7/27/21
Direction Photo Taken: Southwest	
Description: View of existing range house offices	

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** 15.0166960.00

Photo No. 9	**Date:** 7/27/21
Direction Photo Taken: West	
Description: View of existing range house observation room and offices	

Photo No. 10	**Date:** 7/27/21
Direction Photo Taken: Northwest	
Description: View of existing range house observation room	

Appendix C
Existing Building Condition Photos

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** 15.0166960.00

Photo No. 11	**Date:** 7/27/21
Direction Photo Taken: East	
Description: View of existing range house offices	

Photo No. 12	**Date:** 7/27/21
Direction Photo Taken: North	
Description: View of existing range house offices and tool shop	

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** 15.0166960.00

Photo No. 13	**Date:** 7/27/21
Direction Photo Taken: North	
Description: View of existing range house stair to tool shop	

Photo No. 14	**Date:** 7/27/21
Direction Photo Taken: West	
Description: View of existing range storage garage	

		Site Location: CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357
Photo No. 15	**Date:** 7/27/21	**REDACTED**	
Direction Photo Taken: East			
Description: View of existing range house ammunition storage room			

Photo No. 16	**Date:** 7/27/21	**REDACTED**
Direction Photo Taken: South		
Description: View of existing range house weapon storage		

	Site Location: CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Photo No. 17	**Date:** 7/27/21	REDACTED
Direction Photo Taken: East		
Description: View of existing range house weapon storage		

Photo No. 18	**Date:** 7/27/21	REDACTED
Direction Photo Taken: West		
Description: View of existing range house weapon vault		

	Site Location: CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

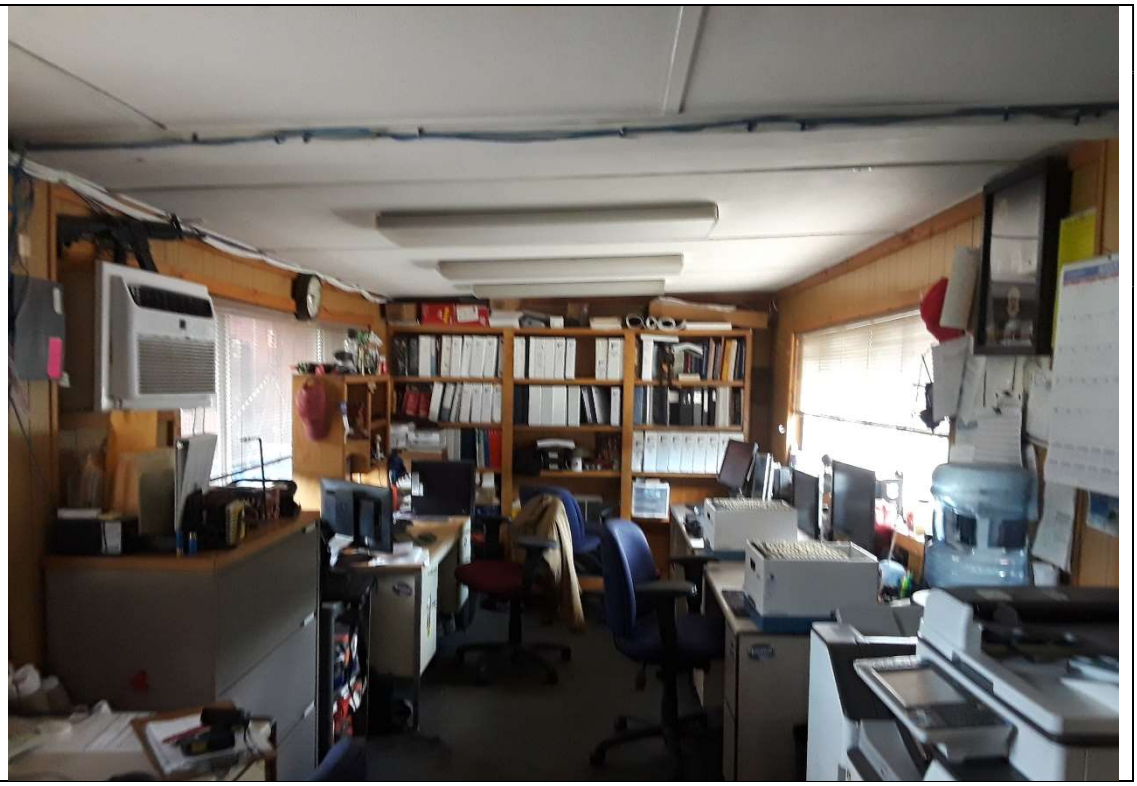
Photo No. 15	**Date:** 7/27/21
Direction Photo Taken: Southwest	
Description: View of existing range house file storage	

Photo No. 16	**Date:** 7/27/21
Direction Photo Taken: North	
Description: View of existing range house tool shop	

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Photo No. 17	**Date:** 7/27/21
Direction Photo Taken: West	
Description: View of existing range house staff rest room	

Photo No. 18	**Date:** 7/27/21
Direction Photo Taken: North	
Description: View of existing range house instructors office	



Appendix C
Existing Building Condition Photos

Client Name: Connecticut Department of Administrative Services	**Site Location:** CT State Police Firing Range, 100 Nod Road Simsbury, CT	**Project No.** BI-N-357

Photo No. 19	**Date:** 7/27/21
Direction Photo Taken: South	
Description: View of existing range house instructors office	

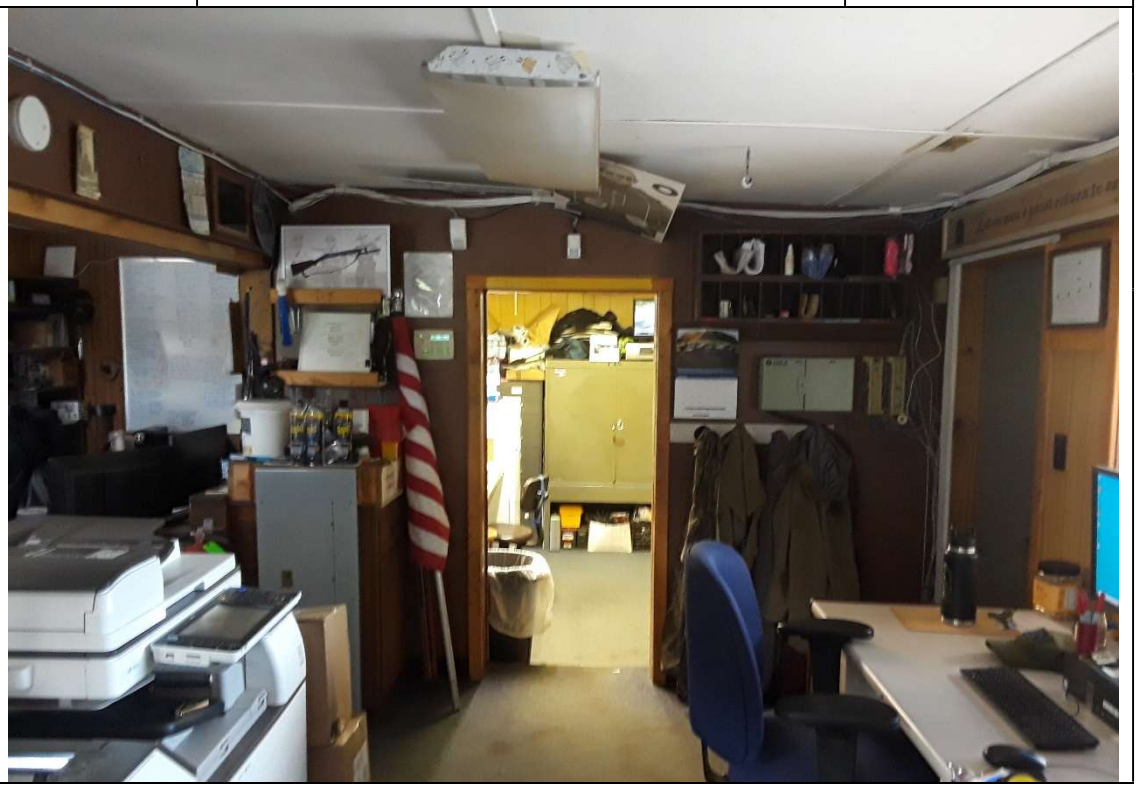
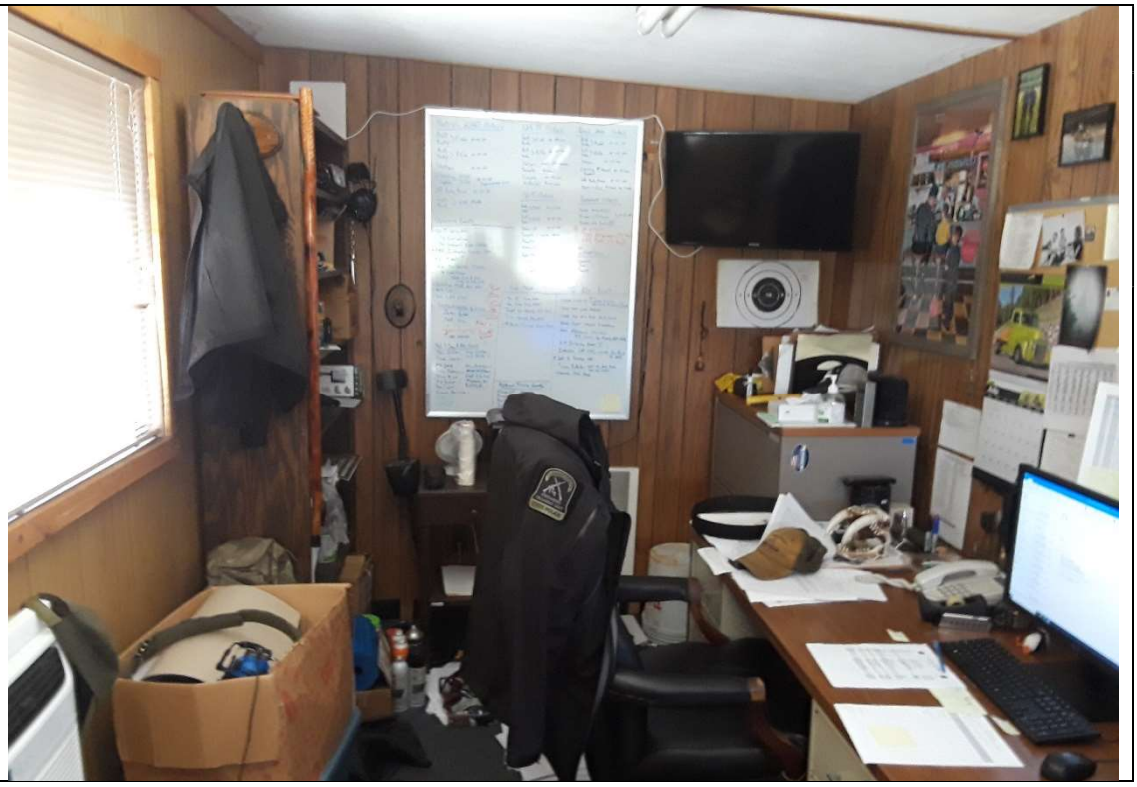


Photo No. 20	**Date:** 7/27/21
Direction Photo Taken: South	
Description: View of existing range house administrator's office	



Client Name:	Site Location:	Project No.
Connecticut Department of Administrative Services	CT State Police Firing Range, 100 Nod Road Simsbury, CT	BI-N-357

Photo No.	Date:
21	7/27/21

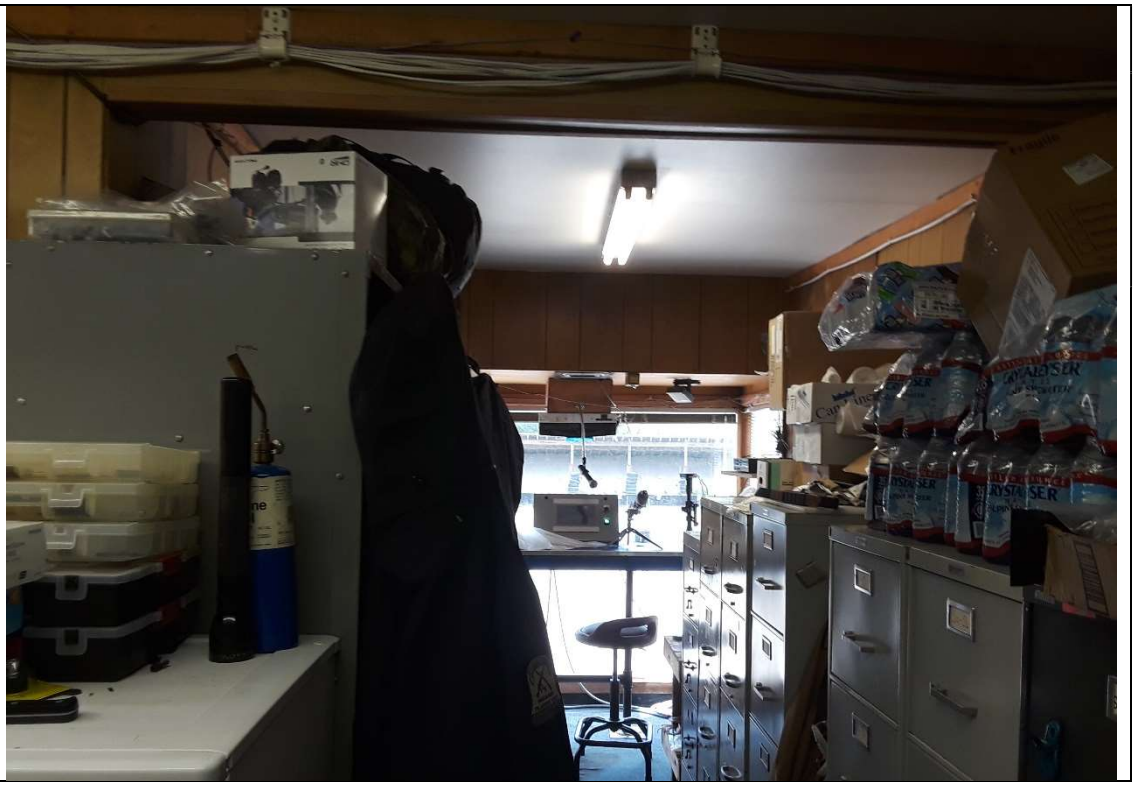
Direction Photo Taken:
South

Description:
View of existing range house kitchenette and armorer's bench

Photo No.	Date:
22	7/27/21

Direction Photo Taken:
East

Description:
View of existing range house observation room



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APPENDIX D

EXISTING CONDITIONS DRAWINGS

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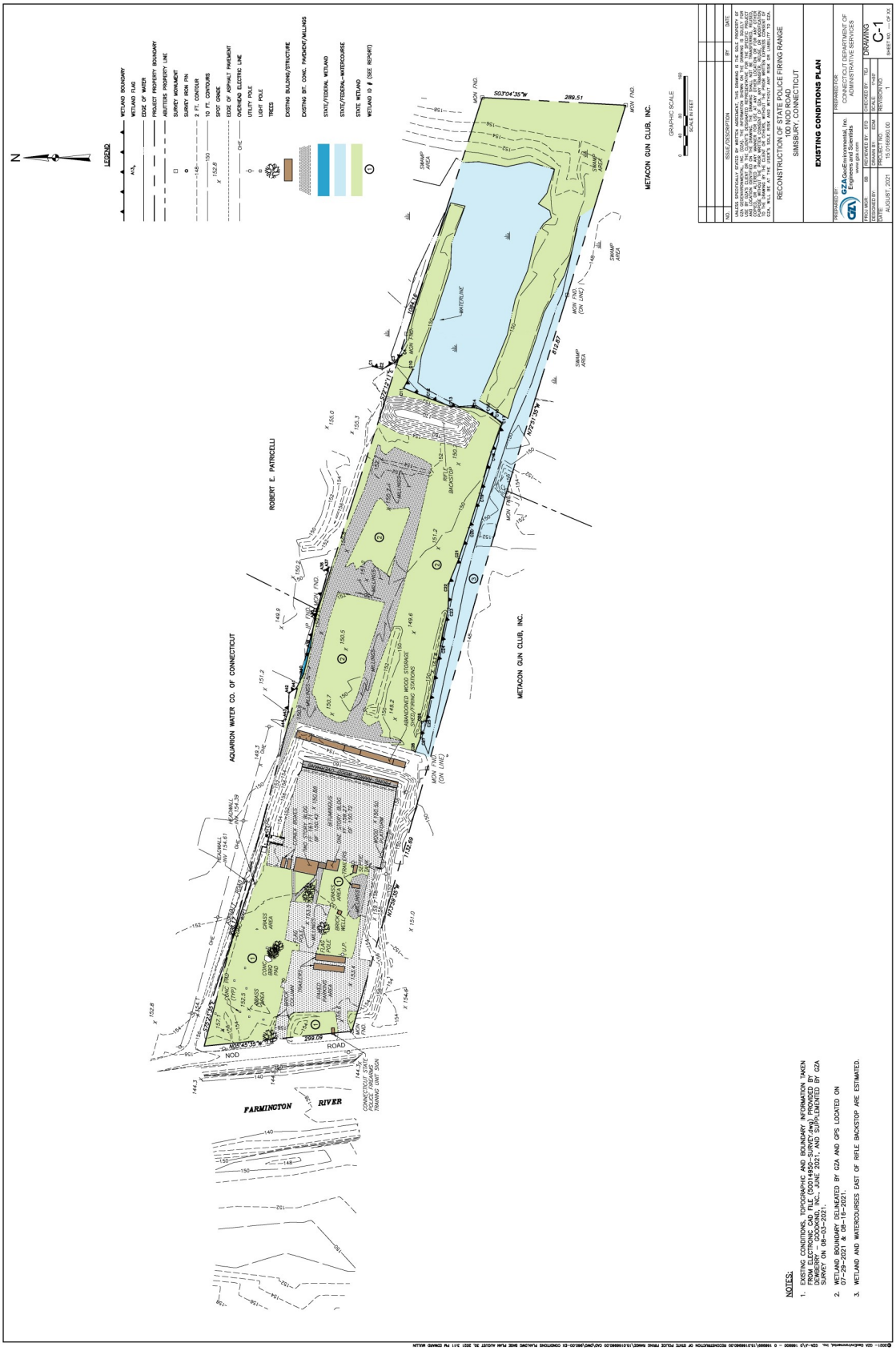
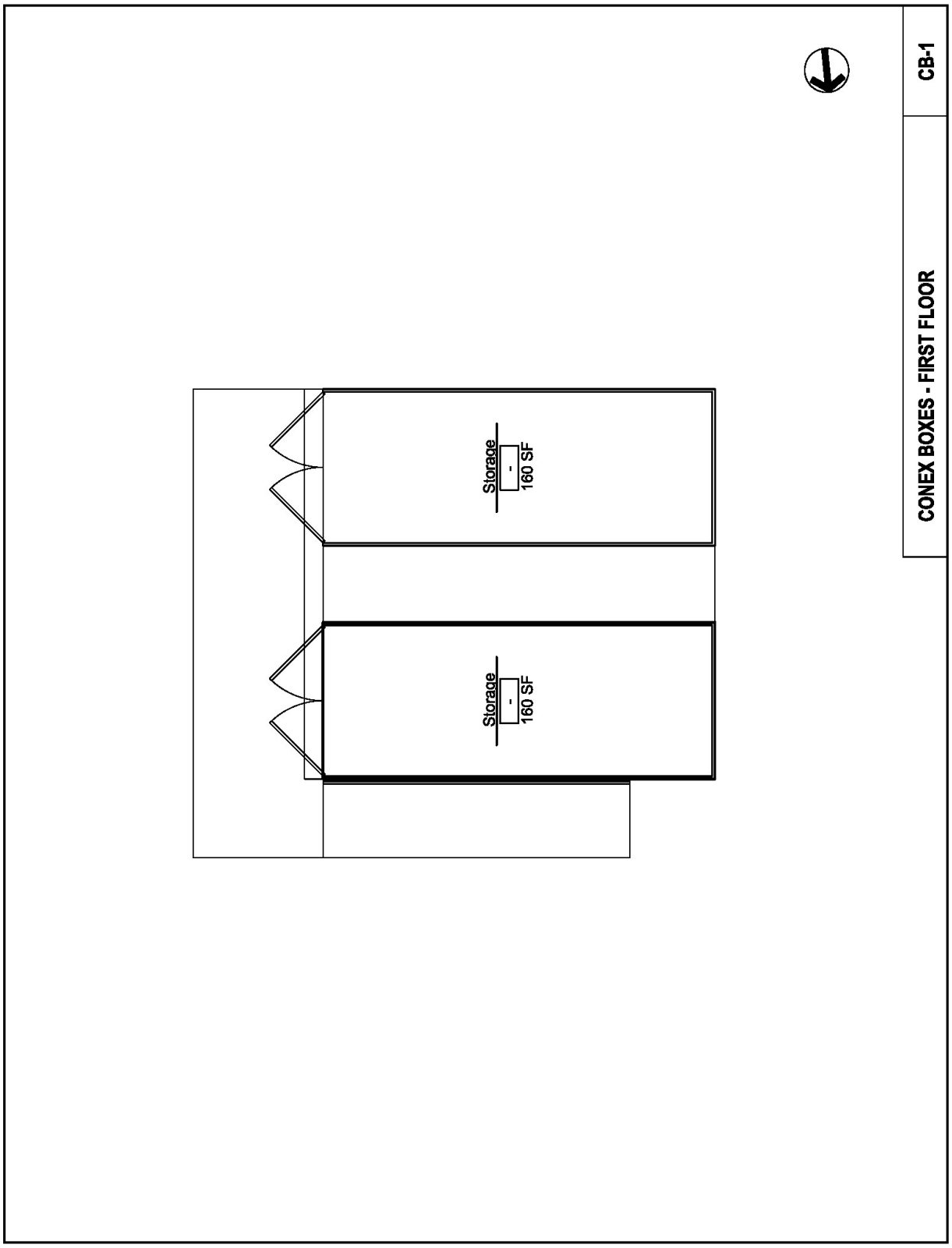
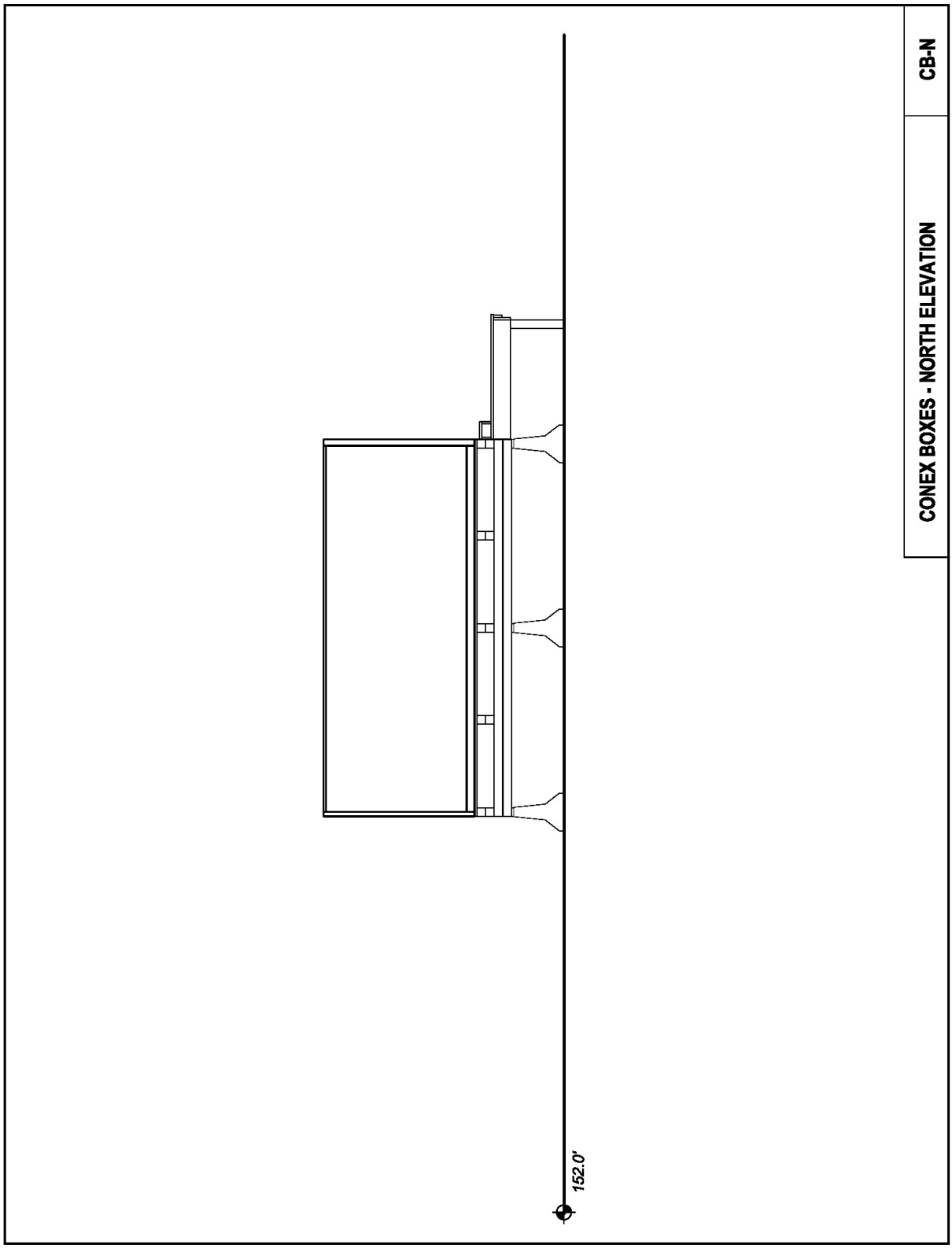


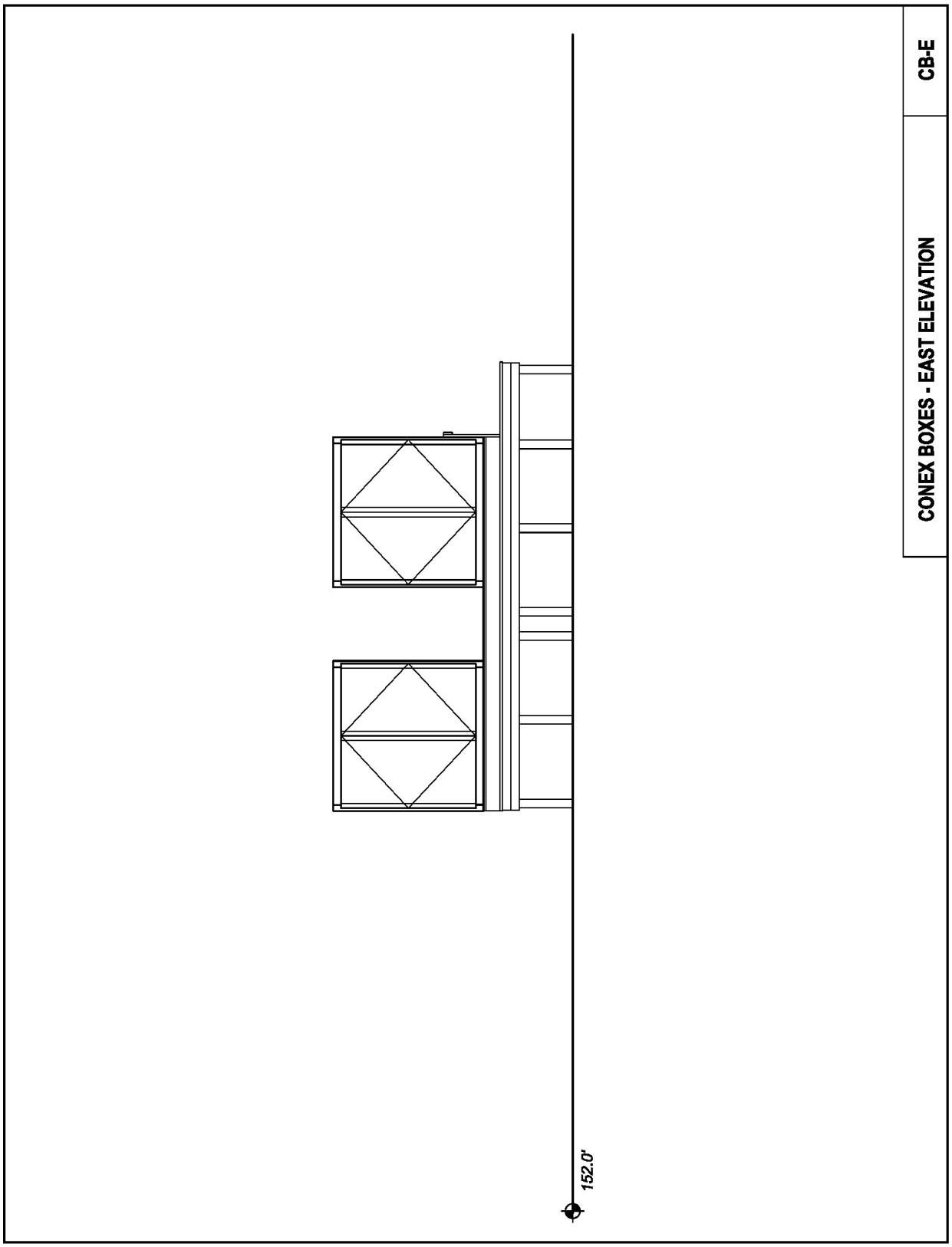
Existing Conditions Site Plan



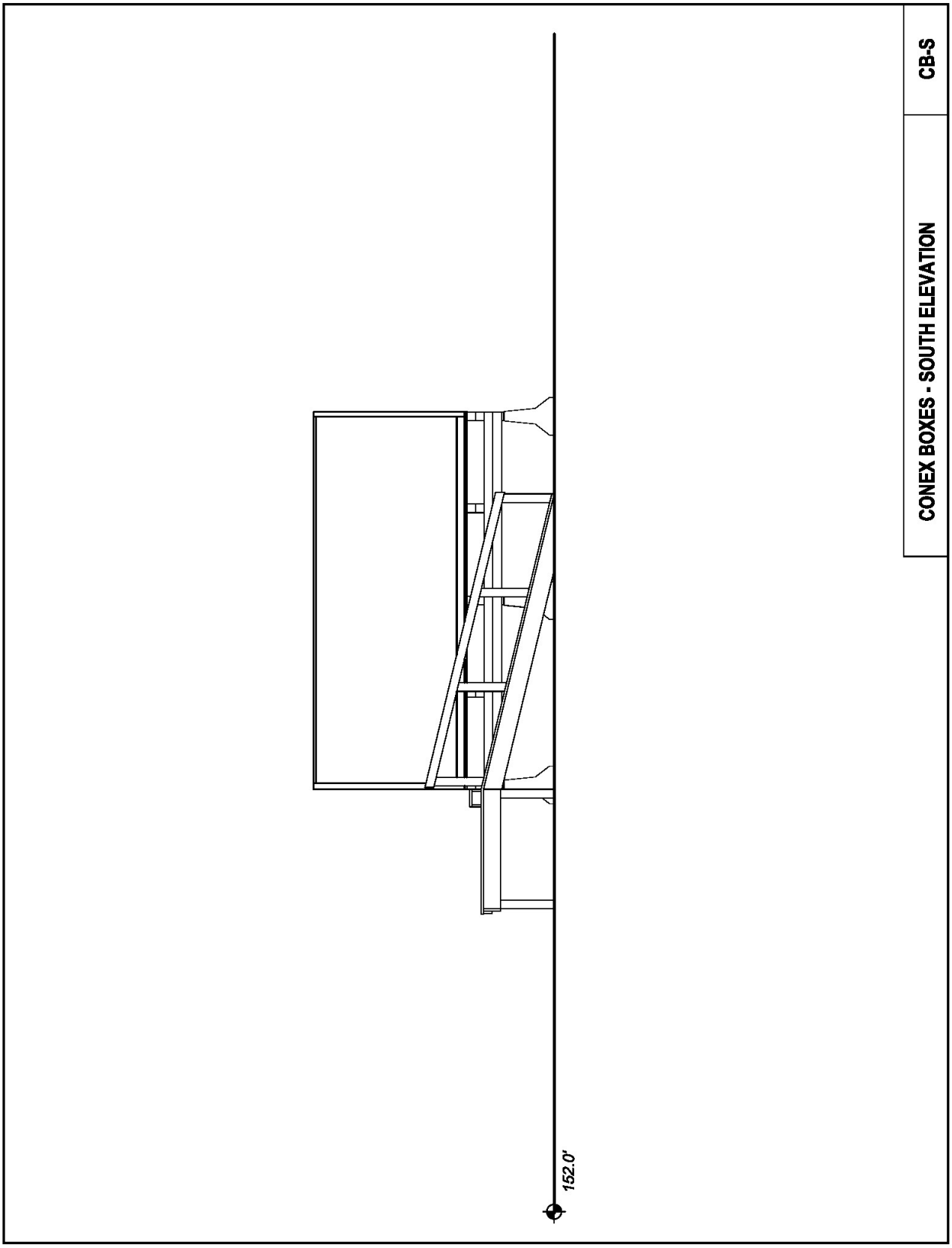
Connex Boxes First Floor



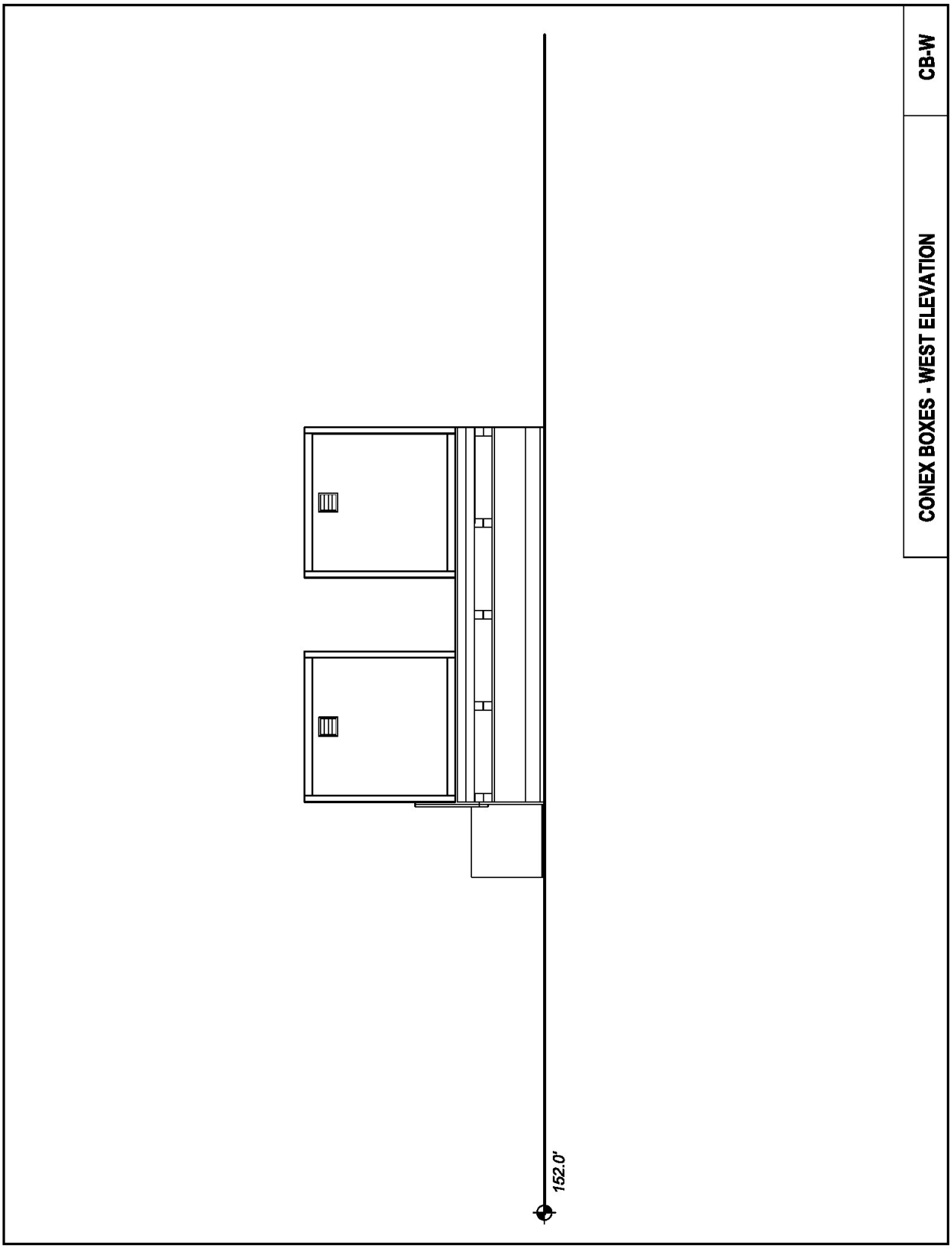
Connex Boxes North Elevation



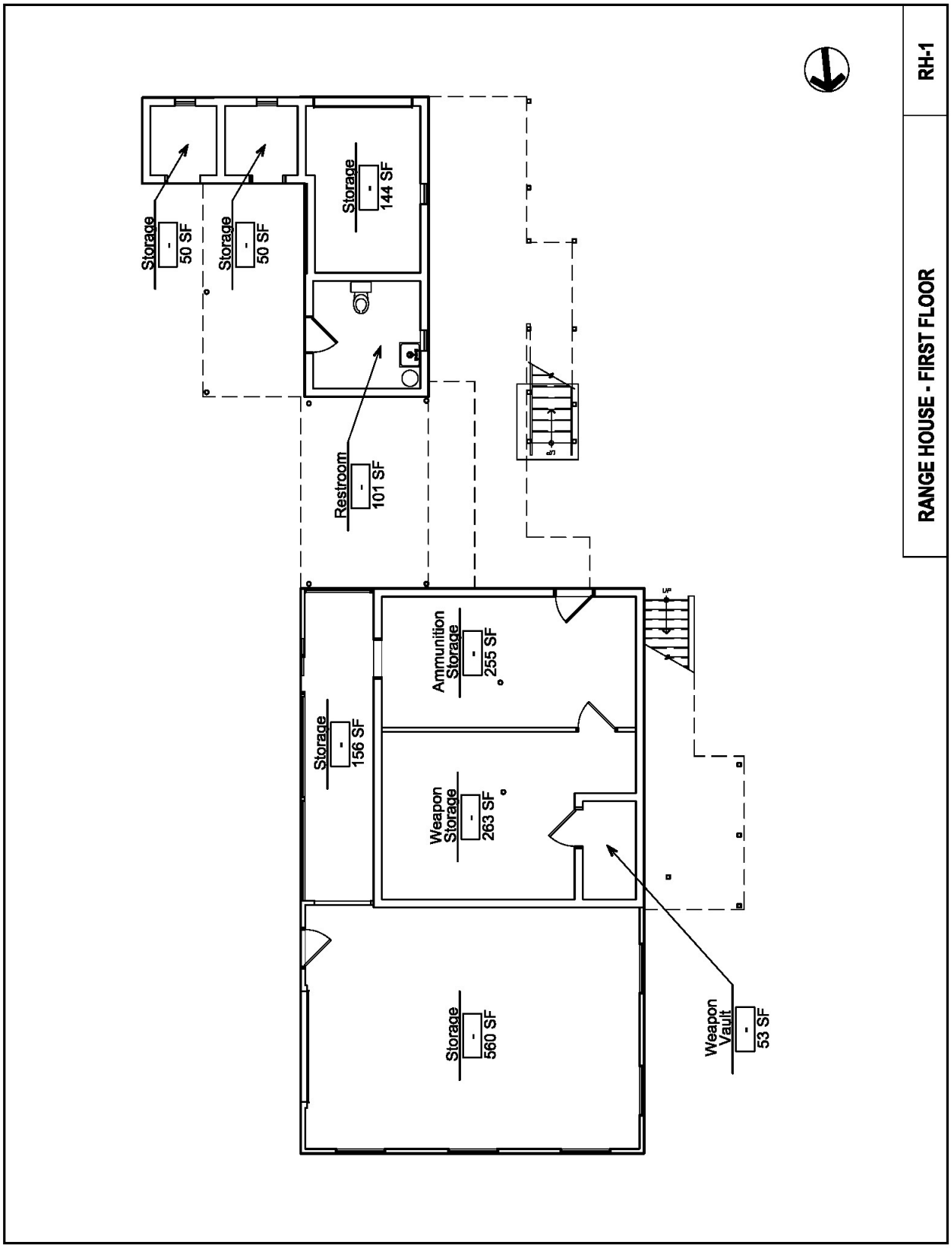
Connex Boxes East Elevation



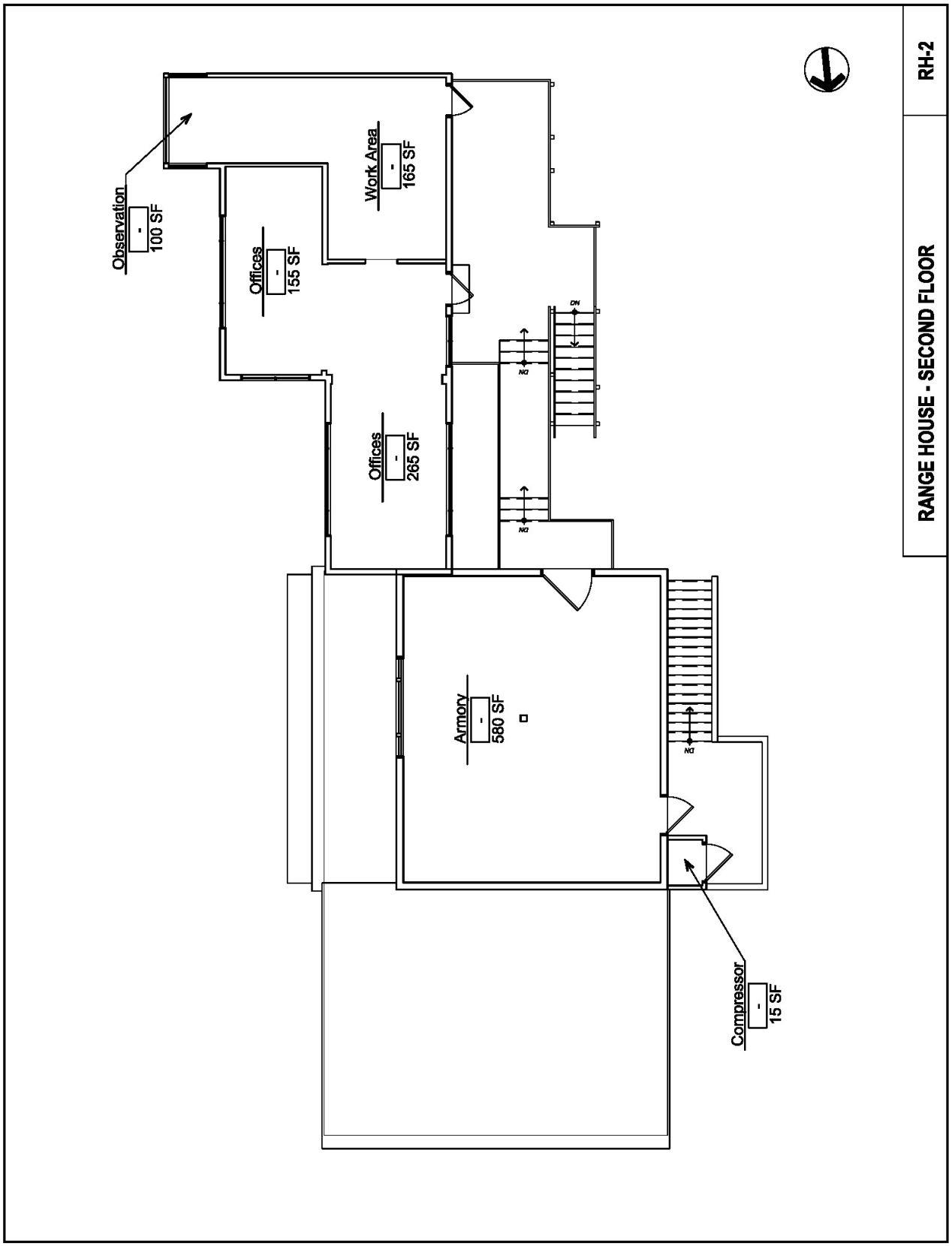
Connex Boxes South Elevation



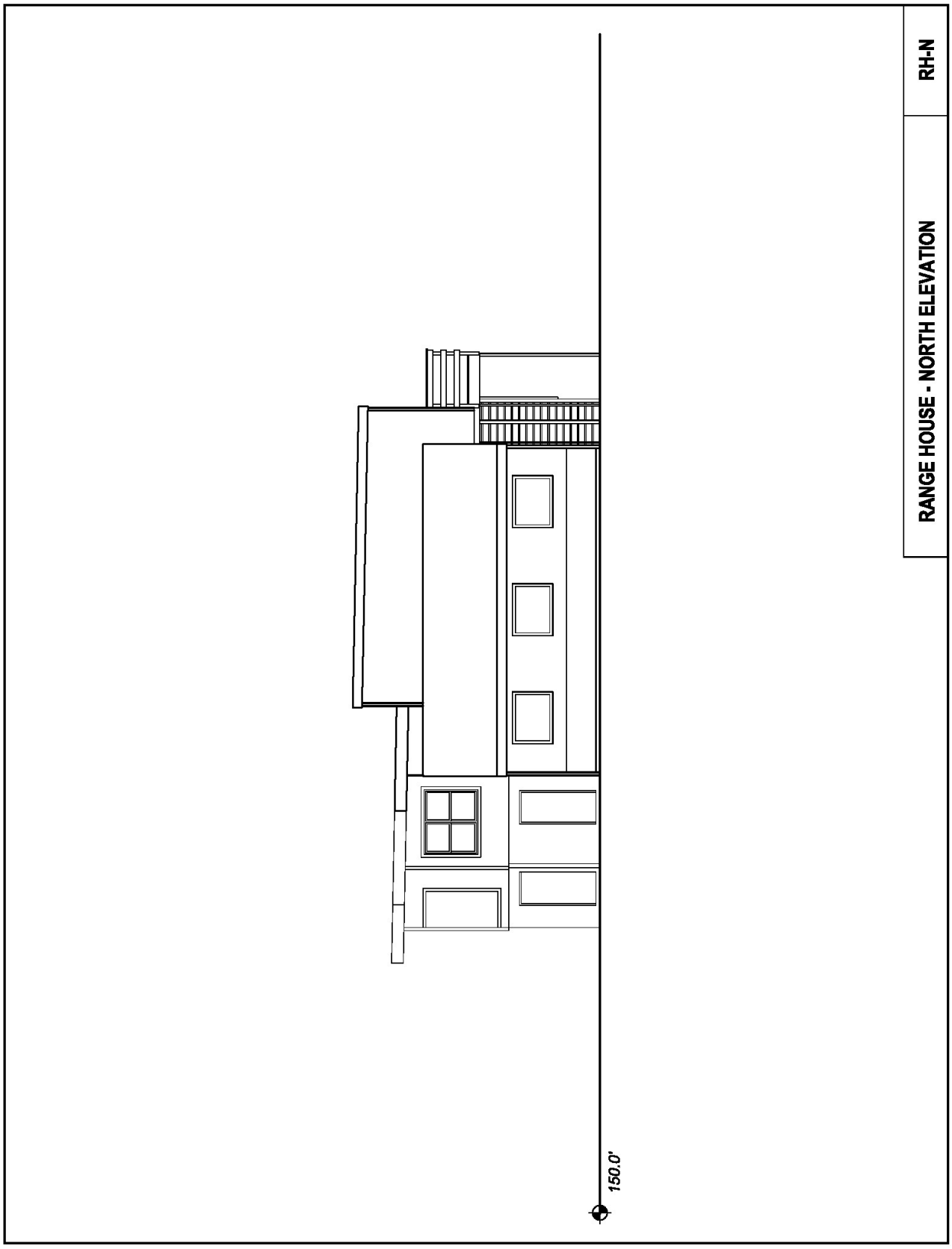
Connex Boxes West Elevation



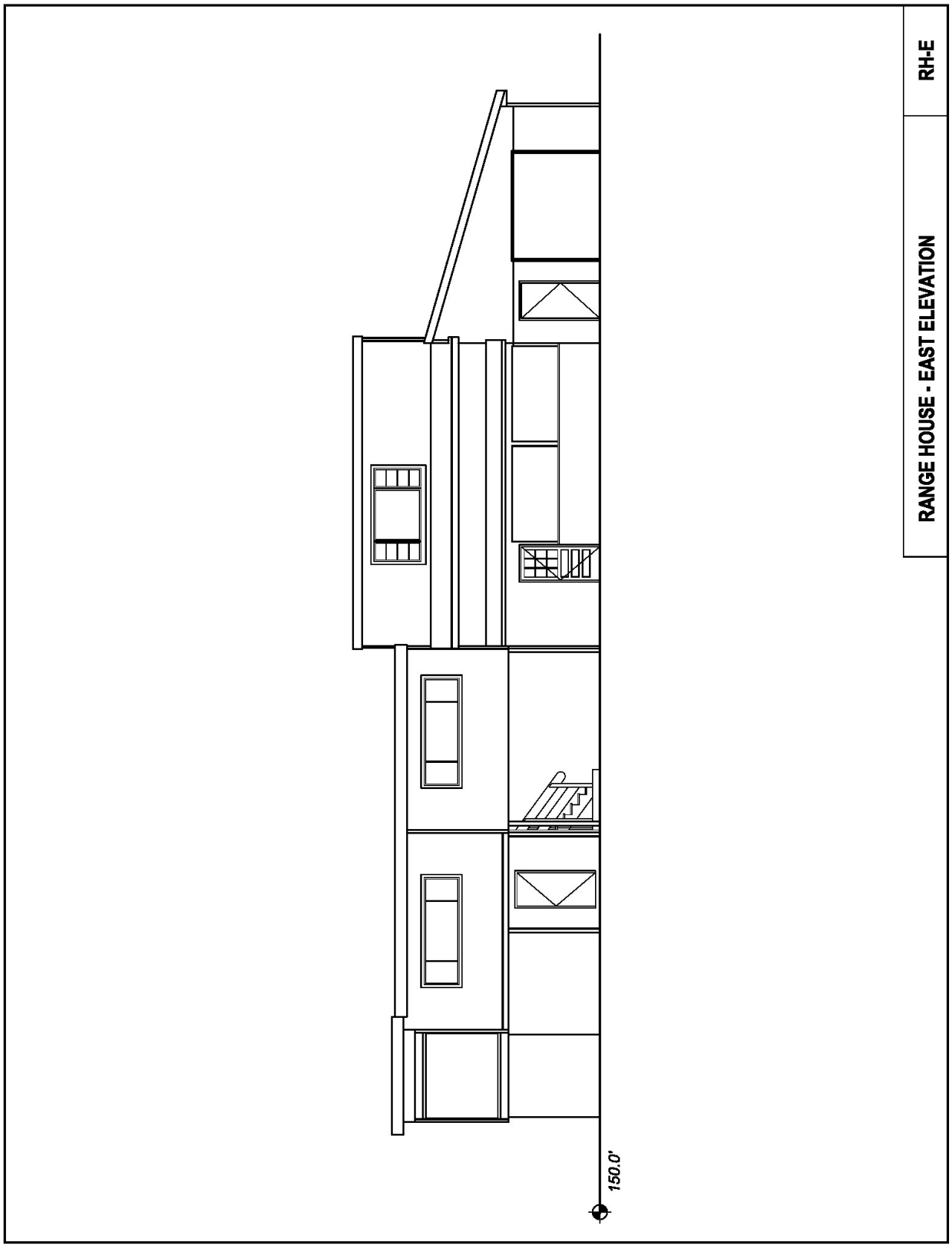
Range House First Floor



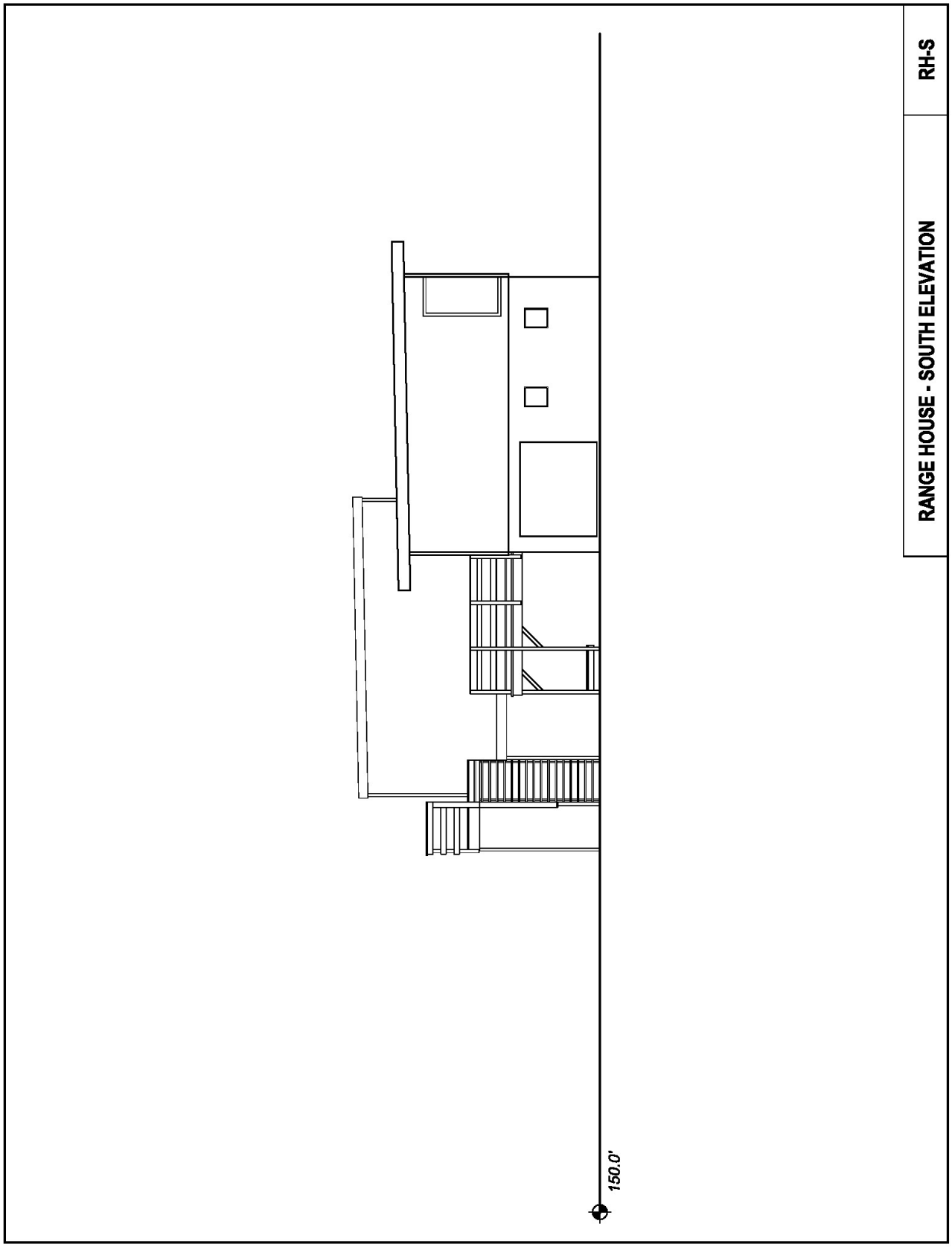
Range House Second Floor



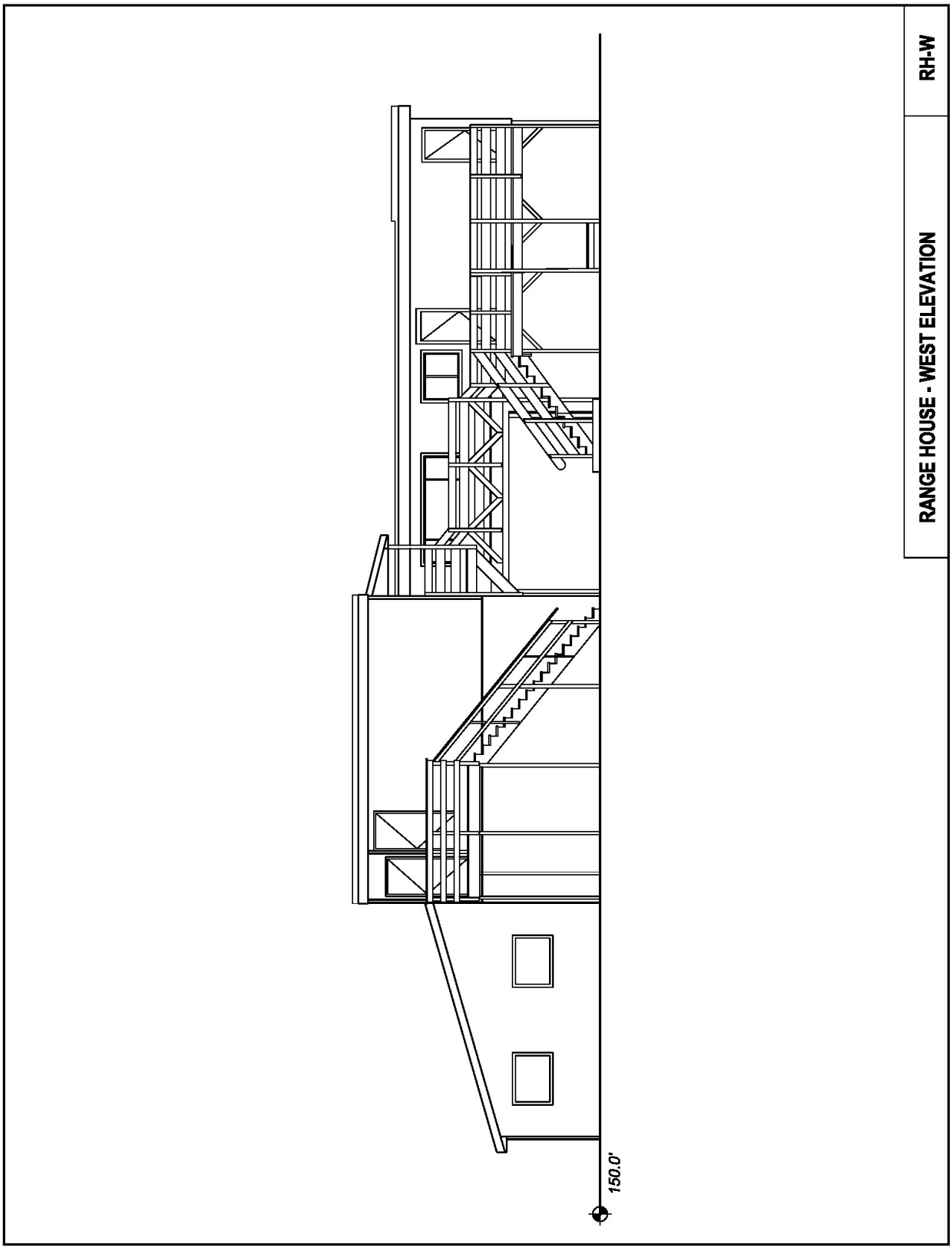
Range House North Elevation



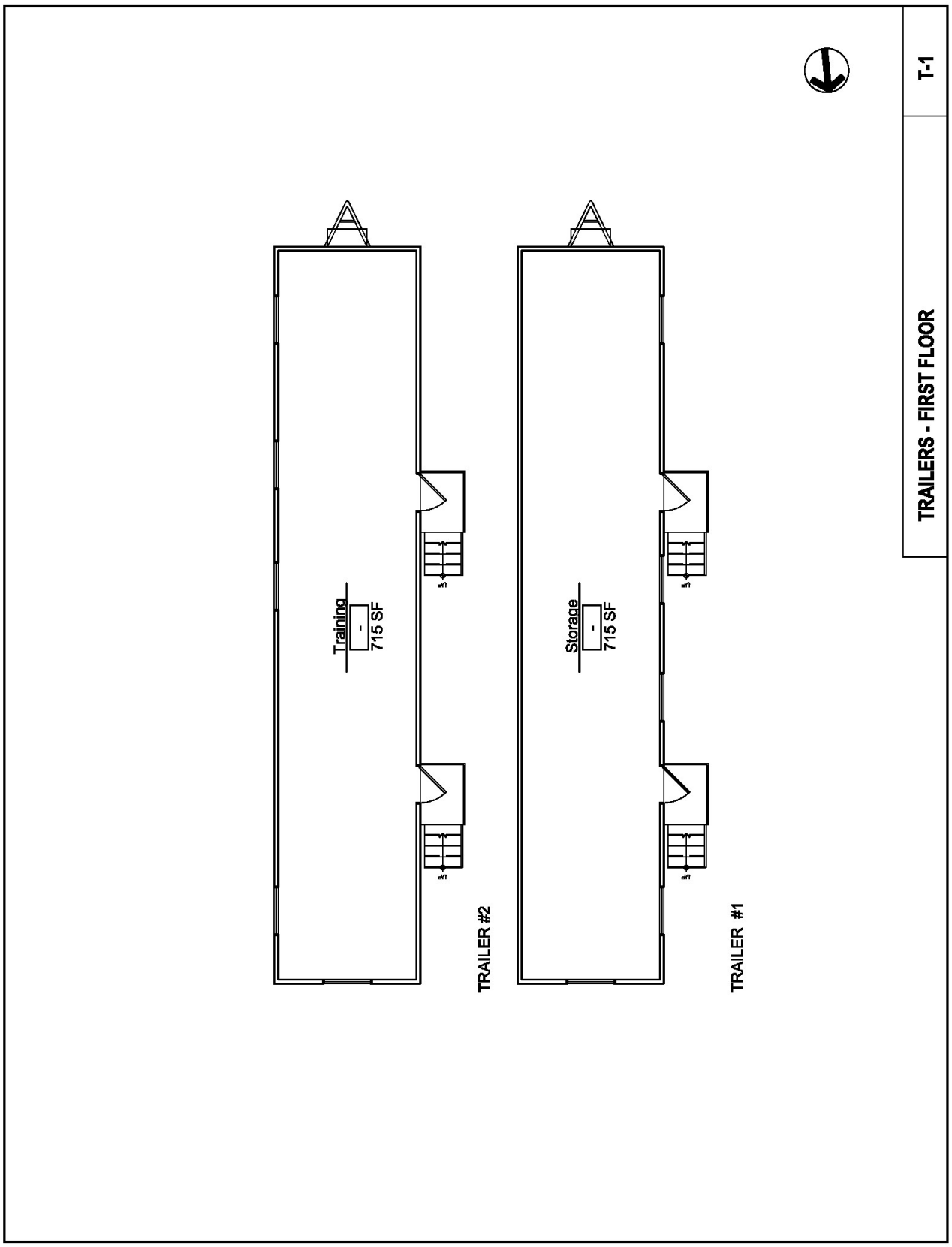
Range House East Elevation



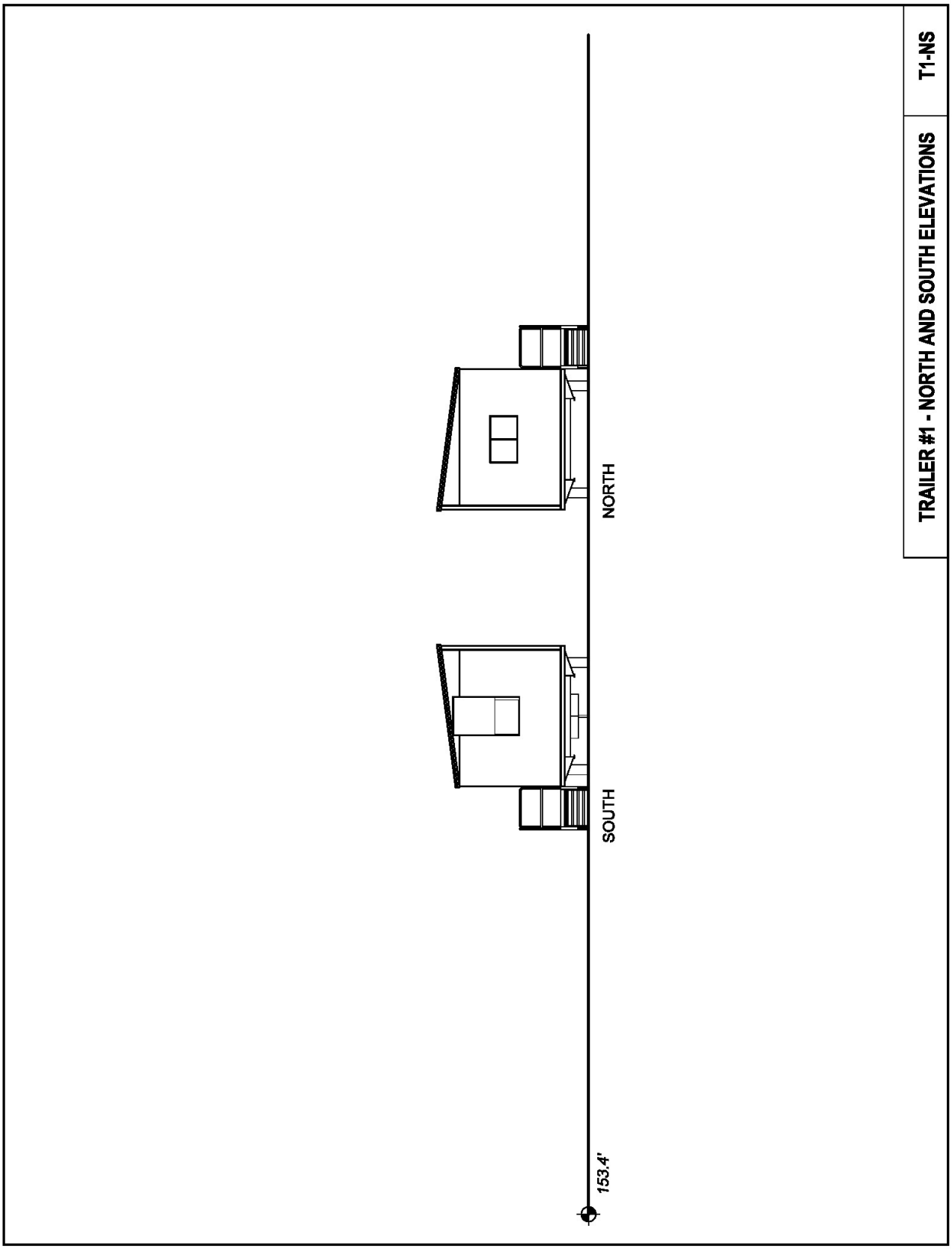
Range House South Elevation



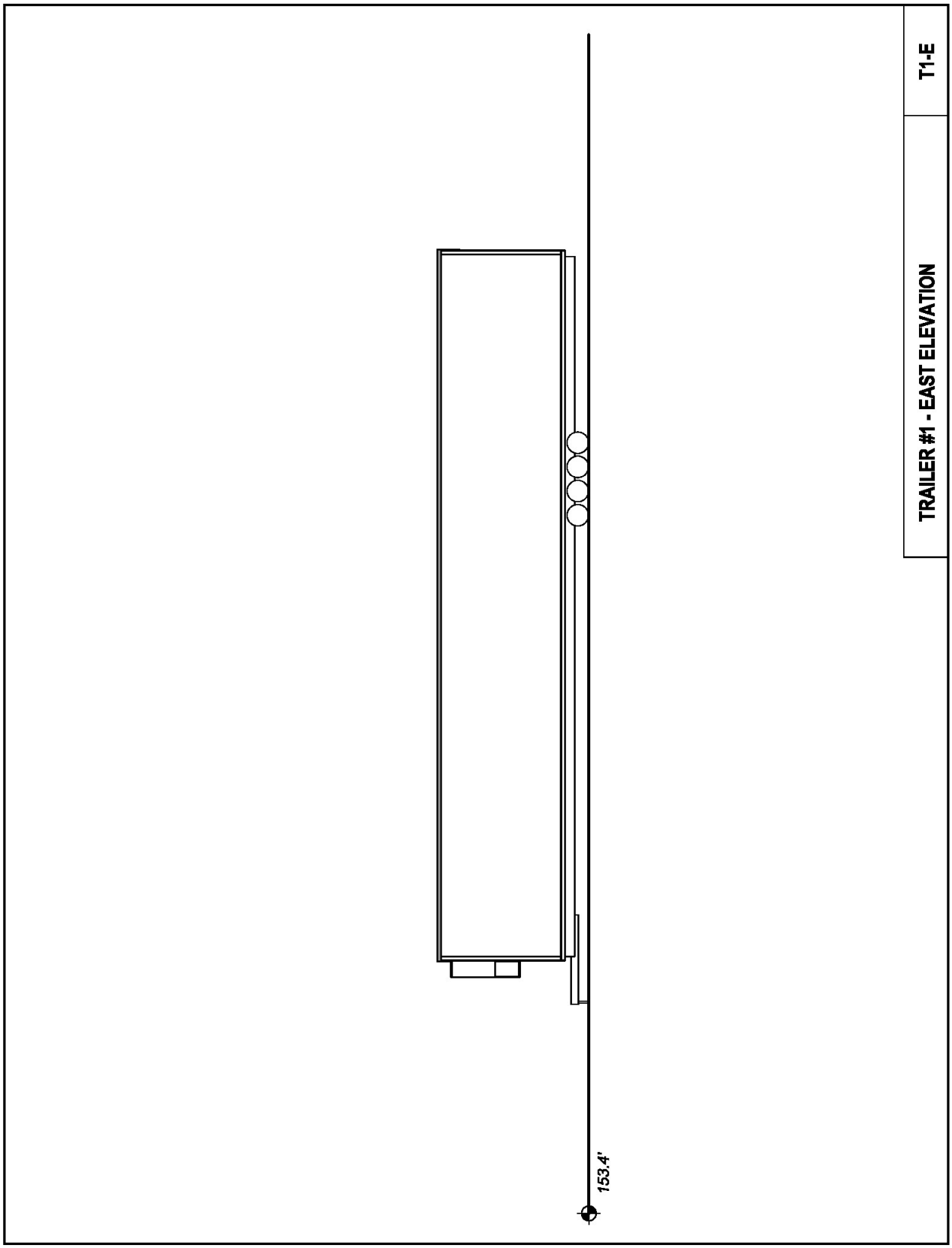
Range House West Elevation



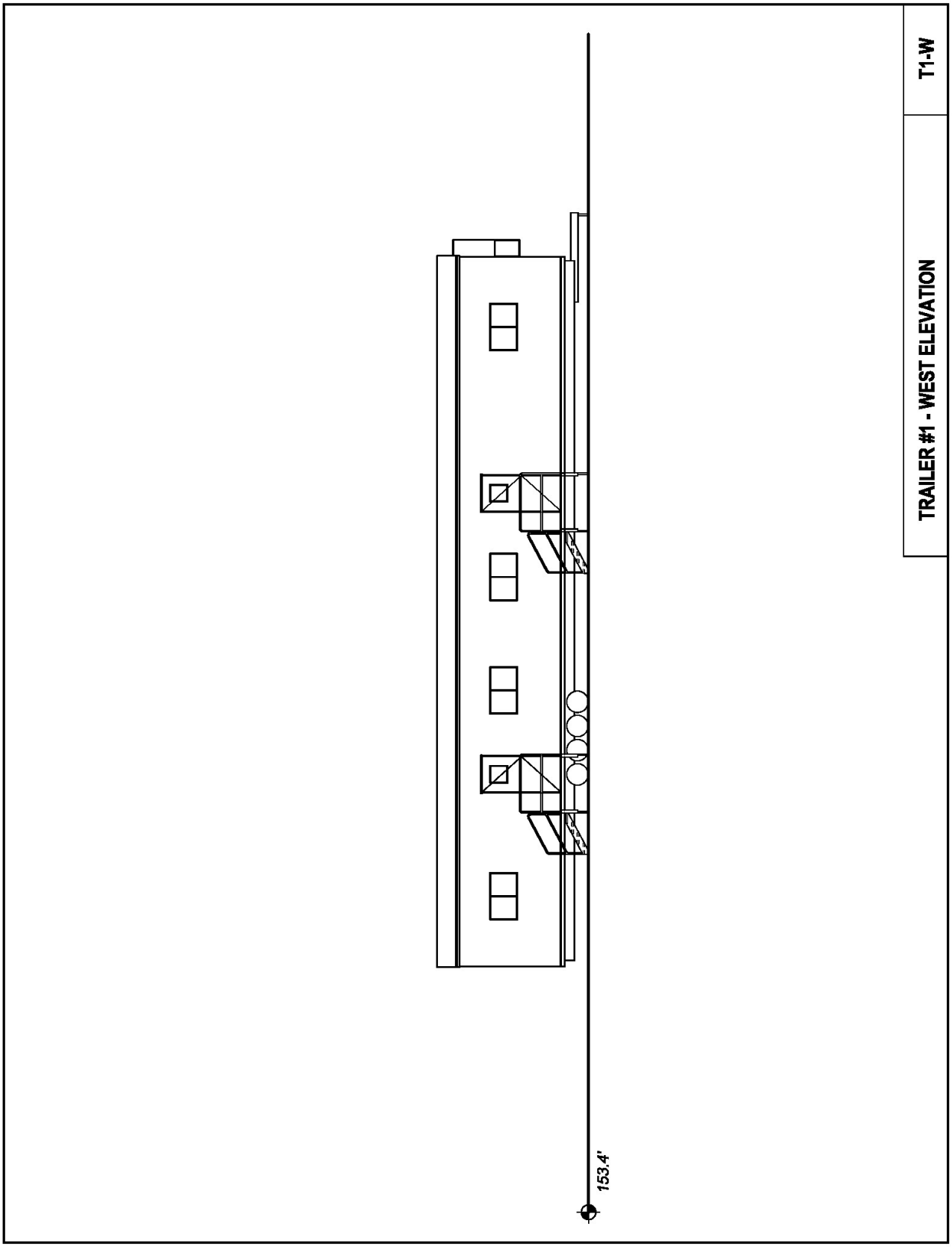
Trailers First Floor



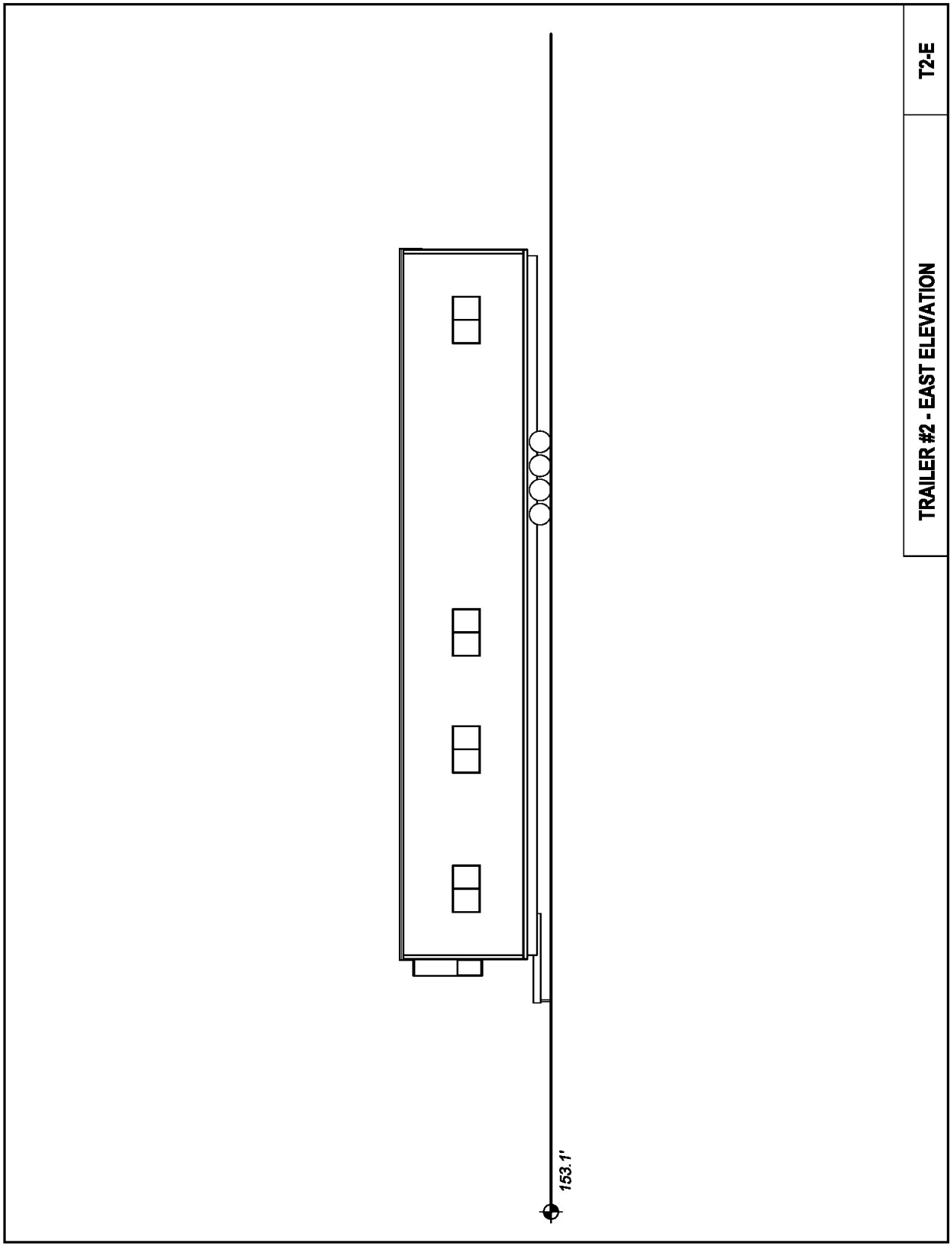
Trailer #1 North and South Elevations



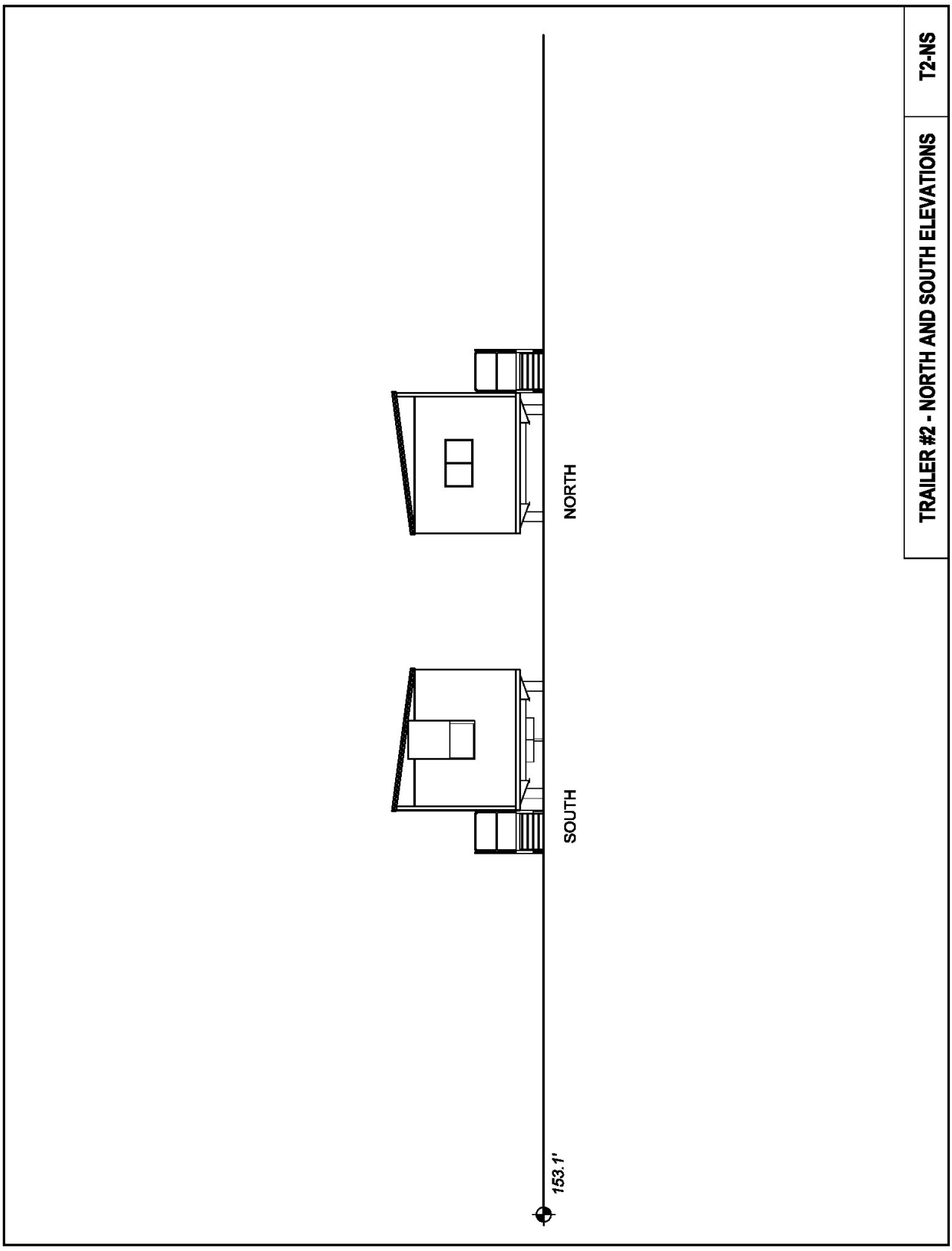
Trailer #1 East Elevation



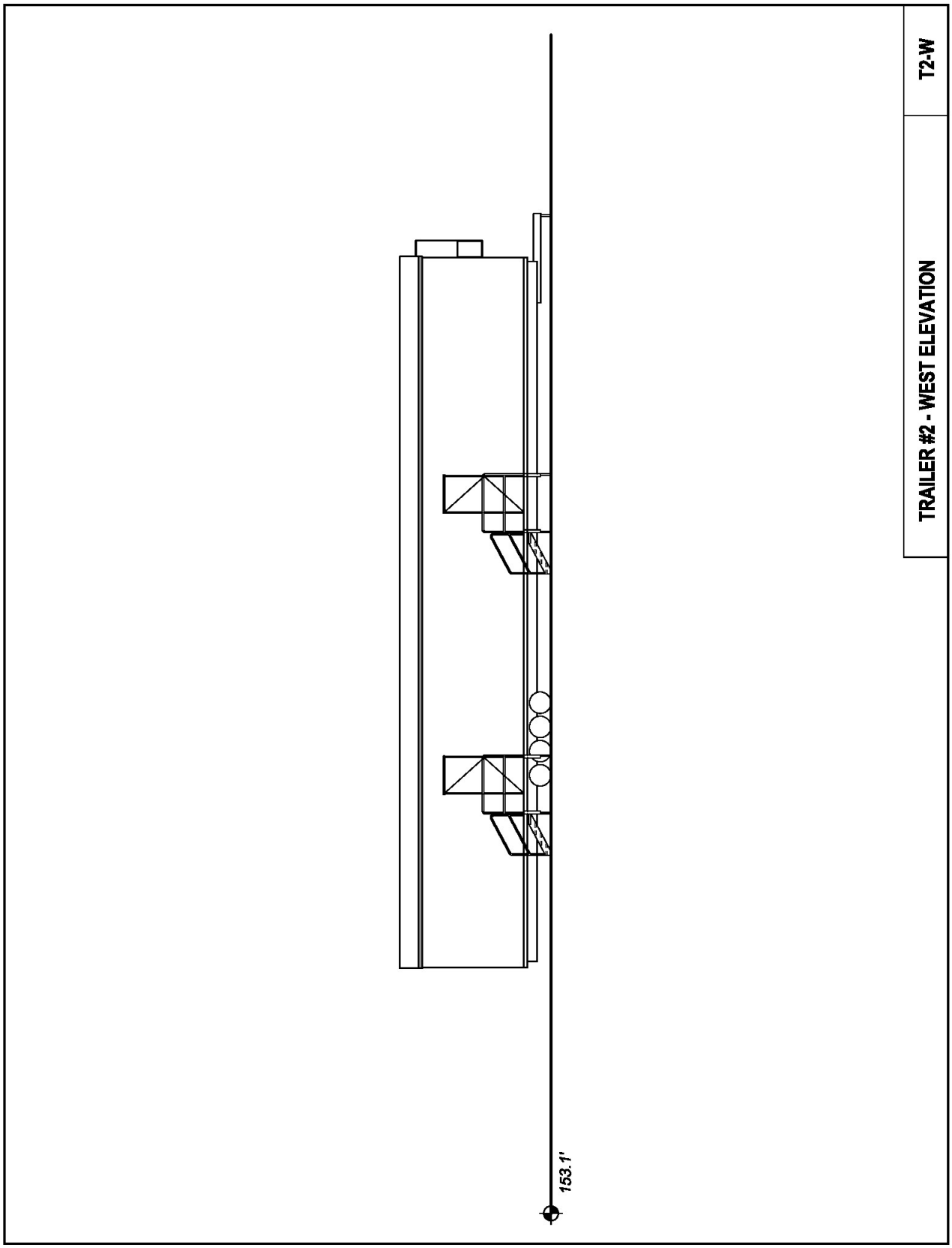
Trailer #1 West Elevation



Trailer #2 East Elevation



Trailer #2 North and South Elevations



Trailer #2 West Elevation

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APPENDIX E

VOLUMETRIC CALCULATIONS

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CONEX BOXES		
Flood Recurrence Internal	**Flood Elevation (ft)**	**Displacement Volume (cuft)**
10 Year	155.9	2414.1
50 Year	158.9	3374.1
100 Year	160.8	3982.1
500 Year	165.2	5262.1

*Includes Platform

Connex Boxes Volumetric Displacement

PORTABLE TOILETS		
Flood Recurrence Internal	**Flood Elevation (ft)**	**Displacement Volume (cuft)**
10 Year	155.9	292.5
50 Year	158.9	517.5
100 Year	160.8	562.5
500 Year	165.2	562.5

Portable Toilet Volumetric Displacement

RANGE HOUSE		
Flood Recurrence Internal	**Flood Elevation (ft)**	**Displacement Volume (cuft)**
10 Year	155.9	9611.1
50 Year	158.9	14004.7
100 Year	160.8	16270.1
500 Year	165.2	21958.1

Range House Volumetric Displacement

TRAILER #1		
Flood Recurrence Internal	**Flood Elevation (ft)**	**Displacement Volume (cuft)**
10 Year	155.9	1792.5
50 Year	158.9	3943.5
100 Year	160.8	5305.8
500 Year	165.2	8066.3

Trailer #1 Volumetric Displacement

TRAILER #2		
Flood Recurrence Internal	**Flood Elevation (ft)**	**Displacement Volume (cuft)**
10 Year	155.9	2007.6
50 Year	158.9	4158.6
100 Year	160.8	5520.9
500 Year	165.2	8281.4

Trailer #2 Volumetric Displacement

TOTAL BUILDING DISPLACEMENT		
Flood Recurrence Internal	**Flood Elevation (ft)**	**Displacement Volume (cuft)**
10 Year	155.9	16117.8
50 Year	158.9	25998.4
100 Year	160.8	31641.4
500 Year	165.2	44130.3

Total Volumetric Displacement

APPENDIX F

PRE-DESIGN OPTIONS

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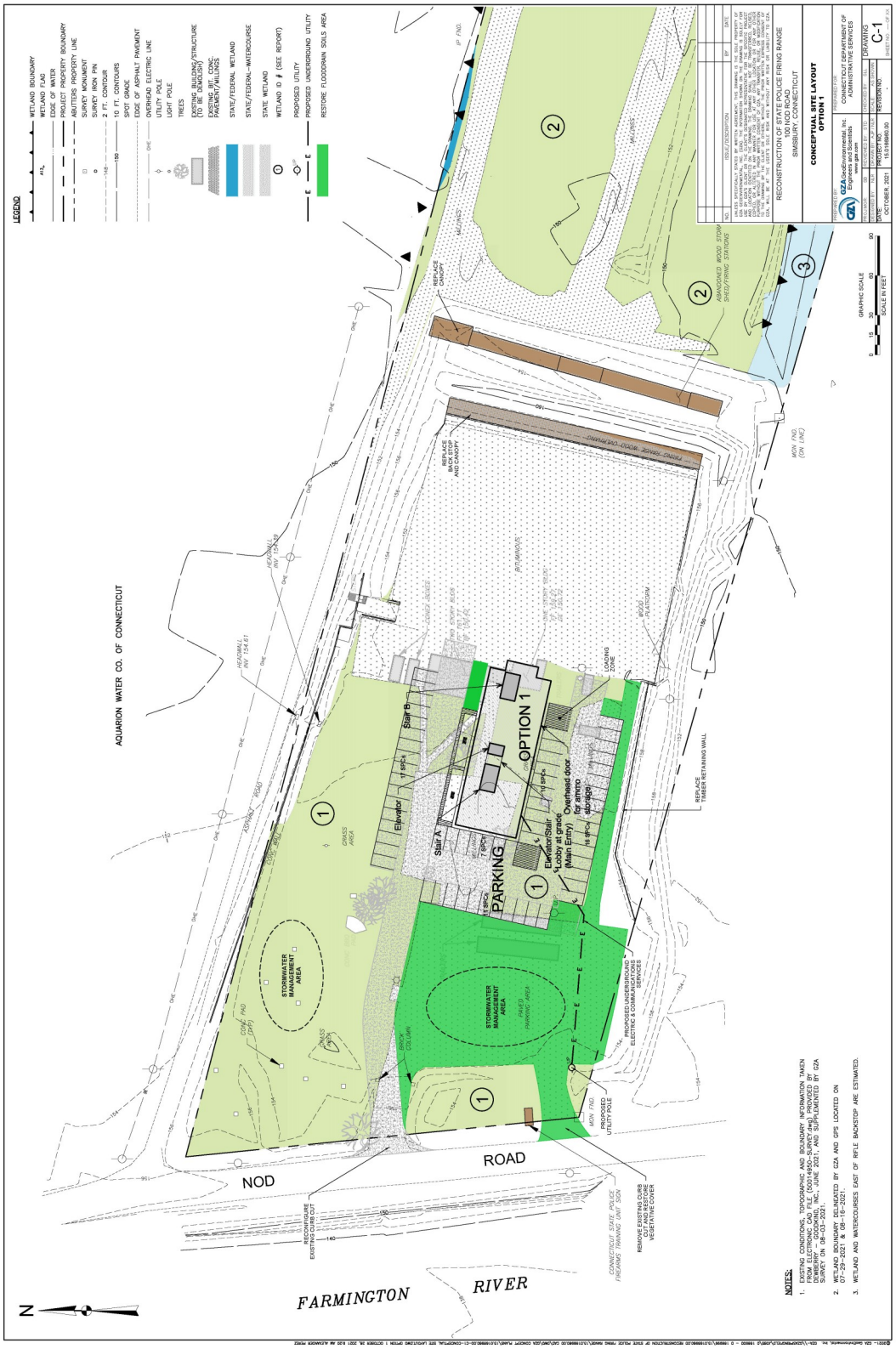
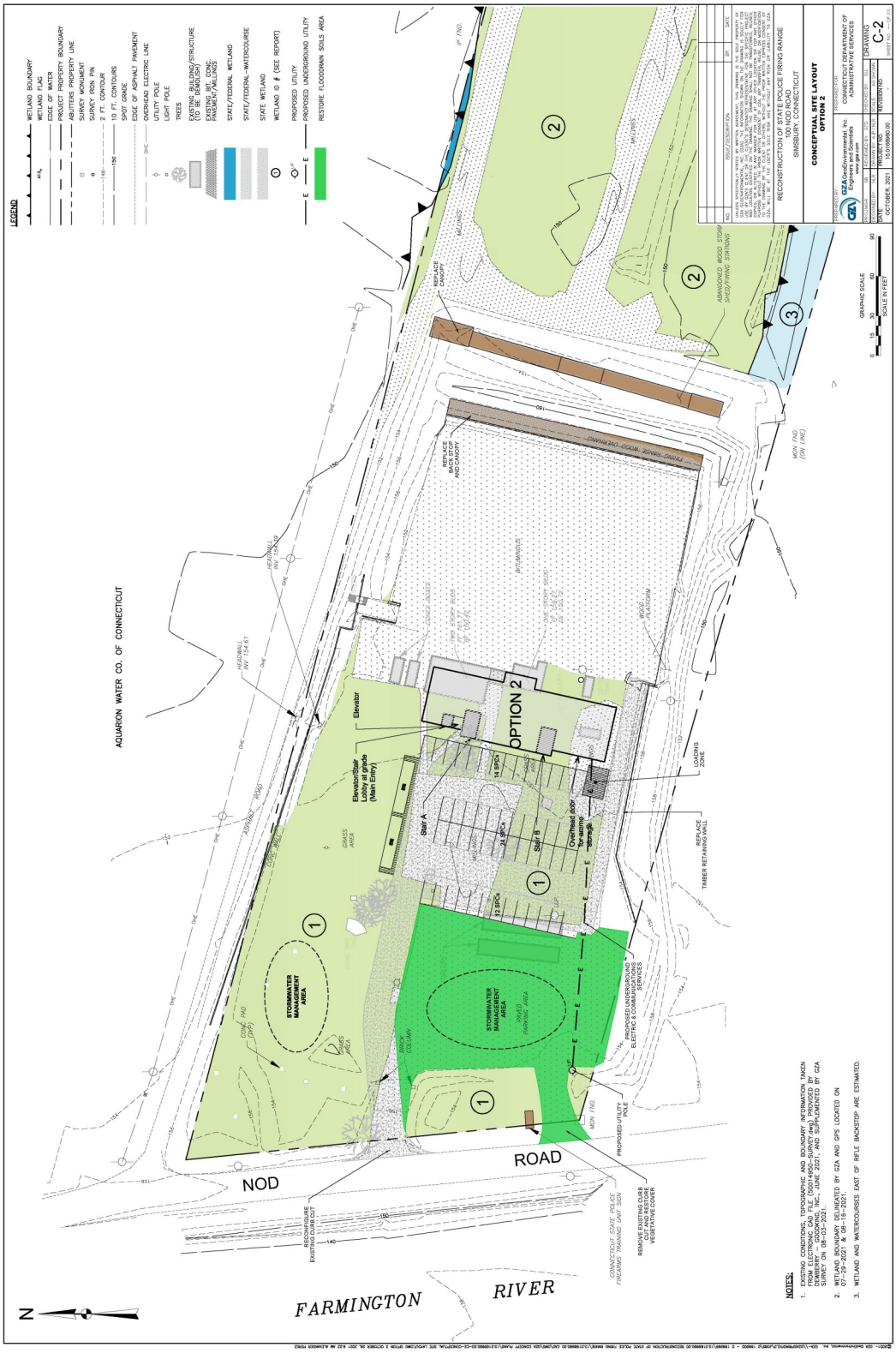
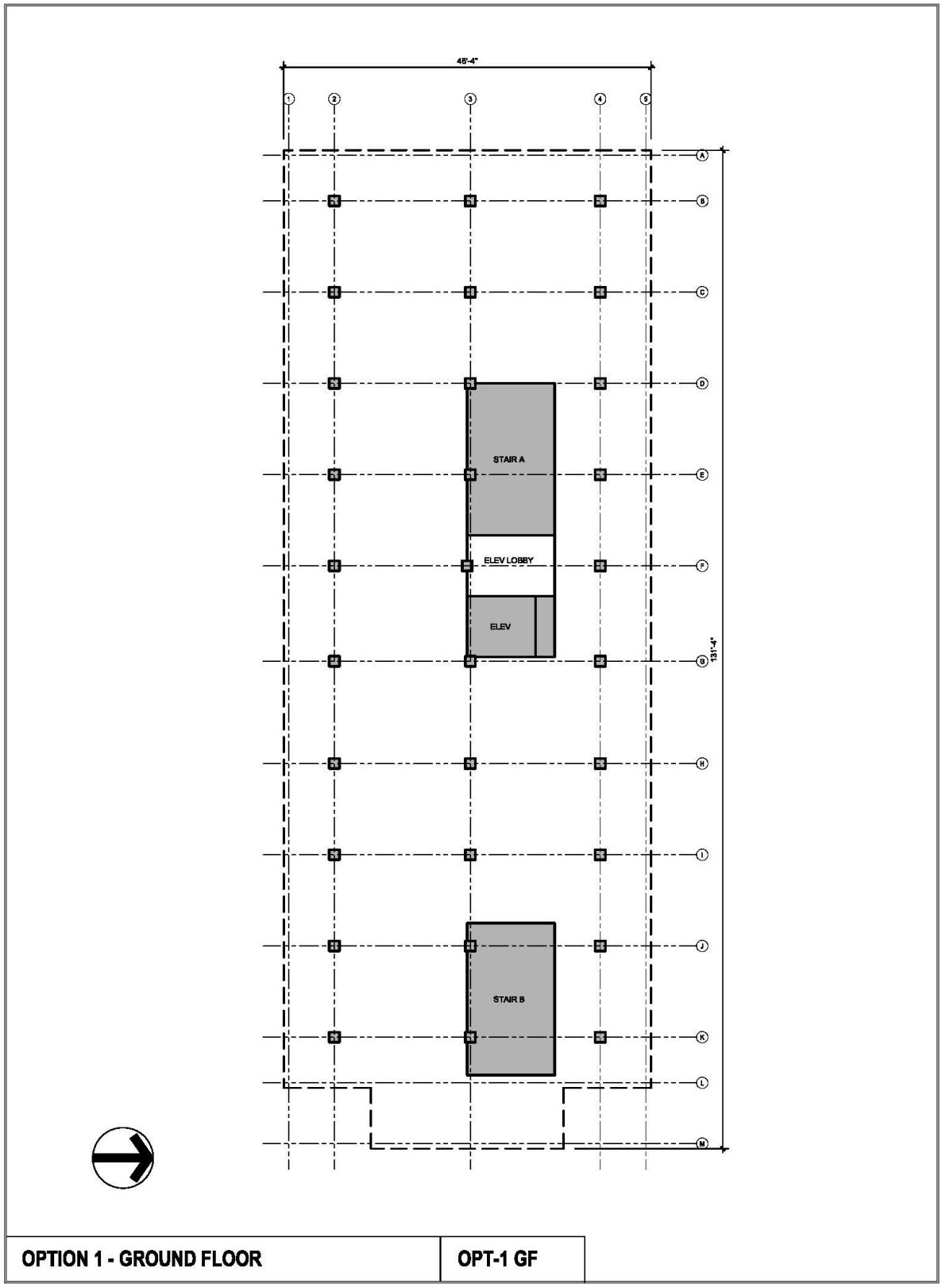


Pre-Design Option 1 - Proposed Site Plan

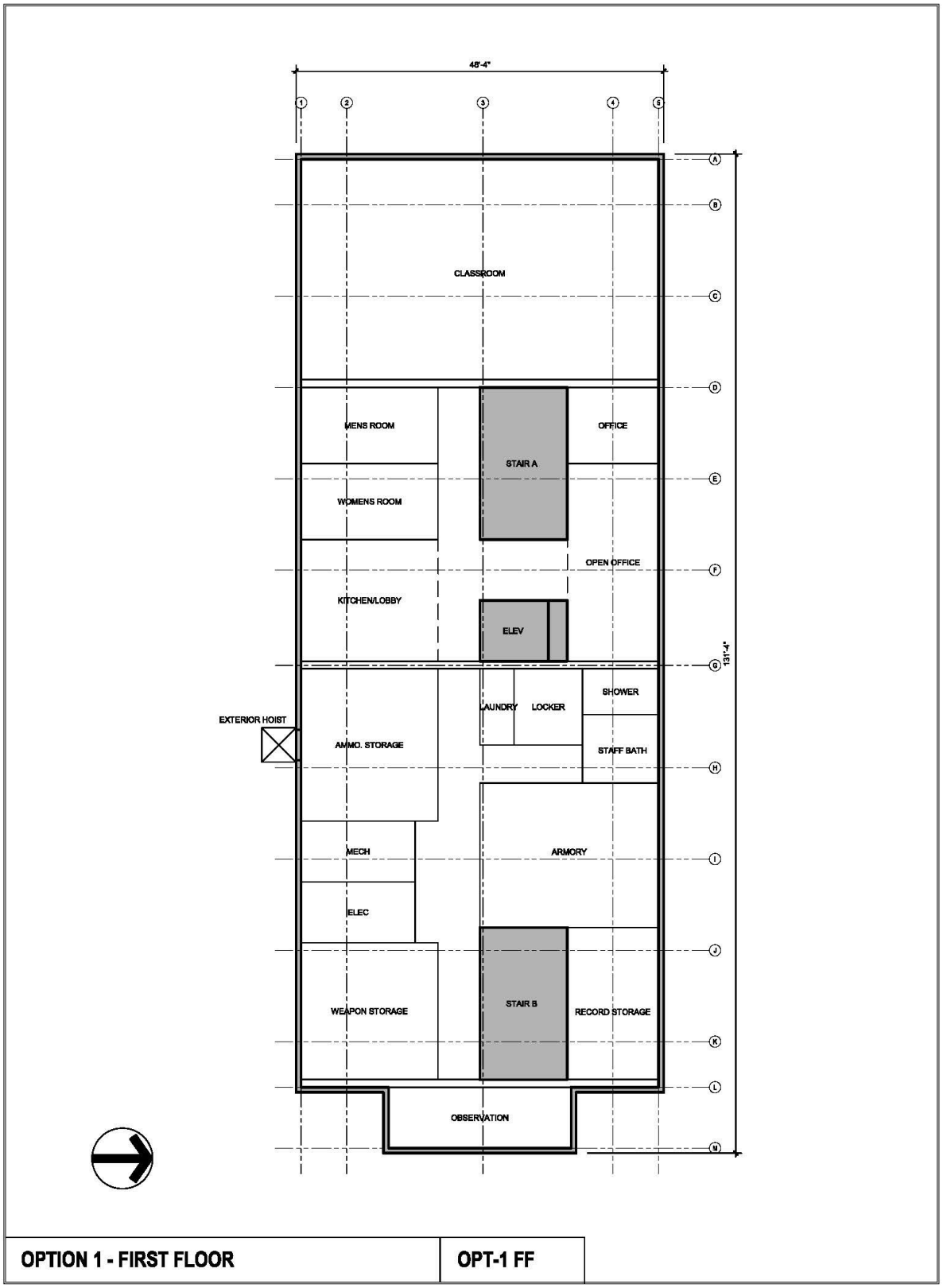


Pre-Design Option 2 - Proposed Site Plan

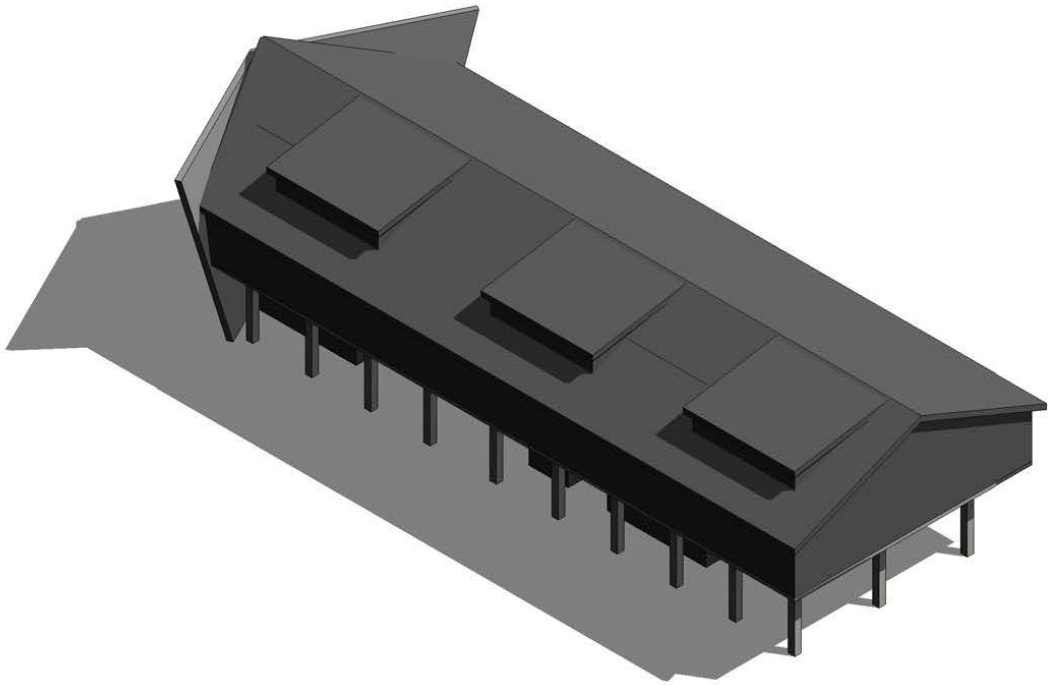
Pre-Design Option 3 - Proposed Site Plan



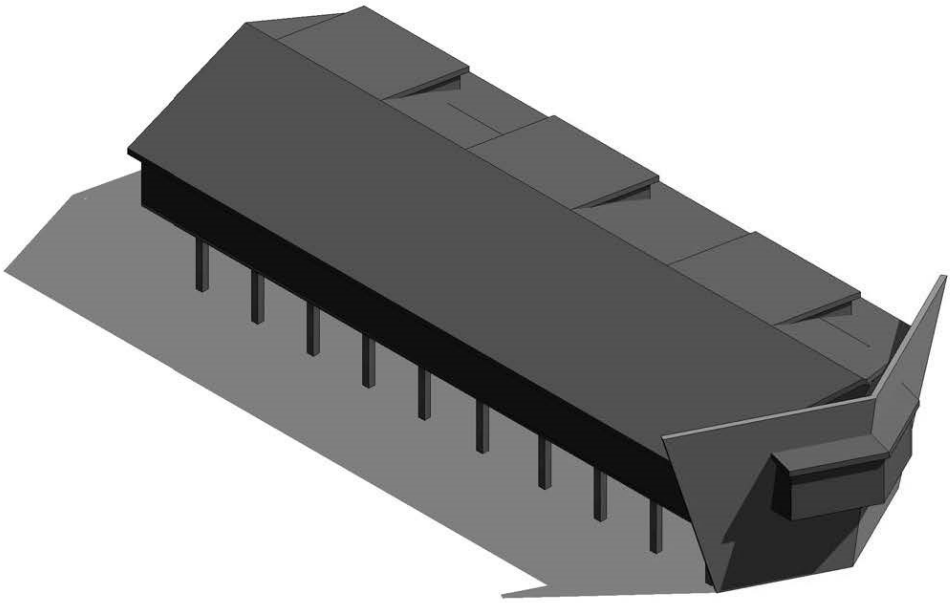
Pre-Design Option 1 - Proposed Ground Floor Plan



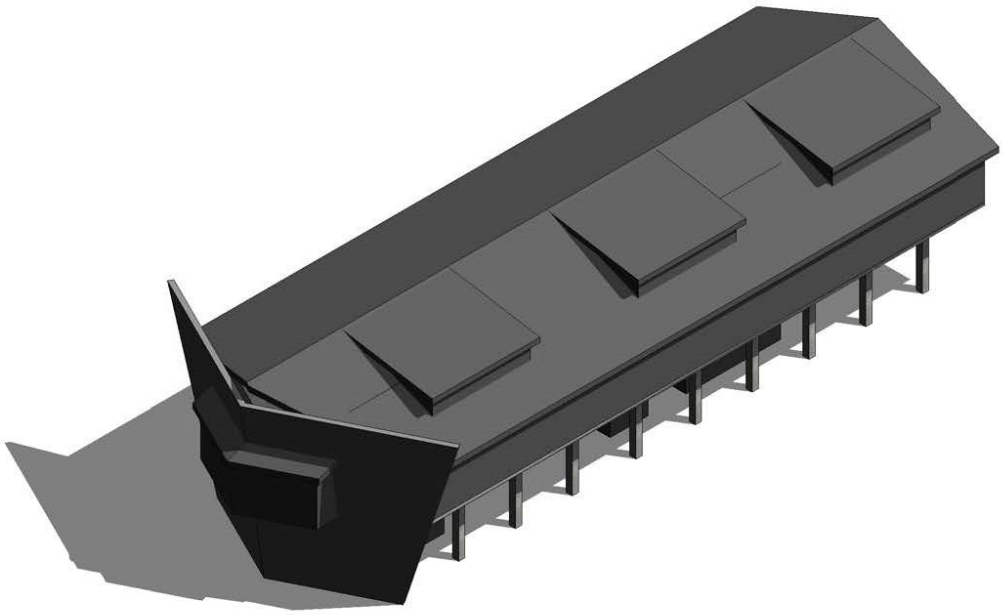
Pre-Design Option 1 - Proposed First Floor Plan



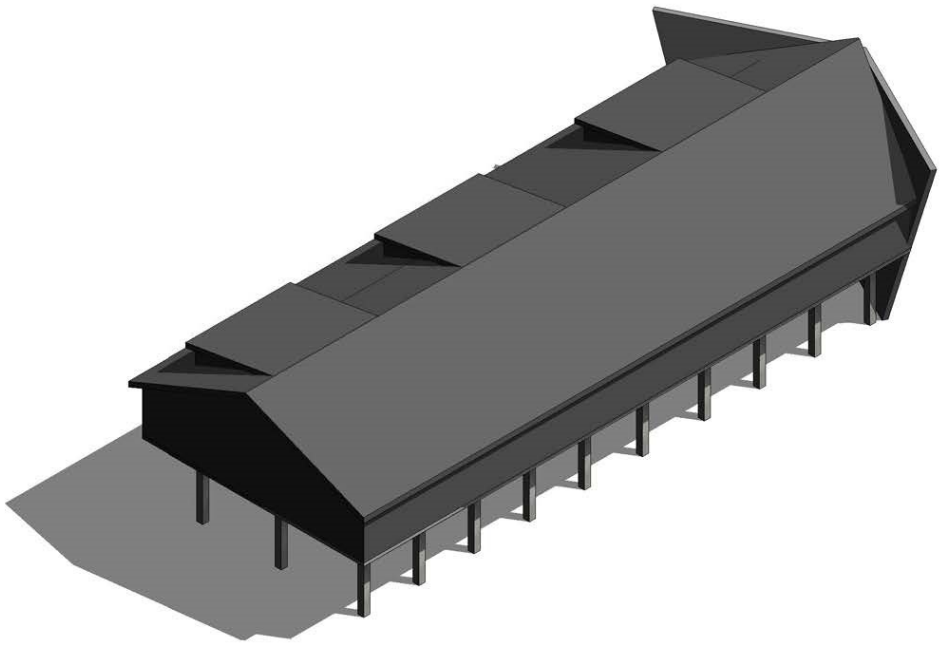
Pre-Design Option 1—Northwest



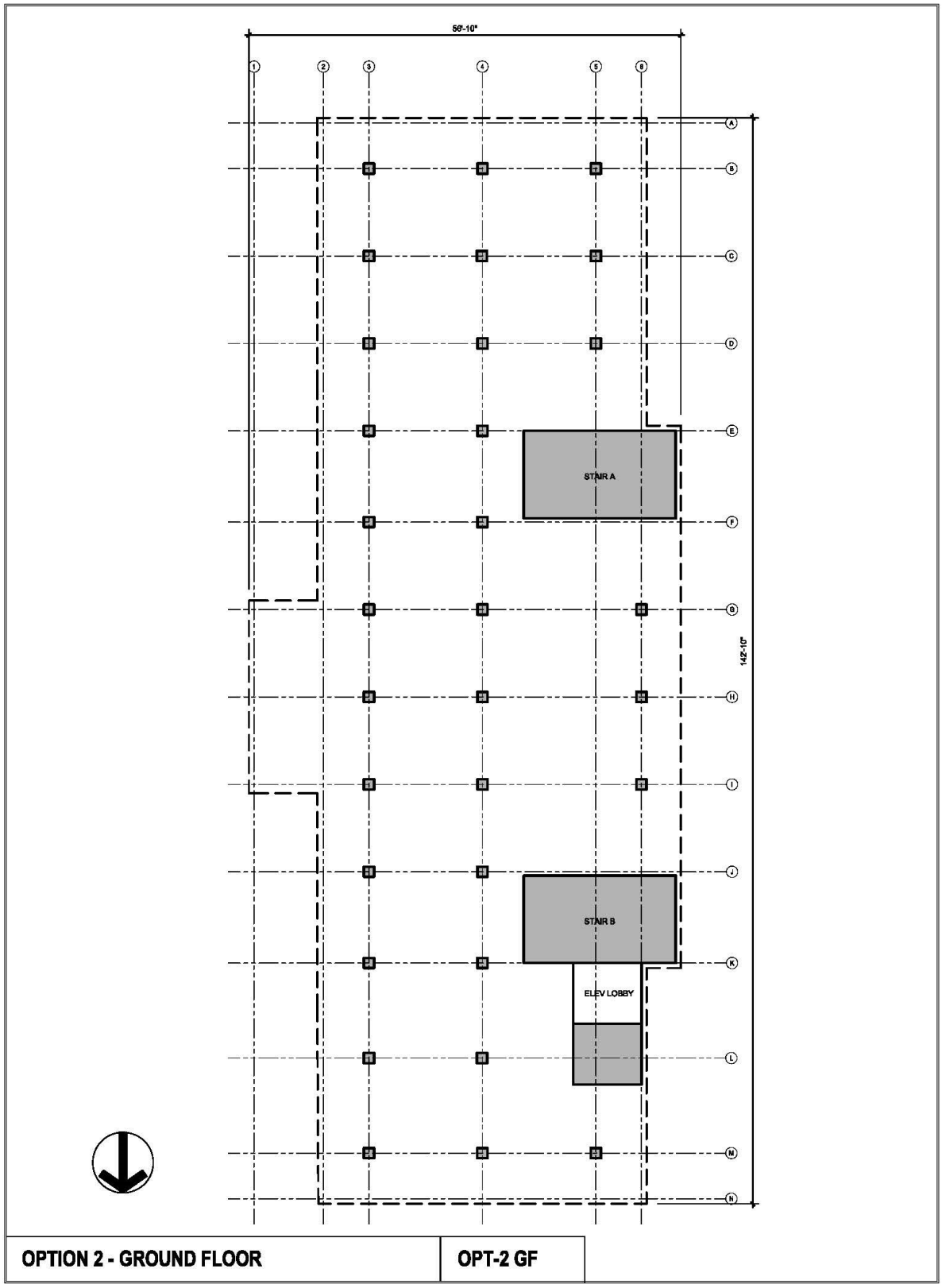
Pre-Design Option 1—Southeast



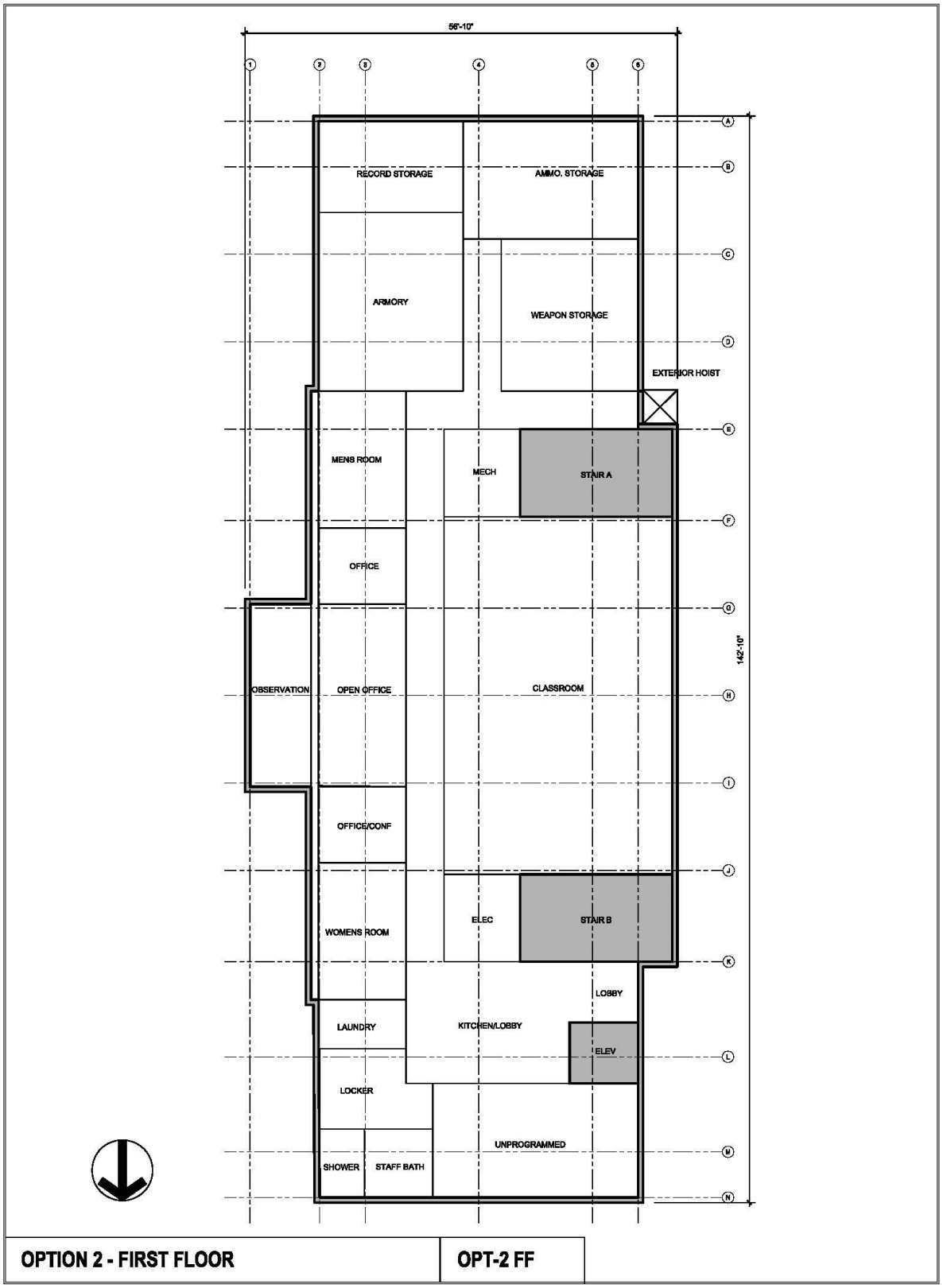
Pre-Design Option 1—Northeast



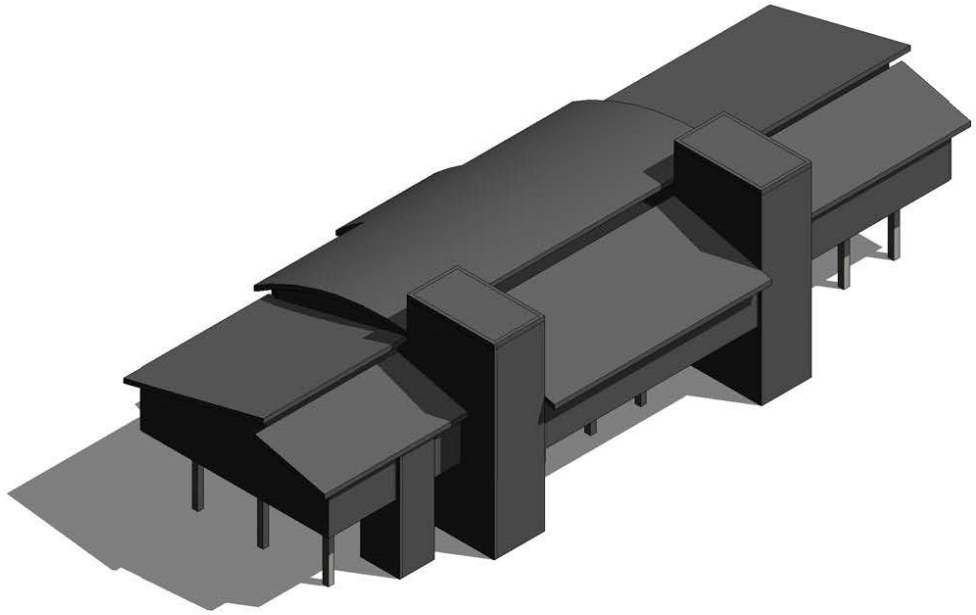
Pre-Design Option 1—Southwest



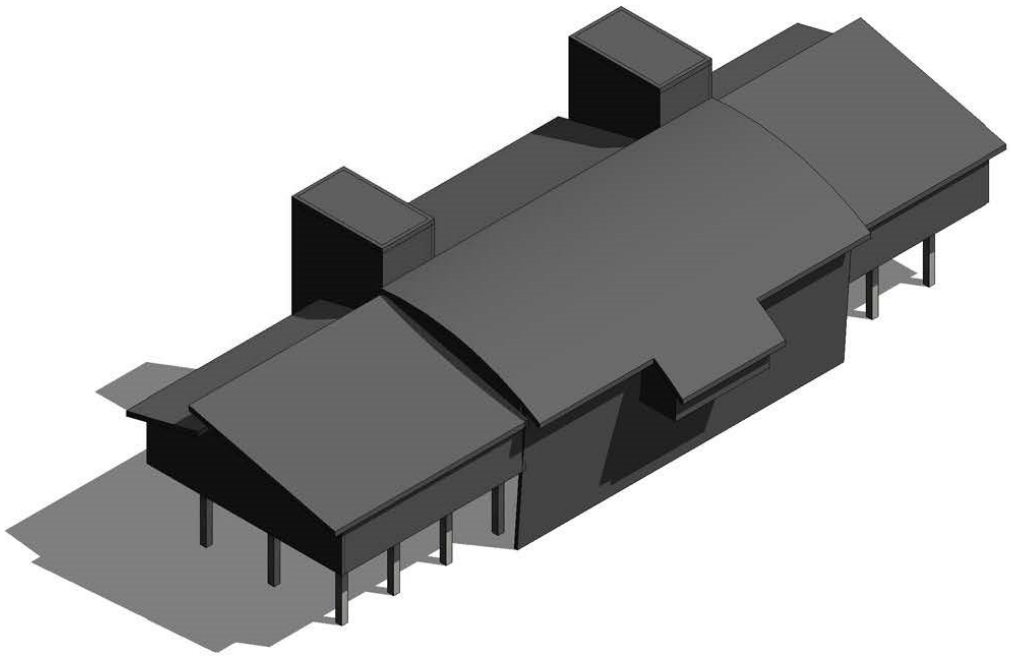
Pre-Design Option 2 - Proposed Ground Floor Plan



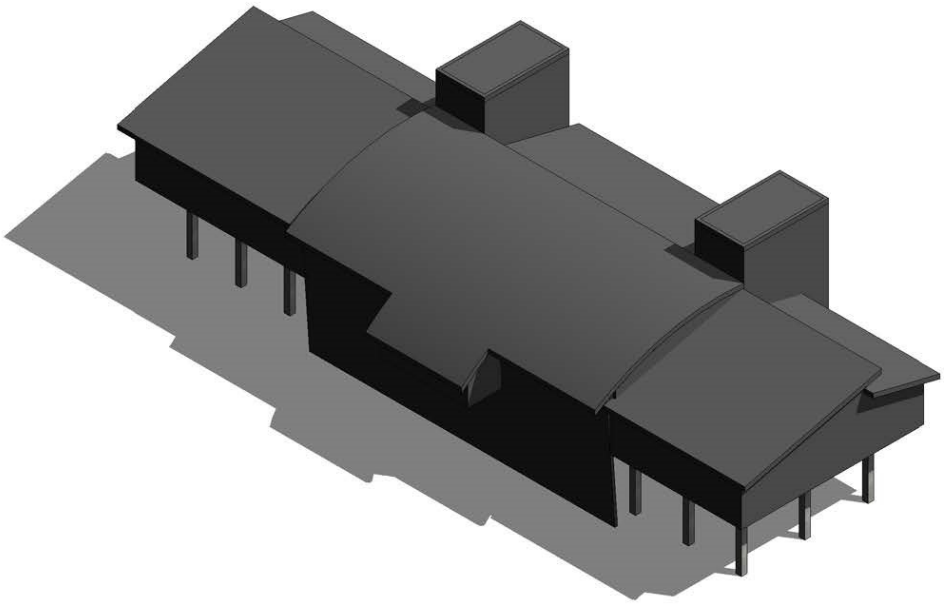
Pre-Design Option 2 - Proposed First Floor Plan



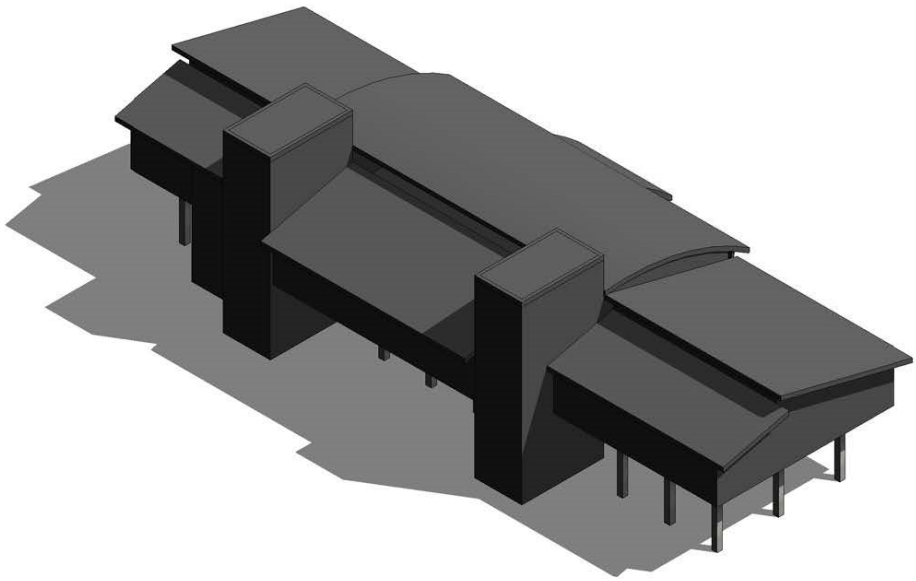
Pre-Design Option 2—Northwest



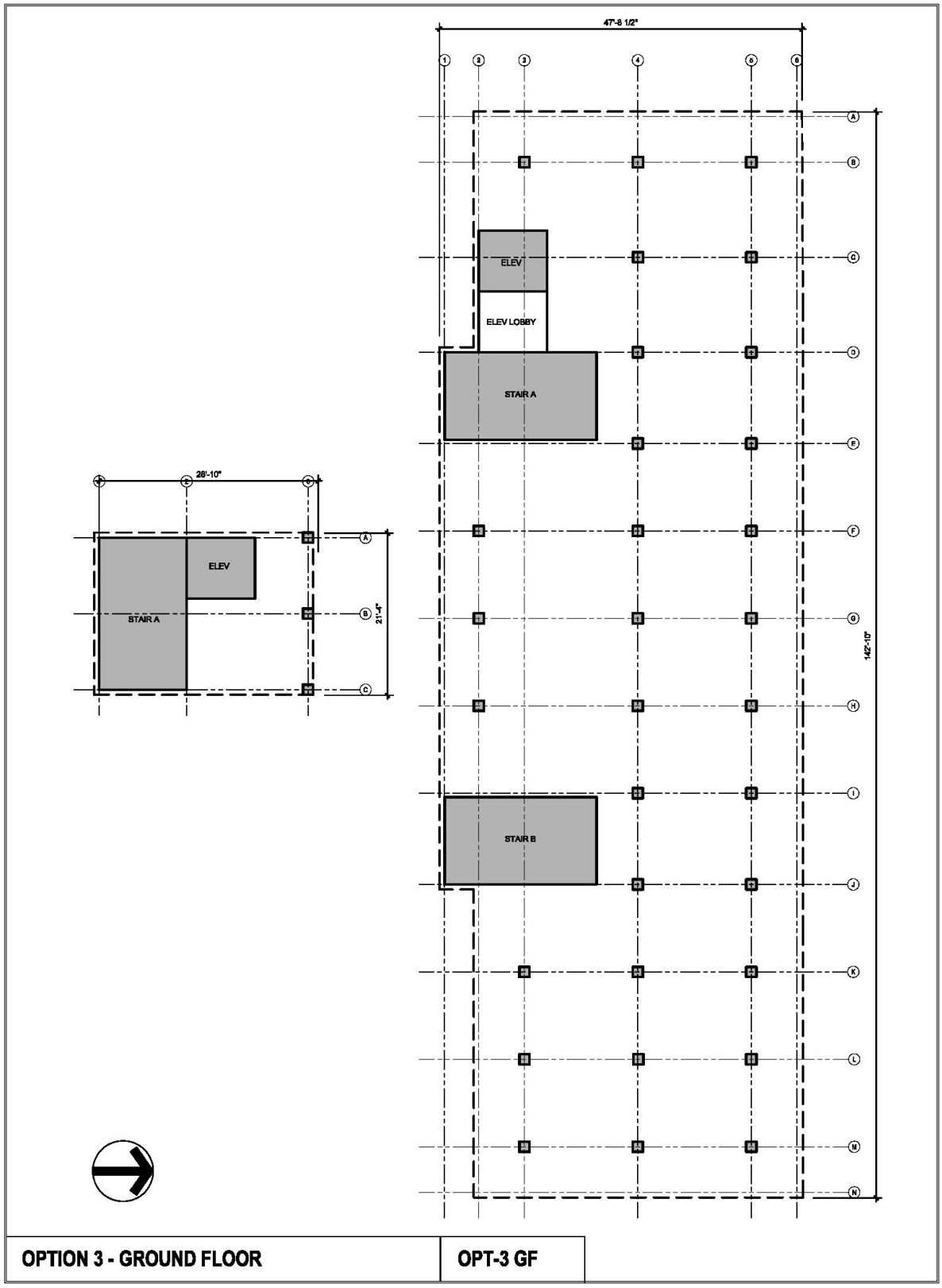
Pre-Design Option 2—Southeast



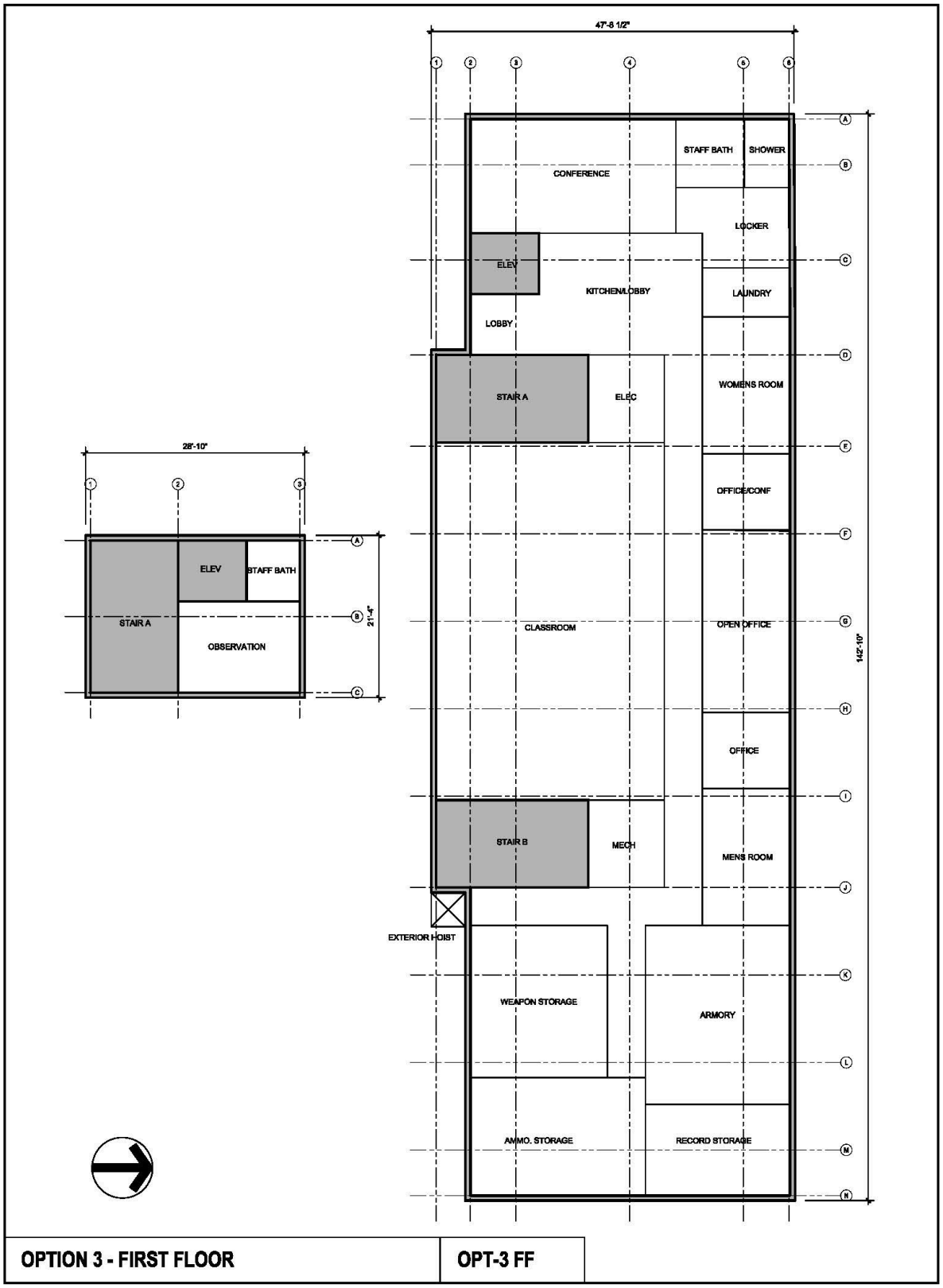
Pre-Design Option 2—Northeast



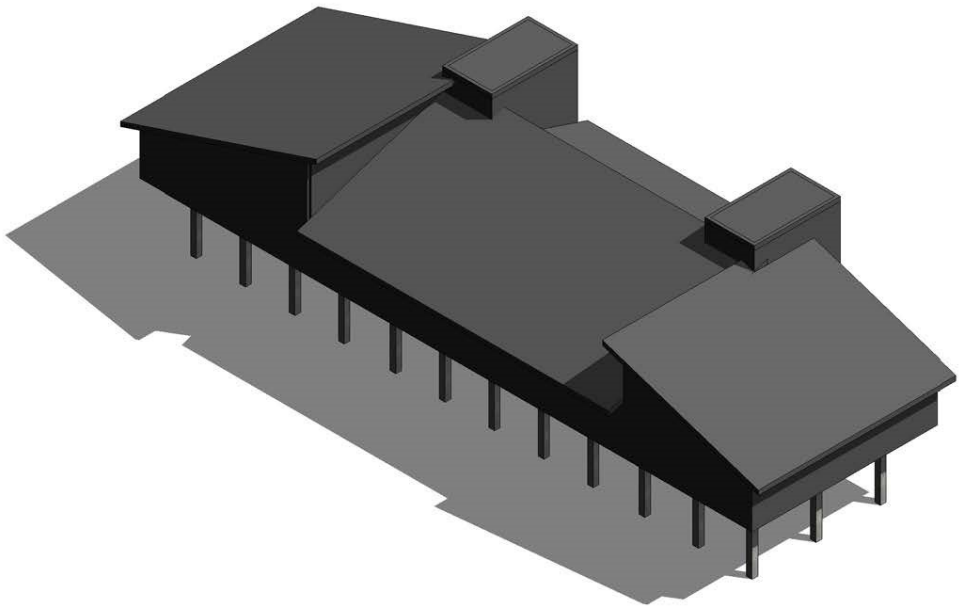
Pre-Design Option 2—Southwest



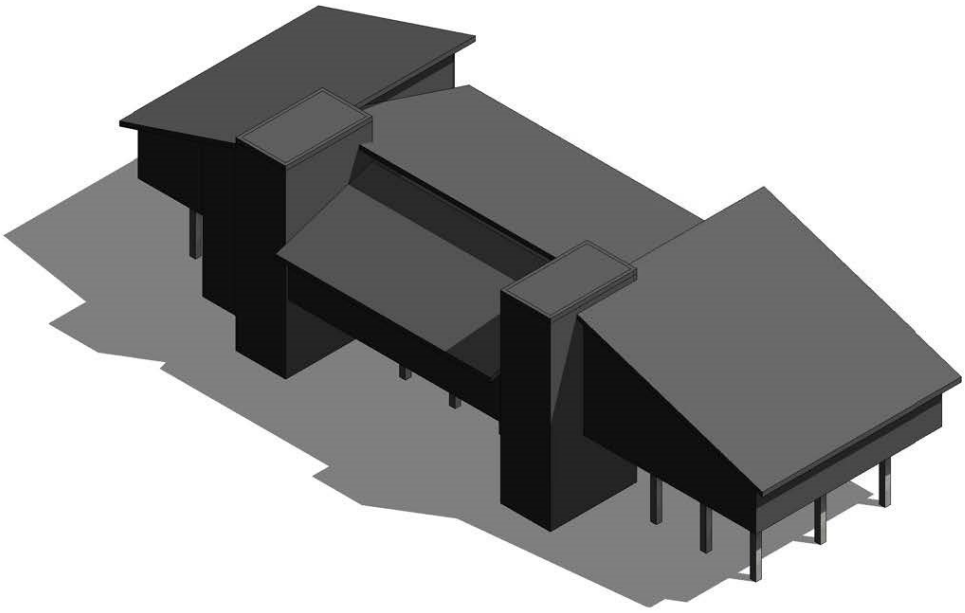
Pre-Design Option 3 - Proposed Ground Floor Plan



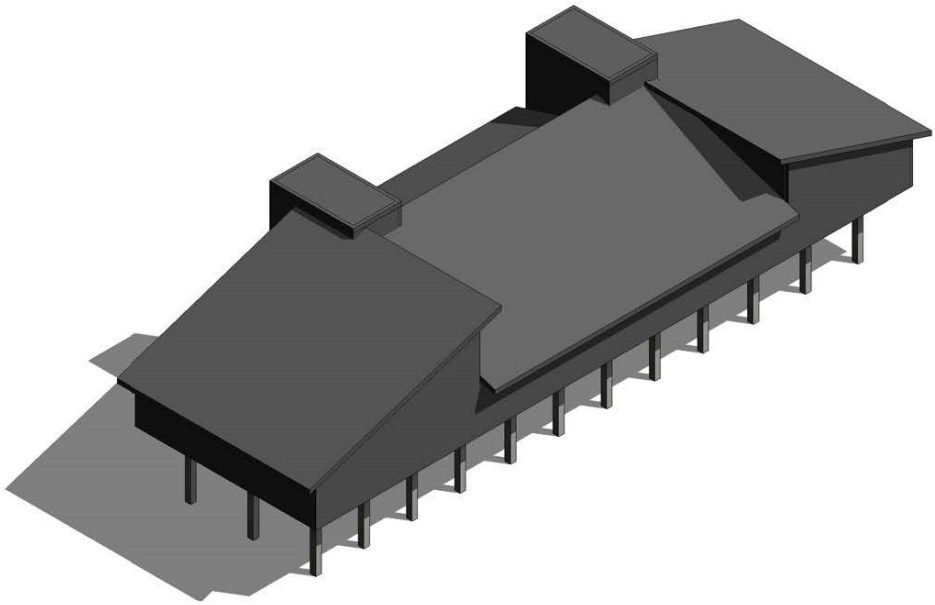
Pre-Design Option 3 - Proposed First Floor Plan



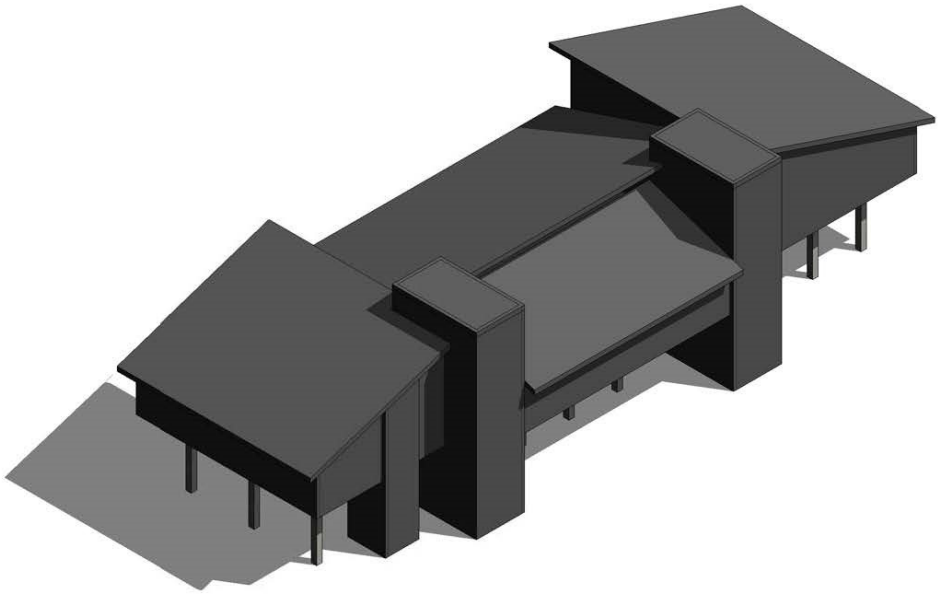
Pre-Design Option 3—Northwest



Pre-Design Option 3—Southeast



Pre-Design Option 3—Northeast



Pre-Design Option 3—Southwest

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APPENDIX G

FORM 3030

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Checklist for Permits, Certifications, and Approvals
Department of Administrative Services, Construction Services

DAS Project Manager:	Ron Wilfinger	**Date:**	12/23/2021
DAS Project Number:	BI-N-357		
DAS Project Title:	Reconstruct State Police Firing Range		
Facility Address:	100 Nod Road, Simsbury CT		
Anticipated Bid Date	2022		

Project Delivery Method: ☒ Design-Bid-Build ☐ Design-Build ☐ CMR (Construction Manager At Risk)

Submitted With:
- ☐ Proposal Phase *(Preliminary Applicable Review)*
- ☐ SD Phase
- ☐ DD Phase *(Include Completed Drafts Of All Applicable Permit Applications)*
- ☐ CD Phase
- ☐ Bid Phase
- ☒ Environmental Phase

Project Type: *(Check All Applicable to this Project)*
- ☒ New ☐ Addition
- ☒ Major Renovation ☐ Minor Renovation

Other Information:

Existing Gross Square Footage (GSF):	2,627	No. of Existing Parking Spaces:	30
Proposed New GSF:	5,500	No. of Proposed New Parking Spaces:	50
Proposed GSF To Be Demolished:	2,627	No. of Existing Parking Spaces To Be Demolished:	30

INSTRUCTIONS TO ARCHITECT/ENGINEER CONSULTANT:

- **For all Department of Administrative Services (DAS) Construction Services Projects:** This Checklist shall be submitted with the Architect/Engineer Consultant's ("Consultant") proposal and revised and resubmitted with **each** Preconstruction Phase Submittal.
- The Checklist must be submitted to the **DAS Project Manager**, with copies to the **DAS Environmental Planning Unit** and the **DAS Office of the State Building Inspector**. See the addresses below.
- Comments may be included at the end of the Checklist.
- Drafts of all permits, certifications, and approvals shall be submitted as part of the Design Development (DD) Phase Submission.
- Select the appropriate answers from the dropdown menus for each permit, certification, and approval.
- See "**Additional Checklist Instructions**" (3030.1) at the end of the Checklist for additional information.

In addition to submitting this Checklist to the DAS Project Manager, submit a copy of the Checklist to:

DAS Construction Services
Environmental Planning Unit
450 Columbus Blvd, Suite 1305
Hartford, CT 06103

AND

DAS Construction Services
Office of the State Building Inspector
450 Columbus Blvd, Suite 1303
Hartford, CT 06103

FEDERAL AGENCIES	Telephone Number	Click On Drop Down Box In Each Category		
		Is the Permit Required?	Who is responsible to obtain Permit?	Permit Status
ARMY CORPS OF ENGINEERS (USACOE)				
Connecticut Programmatic General Permits Applicability: Projects with structures or work in navigable waters of the United States and projects that discharge dredged or fill material into waters/wetlands of the United States; the projects shall result in minimal adverse effects to aquatic resources.	202-761-5903	No	N/A (Reviewed)	N/A (Reviewed)
Individual Permit Procedures Applicability: Projects that have more than minimal individual or cumulative impacts to aquatic resources, are evaluated using additional environmental criteria, and involve a more comprehensive public interest review. See Connecticut General Permits for more information.	202-761-5903	No	N/A (Reviewed)	N/A (Reviewed)
ENVIRONMENTAL PROTECTION AGENCY (EPA)				
PCBs in Caulk *(See Form 1170 DAS PCBs in Caulk Policy)* Applicability: In general, projects that disturb existing caulk in buildings constructed/renovated/repaired between 1950 and 1979.	860 713-5631	Not Sure	N/A (Reviewed)	N/A (Reviewed)
Sole Source Aquifer (SSA) Review Applicability: Projects that have federal funding and are located within a SSA. CT has two SSAs: the Pootatuck Aquifer (Newtown, Monroe, and Easton) and the Pawcatuck River Aquifer (Stonington and North Stonington).	617-918-1683	No	N/A (Reviewed)	N/A (Reviewed)
FEDERAL AVIATION ADMINISTRATION (FAA)				
Notice of Proposed Construction or Alteration Applicability: Projects that may affect navigable airspace.	781 238-7522	Not Sure	N/A (Reviewed)	N/A (Reviewed)

STATE AGENCIES	Telephone Number	Click On Drop Down Box In Each Category		
		Is the Permit Required?	Who is responsible to obtain Permit?	Permit Status
CONNECTICUT SITING COUNCIL (CSC)				
Certificate of Environmental Compatibility & Public Need Applicability: Projects that include telecommunication towers, electric generating facilities, and transmission lines which may have a substantial adverse environmental effect in the state.	860 827-2935	No	N/A (Reviewed)	N/A (Reviewed)
DEPARTMENT OF ADMINISTRATIVE SERVICES (DAS)				
Environmental Planning & Energy Unit (responsible for managing the following activities during DAS construction projects)				
Above and/or Underground Storage Tank Installation	860 713-5631	Not Sure	N/A (Reviewed)	N/A (Reviewed)
Above and/or Underground Storage Tank Removal	860 713-5631	No	N/A (Reviewed)	N/A (Reviewed)
Connecticut Environmental Policy Act (CEPA) and Initial Environmental Review	860 713-5631	No	N/A (Reviewed)	N/A (Reviewed)
Environmental Site Assessments:	860 713-5631	—	—	—
• Phase I	860 713-5631	No	N/A (Reviewed)	N/A (Reviewed)
• Phase II	860 713-5631	No	N/A (Reviewed)	N/A (Reviewed)
• Phase III	860 713-5631	No	N/A (Reviewed)	N/A (Reviewed)
• Remedial Action Plan (RAP)	860 713-5631	No	N/A (Reviewed)	N/A (Reviewed)
Hazardous Material Inspection/Abatement Request (asbestos, PCBs, lead, or indoor air quality)	860 713-5631	Yes	Client Agency	N/A (Reviewed)
High Performance Buildings	860 713-5631	Yes	N/A (Reviewed)	N/A (Reviewed)
LEED	860 713-5631	No	N/A (Reviewed)	N/A (Reviewed)
National Environmental Policy Act (NEPA)	860 713-5631	No	N/A (Reviewed)	N/A (Reviewed)
Property Transfer Program	860 713-5631	No	N/A (Reviewed)	N/A (Reviewed)

3030
Checklist for Permits, Certifications, and Approvals

STATE AGENCIES (continued)	Telephone Number	Click On Drop Down Box In Each Category		
		Is the Permit Required?	Who is responsible to obtain Permit?	Permit Status
DEPARTMENT OF ADMINISTRATIVE SERVICES (DAS) (continued)				
Office of the State Building Inspector (OSBI)				
Construction Project Initiation				
Building Permit Application (Form 3040)	860-713-5900	Yes	Contractor	
Connecticut State Demolition Code	860-713-5900	Yes	N/A (Reviewed)	N/A (Reviewed)
Certificate of Compliance-Preconstruction (Form 3150)	860-713-5900	Yes	N/A (Reviewed)	N/A (Reviewed)
Statement of Special Inspections (CASE Form 101)	860-713-5900	Yes	N/A (Reviewed)	N/A (Reviewed)
Third Party Structural Review (Threshold Only)	860-713-5900	No	N/A (Reviewed)	N/A (Reviewed)
Building Code Modification Request	860-713-5900	Not Sure	N/A (Reviewed)	N/A (Reviewed)
Accessibility Exemption Waiver Request	860-713-5900	Not Sure	N/A (Reviewed)	N/A (Reviewed)
Chair Lifts, Wheelchair, and Limited Elevators Application Request	860-713-5900	Yes	N/A (Reviewed)	N/A (Reviewed)
Construction Project Close-out				
Certificate Of Occupancy Checklist (Form 7160)	860-713-5900	Yes		
Certificate of Occupancy (from OSBI)	860-713-5900	Yes		
Certificate of Substantial Completion (Form 7810)	860-713-5900	Yes		
Certificate of Compliance-Construction Phase (Form 7150)	860-713-5900	Yes		
Certificate of Acceptance (Form 7820)	860-713-5900	Yes		
Office of the State Fire Marshal (OSFM)				
Fire Code Modification Request	860-713-5750	Not Sure	N/A (Reviewed)	N/A (Reviewed)
Bureau of Properties and Facilities Maintenance				
Leasing/Transfers/Acquisitions/Easements	860 713-5682	No	N/A (Reviewed)	N/A (Reviewed)
Proximity to Railroads/Bus Routes *(Only for leasing or purchasing properties)*	860 713-5631	No	N/A (Reviewed)	N/A (Reviewed)
DEPARTMENT OF AGRICULTURE (DOA) **(Contact DAS Environmental Planning -- 860-713-5631)**				
Farmland Preservation Program *(25 plus acres of prime or statewide farmland soils)*	860 713-5631	No	N/A (Reviewed)	N/A (Reviewed)
OFFICE OF EARLY CHILDHOOD				
Child Day Care Licensing Program Applicability: Projects that include the construction of a Child Day Care Facility.	860 500-4450	No	N/A (Reviewed)	N/A (Reviewed)
DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT (DECD)				
Office of the Arts				
Art in Public Spaces Program Applicability: Projects that involve the construction, reconstruction or remodeling of any state building that will be open to the public or intended for such use, exclusive of any shed, warehouse, garage, building of a temporary nature or building located on the grounds of a correctional institution.	860 256-2800	No	N/A (Reviewed)	N/A (Reviewed)
State Historic Preservation Office				
Environmental Review Applicability: Projects that might affect historic resources.	860-256-2759	No	N/A (Reviewed)	N/A (Reviewed)

STATE AGENCIES (continued)	Telephone Number	Click On Drop Down Box In Each Category		
		Is the Permit Required?	Who is responsible to obtain Permit?	Permit Status
DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION (DEEP)				
Where to Begin (Permit Assistance Office)	860 424-3003	—	—	—
Common Forms				
Coastal Consistency Review Applicability: Projects within the coastal boundary and within a town in the coastal area.	860 424-3034	No	N/A (Reviewed)	N/A (Reviewed)
NDDB Review Request *(Endangered, threatened, and special concern species and habitats)* Applicability: Projects that intersect with or overlap an NDDB Area of Concern for state listed species.	860 424-3011	Yes	N/A (Reviewed)	N/A (Reviewed)
Air Emissions Permits				
New Source Review (NSR) Permit Applicability: In general, projects that install a new stationary source of air pollution with potential individual air pollutant emissions greater than 15 tons per year, unless an exemption is met or the source operates under one of the "permit by rule" regulations.	860 424-4152	Not Sure		
General Permit to Limit Potential to Emit from Major Stationary Sources of Air Pollution (GPLPE) Applicability: In general, projects that install a major stationary source of air pollution with potential emissions equal to or greater than Title V source thresholds and actual emissions are less than 80% of such thresholds.	860 424-4152	No		
Permit-by-Rule Notification Applicability: In general, projects that install a new source with potential emissions greater than 15 tons per year and operate the source under one of the "permit by rule" regulations.	860 424-4152	Not Sure		
Title V Operating Permit Applicability: In general, projects that install a major source of air pollution. The Title V Operating Permit is a facility-wide permit.	860 424-4152	No		
Coastal Program Permits				
Minor Coastal Structures Applicability: Projects that include the construction, installation, maintenance, removal and seasonal replacement of various minor structures within the tidal, coastal, and navigable waters of the state below the elevation of the coastal jurisdiction line and, where specifically allowed, in tidal wetlands.	860 424-3034	No	N/A (Reviewed)	N/A (Reviewed)
Coastal Maintenance Applicability: Projects that include the maintenance of various coastal structures and activities within the tidal, coastal, and navigable waters of the state.	860 424-3034	No	N/A (Reviewed)	N/A (Reviewed)
Programmatic General Permit, Department of the Army Applicability: Projects with structures or work in navigable waters of the United States and projects that discharge dredged or fill material into waters of the United States; see **Army Corps of Engineers** on page 2 of this Checklist.	202-761-5903	No	N/A (Reviewed)	N/A (Reviewed)
Structures, Dredging & Fill Permit Applicability: Projects that are waterward of the Coastal Jurisdiction Line in tidal, coastal or navigable waters of the state.	860 424-3034	No	N/A (Reviewed)	N/A (Reviewed)
Tidal Wetlands Permit Applicability: Projects within tidal wetlands.	860 424-3034	No	N/A (Reviewed)	N/A (Reviewed)
Coastal 401 Water Quality Certification Applicability: Projects which may result in a discharge to navigable waters (including all wetlands, watercourses, and natural & man-made ponds) and require a federal license or permit.	860 424-3034	No	N/A (Reviewed)	N/A (Reviewed)
Certificate of Permission Application Applicability: Certain minor activities involving dredging, erection of structures, or fill in any tidal, coastal or navigable waters of the state.	860 424-3003	No	N/A (Reviewed)	N/A (Reviewed)

STATE AGENCIES (continued)	Telephone Number	Click On Drop Down Box In Each Category		
		Is the Permit Required?	Who is responsible to obtain Permit?	Permit Status
DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION (DEEP) (continued)				
Inland Water Resources Permits (Contact the DAS Environmental Planning Unit for DEEP Coordination: 860-713-5631)				
Aquifer Protection Area Applicability: Projects located within an Aquifer Protection Area and involve Regulated Activities.	860 424-3019	No	N/A (Reviewed)	N/A (Reviewed)
Inland 401 Water Quality Certification Applicability: Projects which may result in a discharge to navigable waters (including all wetlands, watercourses, and natural & man-made ponds) and require a federal license or permit.	860 424-3034	No	N/A (Reviewed)	N/A (Reviewed)
Dam Construction Permit Applicability: Projects that include the construction, alteration, repair or removal of dams, dikes, reservoirs and similar structures.	860 424-3706	No	N/A (Reviewed)	N/A (Reviewed)
Flood Management Certification Applicability: Projects located in or affecting floodplains, floodways, or storm drainage facilities.	860 424-3706	Yes	N/A (Reviewed)	N/A (Reviewed)
Inland Wetlands & Watercourses Permits Applicability: Projects that shall conduct any operation within or use of a wetland or watercourse involving the removal or deposition of material, or any obstruction, construction, alteration or pollution of such wetlands or watercourses.	860 424-3019	Not Sure	N/A (Reviewed)	N/A (Reviewed)
Water Diversion Permit *(Detention/Retention Ponds)* Applicability: In general, any project that will result in the alteration of surface water flows and withdrawals of surface and ground water exceeding 50,000 gallons in any 24-hour period.	860 424-3019	No	N/A (Reviewed)	N/A (Reviewed)
Diversion of Remediation Groundwater Applicability: Projects that include any diversion of remediation groundwater greater than 50,000 gallons during any twenty-four hour period.	860 424-3019	No	N/A (Reviewed)	N/A (Reviewed)
Diversion of Water for Consumptive Use Applicability: Projects that include diverting the waters of the state in excess of 50,000 gallons per day.	860 424-3704	No	N/A (Reviewed)	N/A (Reviewed)
Water Resource Construction Activities Applicability: In general, projects that include trail construction, public works projects, infrastructure repairs, conservation activities, and US Army Corps of Engineers General Permit and 401 Water Quality Certification within wetlands, watercourses and/or flood plains.	860 424-3019	Not Sure	N/A (Reviewed)	N/A (Reviewed)
Wastewater Discharge Permits				
Domestic Sewage Applicability: Projects that will generate a discharge of domestic sewage from a community sewerage system to a Publicly Owned Treatment Works (POTW or sewage treatment plant).	860 424-3025	No	N/A (Reviewed)	N/A (Reviewed)
Food Service Establishment Wastewater Applicability: Projects that include the installation of a "Fats, Oil, and Grease" (FOG) separator.	860 424-3758	No	N/A (Reviewed)	N/A (Reviewed)
Miscellaneous (MISC) Discharges of Sewer Compatible Wastewater Applicability: Projects that will generate miscellaneous discharges of wastewater to a POTW either directly via a sanitary sewer, or to an approved holding tank. **See the general permit for applicable discharges.**	860 424-3025	No	N/A (Reviewed)	N/A (Reviewed)
Stormwater and Dewatering Wastewater Associated with Construction Activities Applicability: Construction activities that disturb one or more total acres on a site regardless of project phasing resulting in discharges of stormwater and dewatering wastewater.	860 424-3025	Yes	N/A (Reviewed)	N/A (Reviewed)
Vehicle Maintenance Wastewater Applicability: Projects that will generate a discharge of wastewater from 1) floor washdown and incidental drippage from vehicles as a result of routine servicing operations and 2) washing of vehicle exteriors or steam cleaning of engines.	860 424-3025	No	N/A (Reviewed)	N/A (Reviewed)

STATE AGENCIES (continued)	Telephone Number	Click On Drop Down Box In Each Category		
		Is the Permit Required?	Who is responsible to obtain Permit?	Permit Status
DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION (DEEP) (continued)				
Waste & Materials Management Permits *and* **Remediation & Site Clean-Up**				
Aerial Pesticide Application Applicability: Projects that apply pesticides and fertilizers by aircraft.	860 424-3369	No	N/A (Reviewed)	N/A (Reviewed)
Aquatic Pesticide Application Applicability: Projects that introduce pesticides into the waters of the state for control of aquatic organisms.	860 424-3369	No	N/A (Reviewed)	N/A (Reviewed)
Beneficial Use Determination (BUD) Approval Applicability: Projects that will generate a solid waste material and want to provide such material to others for beneficial use.	860-424-3366	No	N/A (Reviewed)	N/A (Reviewed)
Contaminated Soil and/or Sediment Management *(Staging and Transfer)* Applicability: Projects that include the staging, transfer, and temporary storage of contaminated soil and/or sediment.	860 424-3366	Not Sure	N/A (Reviewed)	N/A (Reviewed)
Disposal of Special Wastes (Including Asbestos) Applicability: Projects that include the disposal of a "special waste" or asbestos into Solid Waste Disposal Areas (Connecticut landfills) or Resources Recovery Facilities.	860 424-3366	Not Sure	N/A (Reviewed)	N/A (Reviewed)
Emergency or Temporary Authorization to Discharge to Groundwater to Remediate Pollution Applicability: Projects that include the discharge of a substance into groundwater to remediate pollution.	860 424-3705	No	N/A (Reviewed)	N/A (Reviewed)
Groundwater Remediation Wastewater Directly to Surface Water Applicability: Projects that will generate a discharge of groundwater remediation wastewater directly to a surface water during the process of investigating and remediating groundwater and soil.	860 424-3025	No	N/A (Reviewed)	N/A (Reviewed)
Groundwater Remediation Wastewater to a Sanitary Sewer Applicability: Projects that will generate a discharge of groundwater remediation wastewater directly to a sanitary sewer during the process of investigating and remediating groundwater and soil.	860 424-3025	No	N/A (Reviewed)	N/A (Reviewed)
Property Transfer Program Applicability: Projects that include the transfer of certain real properties and/or businesses ("establishments").	860-424-3705	No	N/A (Reviewed)	N/A (Reviewed)
Radiation - Registration of Devices Applicability: Projects that install Diagnostic and Therapeutic X-Ray (DTX) Devices and Radioactive Materials and Industrial (RMI) Devices.	860 424-3029	No	N/A (Reviewed)	N/A (Reviewed)
Site Characterization and/or Remediation Applicability: Projects that include the investigation and remediation of environmental contamination.	860-424-3705	No	N/A (Reviewed)	N/A (Reviewed)
Underground Storage Tanks Applicability: Projects that include the installation and/or removal of an Underground Storage Tank(s).	860 424-3374	Not Sure	N/A (Reviewed)	N/A (Reviewed)
Public Utilities Regulatory Authority				
Utility Service:	860 827-1553	No	N/A (Reviewed)	N/A (Reviewed)

NOTE: *The Consultant **shall not contact** the Public Utilities Regulatory Authority unless requested to do so by the DAS Project Manager. In the event that the utility company and DAS Construction Services are unable to reach an agreement with regard to utility services for the project, the Consultant may be instructed to contact the Public Utilities Regulatory Authority.*

STATE AGENCIES (continued)	Telephone Number	Click On Drop Down Box In Each Category		
		Is the Permit Required?	Who is responsible to obtain Permit?	Permit Status
DEPARTMENT OF PUBLIC HEALTH (DPH)				
Asbestos Abatement Notification Form Applicability: Projects that include Asbestos Abatement. Must be submitted to DPH at least ten days prior to the start of asbestos abatement.	860 509-7367	No	N/A (Reviewed)	N/A (Reviewed)
Asbestos Alternative Work Practice Form Applicability: Projects that include Asbestos Abatement and alternative work practices.	860 509-7367	No	N/A (Reviewed)	N/A (Reviewed)
Asbestos Demolition Notification Form Applicability: Projects that include demolition of buildings that contain no known asbestos-containing material. Must be submitted to DPH at least ten days prior to the start of demolition.	860 509-7367	Not Sure	N/A (Reviewed)	N/A (Reviewed)
Asbestos Management Plan Applicability: An Asbestos Management Plan must be submitted to DPH if the purpose of a project is to inspect and document asbestos-containing building material in schools for grades kindergarten to 12.	860 509-7367	No	N/A (Reviewed)	N/A (Reviewed)
Environmental Laboratory Certification Applicability: Projects that include the construction of an environmental laboratory which tests drinking water, sewage, solid waste, soil, air, food, and other environmental samples for bacteria, inorganics, organics, and radiochemicals.	860 509-7389	No	N/A (Reviewed)	N/A (Reviewed)
General Application - Public Water System Applicability: Projects that include the construction of a regulated public water system.	860 509-7333	No	N/A (Reviewed)	N/A (Reviewed)
Health Care Facilities - Certificate of Need (CON) Applicability: In general, projects that include the construction, renovation, or termination of health care facilities that provide services for the prevention, diagnosis or treatment of human health conditions.	860 418-7001	No	N/A (Reviewed)	N/A (Reviewed)
Lead-Based Paint Applicability: In general, projects that include painted surfaces in structures built before 1978.	860 509-7299	Not Sure	N/A (Reviewed)	N/A (Reviewed)
Public Pools Applicability: Projects that include the construction, alteration or reconstruction of public pools.	860 509-7296	No	N/A (Reviewed)	N/A (Reviewed)
Subsurface Sewage Treatment and Disposal System (Septic System) Applicability: Projects that include a septic system, as described below:	(see below)	—	—	—
• Local Health Department: Conventional system with design flow less than 2000 gpd.	Local Health Dept.	Yes	N/A (Reviewed)	N/A (Reviewed)
• DPH Sewage Program: Conventional system with design flow between 2000 and 5000 gpd.	860-509-7296	No	N/A (Reviewed)	N/A (Reviewed)
• DEEP Subsurface Sewage Disposal Program: Conventional system with design flow greater than 5000 gpd; community system; and alternative treatment system.	860-424-3025	No	N/A (Reviewed)	N/A (Reviewed)
DEPARTMENT OF TRANSPORTATION (DOT)				
Encroachment Permit Applicability: Projects that require the use of a State highway for purposes other than travel. Normally, excavations, utility work, driveway curb cuts, etc. within the right of way.	860 594-2610	No	N/A (Reviewed)	N/A (Reviewed)
Office of the State Traffic Administration (OSTA) (Contact the DAS Environmental Planning Unit for OSTA Coordination: 860-713-5631)				
Administrative Decisions Applicability: **New facilities:** 200 or more parking spaces and/or a gross floor area of 100,000 square feet or more **OR existing facilities with a MTG Certificate:** 50 or more parking spaces and/or any increase in square footage; **BUT** have demonstrated through a traffic impact analysis that the added traffic **DOES NOT** trigger the need for mitigation or traffic safety measures on the State highway system.	860 594-3020	No	N/A (Reviewed)	N/A (Reviewed)
Major Traffic Generator Certificate Applicability: Projects that include 200 or more parking spaces, or a gross floor area of 100,000 square feet or more, **AND** trigger the need for mitigation or traffic safety measures on the State highway system.	860 594-3020	No	N/A (Reviewed)	N/A (Reviewed)

MUNICIPAL	Telephone Number	Click On Drop Down Box In Each Category		
		Is the Permit Required?	Who is responsible to obtain Permit?	Permit Status
CITY OF HARTFORD				
Greater Hartford Flood Certificate of Approval Applicability: In general, projects located within the floodplain management authority of the Greater Hartford Flood Commission.	860 757-9971	No	N/A (Reviewed)	N/A (Reviewed)
ALL MUNICIPALITIES				
Planning and Zoning *(Note: State agencies are exempt from local planning and zoning regulations. However, where possible the goal is to be consistent with local regulations.)*	List of CT Towns	—	—	—
Building Demolition Permit (issued by Town Building Department)	List of CT Towns	No	N/A (Reviewed)	N/A (Reviewed)
Subsurface Sewage Treatment and Disposal System (Conventional system with design flow less than 2000 gpd)	Local Health Department	No	N/A (Reviewed)	N/A (Reviewed)

ENERGY CONSERVATION PROGRAMS		Telephone Number	Click On Drop Down Box In Each Category		
			Is the Permit Required?	Who is responsible to obtain Permit?	Permit Status
Energize CT: Energy Conscious Blueprint	*(Eversource, United Illuminating, Connecticut Natural Gas, Southern Connecticut Gas)*	877 947 3873	No	N/A (Reviewed)	N/A (Reviewed)
Energize CT: Energy Opportunities		877 947 3873	No	N/A (Reviewed)	N/A (Reviewed)

PERMANENT UTILITY SERVICES

The Consultant is required to research, as applicable, potential connection fees and permits associated with each permanent utility service provider.

A copy of the specific project data from the permanent utility company including the date of the agreement must be sent to the design engineer.

NOTE: *If permanent utility connections are required then the Consultant must note in the applicable utility CSI Construction Specification Section that the Contractor or CMR shall be responsible for* ***obtaining all approvals and paying all fees and costs*** *associated with the each permanent utility connection to each permanent utility provider.*

Date Of Agreement	Permanent Utility	Connection Needed?	Potential Connection Fees	Is a Permit Required?	Who is responsible to obtain Permit?	Permit Status
	Cable TV	Yes				
	Closed Circuit TV *(Agency System)*	No				
	Electric *(Eversource, UI etc.)*	Yes				
	Fire Alarm *(Connected to Fire Dept.)*	Yes				
	Gas *(Eversource, CNG, SCG etc.)*	No				
	Security Systems	Yes				
	Septic *(DPH/DEEP)*	Yes				
	Sewer *(Town, MDC, agency-owned systems, etc.)*	No				
	Telephone	Yes				
	Water Supply *(Utility)*	No				
	Other:	No				

3030
Checklist for Permits, Certifications, and Approvals

OTHER PERMITS, CERTIFICATIONS, OR APPROVALS	Telephone Number	Click On Drop Down Box In Each Category		
		Is the Permit Required?	Who is responsible to obtain Permit?	Permit Status

COMMENTS

Information provided above is based on pre-design study. Additional design is needed to fully complete this document; therefore, this document will be updated during the SD and future phases of the project.

A/E CONSULTANT SIGNATURE

At this submission phase, I/we have reviewed each permit, certification, and approval to determine if it is applicable to the project and will prepare all necessary permit, certification, or approval applications, as well as all required documentation for each application for the project.

Signed: _____ **Date:** 11/01/2021
(Architect/Engineer Signature)

Architect/ Engineer Firm Name: Maier Design Group/GZA
(Typed or Printed)

Phone Number: (860) 293-0093
(Typed or Printed)

Email: darai@mdgai.com
(Typed or Printed)

In addition to submitting this Checklist to the DAS Project Manager, submit a copy of <u>just</u> the Checklist to:

DAS Construction Services
Environmental Planning Unit
450 Columbus Blvd, Suite 1305
Hartford, CT 06103

<u>AND</u>

DAS Construction Services
Office of the State Building Inspector
450 Columbus Blvd, Suite 1303
Hartford, CT 06103

End
Checklist for Permits, Certifications, and Approvals

ADDITIONAL CHECKLIST INSTRUCTIONS

Consultant's Responsibility:

- For all DAS Construction Services projects, the Consultant (or in the case of a Design-Build Project, the Design-Build Firm) shall ensure that all required permits, certificates, and/or approvals are obtained for the project.

Evaluation and Review:

- The list of permits, certificates, and approvals is meant to assist the Consultant with their evaluation; the list and the brief "Applicability" descriptions are not intended to be all-inclusive. Ultimate responsibility for evaluating all permits, certificates, and approvals resides with the Consultant.
- The Consultant shall review each permit, certification, and approval to determine if it is applicable to the project.
- The Consultant shall also review all prior **environmental documents** for the project to assist in determining required permits and/or mitigation measures.
- For supplemental information about an individual permit, certification, or approval, contact the appropriate permitting agency or agency website for specific information.

Additional Study:

- If additional study is required by the permitting agency, then an additional scope of work can be negotiated with the DAS Project Manager for such services.

Submission:

- As specified in the DAS Consultant's Procedure Manual, the Consultant shall submit to the appropriate agencies all required permits, certifications, and approvals for the project. This shall include coordinating with the appropriate agencies, preparing and providing needed material, and completing all necessary documents, applications, and forms.
- **NOTE:** For **DEEP Inland Water Resources** and **DOT OSTA approvals**, the Consultant **shall coordinate** with the **DAS Environmental Planning Unit** (860-713-5631).

Fees:

- DAS is responsible for all application fees.

General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities:

- For the "*General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities*", the Consultant is responsible for assisting with and providing permit information in the construction contract documents for use by the General Contractor or CMR. In addition, the Consultant shall assist with the online registration.
- **The General Contractor, CMR, or Design-Build Firm** is responsible for electronically registering and submitting the "General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities" on **DEEP's ezFile website** (for projects involving one [1] acre or more of soil disturbance).

General Permit for the Discharge of Domestic Sewage:

- The Consultant shall contact the DEEP and, if applicable, obtain a copy of the facility's existing *"General Permit for the Discharge of Domestic Sewage"* to determine applicability and correct submittal information.
- If the project will change any information previously submitted on an existing Domestic Sewage Permit, then the Consultant must submit, on behalf of the facility, the correct information in writing to the DEEP.

Air Emissions Evaluation:

- If new air emission equipment **(including, but not limited to, boilers, hot water heaters, laboratory fume hoods, spray paint booths, and/or emergency generators)** are to be installed as part of the project, then the Consultant shall include appropriate **air emission calculations** in their evaluations of permit applicability. Actual and potential air emissions calculations shall be performed in accordance with DEEP Bureau of Air Management Regulations. Air emission equipment (to be installed as part of the project) must be evaluated individually (New Source Review Permit) and facility-wide (Title V Permit) with all existing air emission equipment.
- **Air emission calculations shall be summarized in a letter addressed to the DAS Environmental Planning Unit.** The letter must also state that should anything change (e.g., additions or modifications to the equipment), then the owner/agency is responsible for reviewing and updating the permits as necessary.
- If there are any **exemptions** to the permits which are based on operational requirements (for example, an emergency generator), then the letter must include applicable **operational requirements** so as to remain in compliance with the permit.
- Please consult the DEEP Air Permitting website for additional details and information.

End - Additional Checklist Instructions

APPENDIX H

Boring Logs

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TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Reconstruction of State Police Firing Range
100 Nod Road
Simsbury, Connecticut

EXPLORATION NO.: GZ-1
SHEET: 1 of 1
PROJECT NO: 15.0166960.00
REVIEWED BY: NLR

Logged By: B. Edwards
Drilling Co.: Seaboard Drilling
Foreman: Dale Griffin

Type of Rig: Mobile
Rig Model: B-53
Drilling Method: HSA

Boring Location: See Plan
Ground Surface Elev. (ft.): 152
Final Boring Depth (ft.): 32
Date Start - Finish: 10/20/2021 - 10/20/2021

H. Datum: NAD83
V. Datum: NAVD88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 7 5/8 / 4 1/4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Core Barrel Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/20/21	1150	~3.5	10 min.

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	STRATUM Depth (ft.)	STRATUM Description	STRATUM Elev. (ft.)
		S-1	0-2	24	14	20 8 7 5	15	S-1: Top 7": PAVEMENT MILLINGS Bottom 7": Brown, fine to medium SAND, some Silt	1		0.7	PAVEMENT MILLINGS	151.3
		S-2	2-4	24	16	3 3 2 3	5	S-2: Top 8": Brown, fine to medium SAND, some Silt Bottom 8": Brown SILT, trace fine Sand			2.8	SAND	149.2
5		S-3	4-6	24	18	2 1 1 1	2	S-3: Very loose, brown, SILT, trace fine Sand			6	SILT	146.0
		S-4	6-8	24	12	4 5 8 9	13	S-4: Medium dense, fine to medium SAND, trace coarse Sand, trace Silt					
10		S-5	10-12	24	15	1 3 3 4	6	S-5: Loose, brown, fine to coarse SAND, trace Gravel, trace Silt					
15		S-6	15-17	24	22	1 3 3 5	6	S-6: Loose, brown, fine to coarse SAND, trace Gravel, trace Silt					
20		S-7	20-22	24	10	2 1 1 1	2	S-7: Very loose, brown, fine to coarse SAND, trace Silt					
25		S-8	25-27	24	11	2 1 1 2	2	S-8: Very loose, brown, fine SAND, little Silt					
30		S-9	30-32	24		2 1 2 2	3	S-9: Very loose, brown, fine SAND, little Silt	2 3 4		32		120.0
								End of Exploration at 32 feet.					

REMARKS

1 - Boring drilled using hollow stem augers. Driller started adding water to augers starting at approximately 4 feet below ground surface (bgs).
2 - Upon completion, boring backfilled with drilling spoils to ground surface.
3 - Monitoring well installed in offset boring, approximately 10 feet north of GZ-1.
4 - Well Construction: 10 feet of 2 inch diameter Schedule 40 threaded, flush-joint PVC well screen set from approximately 10 to 20 feet below bgs. Well completed to ground surface with 2 inch diameter Schedule 40, flush joint PVC riser. Filter sand placed in annulus around well from approximately 4 to 22 feet bgs. Bentonite seal placed from approximately 3 to 4 feet bgs. Annulus backfilled with sand from 1 to 3 feet bgs and protected with flush mount road box set in concrete.

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual.

Exploration No.: GZ-1

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Reconstruction of State Police Firing Range
100 Nod Road
Simsbury, Connecticut

EXPLORATION NO.: GZ-2
SHEET: 1 of 1
PROJECT NO: 15.0166960.00
REVIEWED BY: NLR

Logged By: B. Edwards
Drilling Co.: Seaboard Drilling
Foreman: Dale Griffin

Type of Rig: Mobile
Rig Model: B-53
Drilling Method: Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 152
Final Boring Depth (ft.): 32
Date Start - Finish: 10/20/2021 - 10/20/2021

H. Datum: NAD83
V. Datum: NAVD88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4 1/2 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Core Barrel Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/20/21	1443	0.5	10 min.

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	STRATUM Depth (ft.)	STRATUM Description	STRATUM Elev. (ft.)
		S-1	0-2	24	18	1 6 4 2	10	S-1: Top 4": ASPHALT Bottom 14": Brown, fine to coarse SAND, some Silt	1		0.4	ASPHALT	151.6
											2	FILL	150.0
		S-2	2-4	24	6	2 2 2 2	4	S-2: Loose, brown, SILT, trace fine Sand				SILT	
											4.3		147.7
5		S-3	4-6	24	10	3 2 2 5	4	S-3: Top 3": Brown, SILT Bottom 7": Brown, fine to medium SAND, trace Silt					
		S-4	6-8	24	22	5 8 8 10	16	S-4: Medium dense, brown, fine to coarse SAND, little Gravel, trace Silt					
10		S-5	10-12	24	11	4 2 3 5	5	S-5: Loose, brown, fine to coarse SAND, trace Gravel, trace Silt					
15		S-6	15-17	24	9	7 5 4 3	9	S-6: Loose, brown, fine to coarse SAND, little Gravel, trace Silt				SAND	
20		S-7	20-22	24	15	2 2 2 2	4	S-7: Loose, brown, fine SAND, little Silt					
25		S-8	25-27	24	11	3 2 2 3	4	S-8: Loose, brown, fine SAND, little Silt, trace Gravel					
30		S-9	30-32	24	11	2 3 2 2	5	S-9: Loose, brown, fine SAND, little Silt			32		120.0
								End of Exploration at 32 feet.	2				

REMARKS

1 - Boring drilled with casing using drive and wash techniques.
2 - Upon completion, boring backfilled with drilling spoils to ground surface.

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual.

Exploration No.: GZ-2

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TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Reconstruction of State Police Firing Range
100 Nod Road
Simsbury, Connecticut

EXPLORATION NO.: GZ-3
SHEET: 1 of 1
PROJECT NO: 15.0166960.00
REVIEWED BY: NLR

Logged By: N. Fonda
Drilling Co.: Seaboard Drilling
Foreman: Dale Griffin

Type of Rig: Mobile
Rig Model: B-53
Drilling Method: Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 153
Final Boring Depth (ft.): 22
Date Start - Finish: 10/20/2021 - 10/20/2021

H. Datum: NAD83
V. Datum: NAVD88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4 1/2 / 4

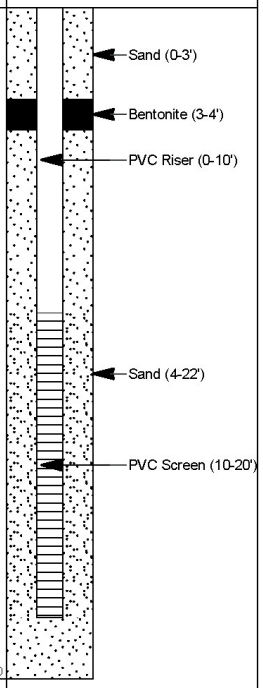
Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
See Note 4			

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows per 6"	SPT Value	Sample Description Modified Burmister	Remark	Field Test Data
0	21	S-1	0-2	24	18	3 2 3 2	5	S-1: Loose, brown, fine SAND, trace Silt	1	
		S-2	2-4	24	20	2 2 2 2	4	S-2: Loose, dark brown, fine SAND, little Silt, trace Organics		
5	87	S-3	4-6	24	24	2 2 2 2	4	S-3: Loose, dark brown to brown, Clayey SILT, fine Sand, trace Organics		
		S-4	6-8	24	24	3 4 5 3	9	S-4: Loose, light brown to gray, fine SAND, trace Silt		
10	150	S-5	10-12	24	16	4 3 4 3	7	S-5: Loose, brown, fine SAND, trace Silt		
15	200	S-6	15-17	24	0	14 11 11 8	22	S-6: No Recovery		
20		S-7	20-22	24	5	7 4 3 4	7	S-7: Loose, brownish-red, fine to coarse SAND, little Gravel, trace Silt	2	
								End of exploration at 22 feet.	3 4	
25										
30										

Depth (ft.)	Stratum Description	Elev. (ft.)
22	SAND	131.0



REMARKS

1 - Boring drilled with casing using drive and wash techniques.
2 - Boring completed as monitoring well.
3 - Well Construction: 10 feet of 2 inch diameter Schedule 40 threaded, flush-joint PVC well screen set from approximately 10 to 20 feet below ground surface (bgs). Well completed to ground surface with 2 inch diameter Schedule 40, flush joint PVC riser. Filter sand placed in annulus around well from approximately 4 to 22 feet bgs. Bentonite seal placed from approximately 3 to 4 feet bgs. Annulus backfilled with sand from 1 to 3 feet bgs and protected with flush mount road box set in concrete.
4 - Stabilized groundwater measurement not made due to drilling method.

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-3

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Reconstruction of State Police Firing Range
100 Nod Road
Simsbury, Connecticut

EXPLORATION NO.: GZ-4
SHEET: 1 of 2
PROJECT NO: 15.0166960.00
REVIEWED BY: NLR

Logged By: B. Edwards
Drilling Co.: Seaboard Drilling
Foreman: Dale Griffin

Type of Rig: Mobile
Rig Model: B-53
Drilling Method: Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 154
Final Boring Depth (ft.): 62
Date Start - Finish: 10/21/2021 - 10/21/2021

H. Datum: NAD83
V. Datum: NAVD88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4 1/2 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Core Barrel Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
See Note 3			

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Depth (ft.)	STRATUM Description	Elev. (ft.)
		S-1	0-2	24	22	6 6 2 2	8	S-1: Top 8": Dark brown, fine to coarse SAND, some Silt (Pavement Millings) Bottom 14": Brown, fine to medium Sand	1			FILL	
		S-2	2-4	24	11	1 2 2 2	4	S-2: Loose, brown, fine to medium SAND, trace Silt			2		152.0
5		S-3	4-6	24	13	2 2 2 2	4	S-3: Loose, brown, fine SAND, trace Silt					
		S-4	6-8	24	17	3 2 3 3	5	S-4: Loose, brown, fine SAND, trace Silt					
10													
15		S-5	15-17	24	18	6 11 12 12	23	S-5: Medium dense, brown, fine to coarse SAND, little Gravel, trace Silt				SAND	
20		S-6	20-22	24	12	6 9 5 5	14	S-6: Medium dense, fine to coarse SAND, some Gravel, trace Silt					
25		S-7	25-27	24	11	5 8 5 6	13	S-7: Medium dense, brown, fine to coarse SAND, some Gravel, trace Silt					
30		S-8	30-32	24	12	5 3 2 5	5	S-8: Loose, brown, fine SAND, little Silt					

REMARKS

1 - Boring drilled with casing and drilling mud using drive and wash techniques.

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual.

Exploration No.: GZ-4

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TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Reconstruction of State Police Firing Range
100 Nod Road
Simsbury, Connecticut

EXPLORATION NO.: GZ-4
SHEET: 2 of 2
PROJECT NO: 15.0166960.00
REVIEWED BY: NLR

Logged By: B. Edwards
Drilling Co.: Seaboard Drilling
Foreman: Dale Griffin

Type of Rig: Mobile
Rig Model: B-53
Drilling Method: Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 154
Final Boring Depth (ft.): 62
Date Start - Finish: 10/21/2021 - 10/21/2021

H. Datum: NAD83
V. Datum: NAVD88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4 1/2 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Core Barrel Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
See Note 3			

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Depth (ft.)	STRATUM Description	Elev. (ft.)
35		S-9	35-37	24	12	3 2 1 2	3	S-9: Loose, brown, Clayey SILT, trace fine Sand					
												SAND	
40		S-10	40-42	24	13	4 3 3 2	6	S-10: Loose, brown, SILT, little fine Sand					
											43.5		110.5
45		S-11	45-47	24	18	WOH/18" 2		S-11: Gray, CLAY, trace Silt					
50		S-12	50-52	24	18	2 1 1 1	2	S-12: Soft, gray, Clayey SILT					
												SILT AND CLAY	
55													
60		S-13	60-62	24	15	WOH/6" 2 3 4	5	S-13: Medium stiff, gray, Clayey SILT					
									2 3		62		92.0
								End of Exploration at 62 feet.					
65													

REMARKS

2 - Upon completion, boring backfilled with drilling spoils to ground surface.
3 - Stabilized groundwater measurement not made due to drilling method.

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual.

Exploration No.: GZ-4

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APPENDIX I

GEOTECHNICAL REPORT

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Known for excellence. Built on trust.

Pre-Design Geotechnical Engineering Report

RECONSTRUCTION OF THE STATE POLICE FIRING RANGE

100 NOD ROAD
SIMSBURY, CONNECTICUT

January 2022
File No. 15.0166960.00

PREPARED FOR:
State of Connecticut
Department of Administrative Services
450 Columbus Boulevard, Suite 1305
Hartford, Connecticut

GZA GeoEnvironmental, Inc.
1350 Main Street, Suite 1400 | Springfield, MA 01103
413-726-2100

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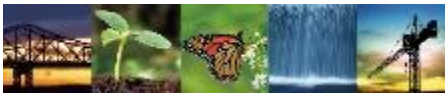

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January 21, 2022
File No. 15.0166960.00

Attention: David H Barkin FAIA, Chief Architect

Construction Services – Technical Services
Department of Administrative Services
450 Columbus Boulevard, Suite 1305
Hartford, Connecticut

Re: Pre-Design Geotechnical Engineering Report
Reconstruction of the State Police Firing Range
Simsbury, Connecticut
BI-N-357

Dear Mr. Barkin:

In accordance with our proposal, executed by you on July 20, 2021, GZA GeoEnvironmental, Inc. (GZA) is pleased to submit this pre-design geotechnical engineering report to the State of Connecticut (Client). The objectives of our services were to evaluate subsurface conditions and provide preliminary geotechnical design and construction recommendations for the proposed buildings site development.

This report is subject to the Limitations included in **Appendix A** and the Terms and Conditions of our Agreement.

We appreciate the opportunity to work with you on this project. Please contact Mr. Nathaniel Russell, P.E., at 413-234-0468, should you have any questions or require additional information.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Nathaniel L. Russell, P.E.
Sr. Project Manager

Lawrence Johnsen, P.E.
Consultant Reviewer

David M. Barstow, P.E.
Associate Principal

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1.0 INTRODUCTION

Elevations in this report reference North American Vertical Datum of 1988 (NAVD88) unless otherwise stated.

1.1 EXISTING CONDITIONS

The project Site encompasses approximately 12.5 acres at 100 Nod Road in Simsbury, Connecticut (Site). The approximate location of the site is shown on **Figure 1- Locus Plan**. The Site is currently operated by the Connecticut State Police (CSP) as a Firing Range and Training Facility. We understand the CSP have been training on this Site since the 1930s, with the current buildings constructed in the 1960s. Further, we understand the site is prone to periodic (seasonal) flooding, resulting in loss of operation and damage to the buildings, supplies and equipment.

The Site abuts Nod Road to the west, which is located along the east side of the Farmington River. The Site forms a generally elongated rectangle, extending more than 1,900 feet in the east-west dimension and about 290 to 300 feet in the north-south direction. The property is in a low-lying area with developed areas ranging in elevation from approximately El. 150 feet to El. 154 feet. The ground slopes upward to the west to about El. 157 feet along Nod Road on the northwestern part of the Site and about El. 156 feet on the southwestern portion of the Site. The paved parking area east of the entrance from Nod Road where two training trailers (temporary modular buildings) are located is at approximately El. 153 feet. The area to the north of the paved parking is largely landscaped area (grass, lawn). Elevations in the paved "pistol deck" area located in the central portion of the site range from about El. 150 feet to El. 154 feet. The developed portion of the site is bounded to the north, east and south by earthen berms. Portions of the southern and northern berms are supported by concrete or timber retaining walls.

The eastern portion of the Site is a rifle range and largely consists of wetlands and gravel areas at around El. 150 feet. On the eastern portion of the rifle range the land slopes steeply up to about El. 170 feet forming an approximately 25-foot-high berm that serves as a backstop for rifle training. The berm slopes down to the east to about an elevation of El. 150 feet. Additional wetlands and wooded areas exist to the east of the 25-foot-high berm before the ground slopes up to El. 170 feet on the far eastern portion of the property (outside the redevelopment limits).

1.2 PROPOSED CONSTRUCTION

While the final development plan is not set, we understand the project team is evaluating three alternatives for redevelopment of the site, referred to as Option1, Option 2 and Option 3. For all three alternatives, the general elements of construction will be substantially similar, including constructing a new training building, with associated parking, loading areas and utilities, and replacing the existing awnings over the pistol deck backstop and rile range shooting position. Existing site retaining walls may also be replaced/reconstructed. Under Options 1 and 2, the new training building would be located centrally within the site, on the west side of the pistol deck, with the building long-dimension oriented east-to-west for Option 1 and north-to-south for Option 2. Under Option 3, the new training building would be located in the northwest corner of the site, and second smaller building (range tower) would be constructed adjacent to the west side of the pistol deck. Under Options 1 and 2, the range tower would be incorporated into the training building.

We understand that the new training building, and separate range tower, if required, will be elevated one-story structures, supported on columns (metal and concrete moment frame) approximately 12 to 14 feet above the exiting ground surface, to establish the finished floor elevation at approximately El 166.2 feet (one foot above the FEMA mapped 500-year flood elevation). Enclosed stairwells and an elevator shaft will extend from the upper building to landings near the existing ground surface elevations below. Other portions of the ground-story level may be enclosed or open to the elements.

2.0 SUBSURFACE EXPLORATIONS

2.1 TEST BORINGS

Under subcontract to GZA, Seaboard Drilling, Inc. (Seaboard) of Chicopee, Massachusetts drilled four borings (designated GZ-1 to GZ-4) on October 20 and 21, 2021 using a truck-mounted drill rig at the approximate locations shown on **Figure 2 – Exploration Location Plan**. The borings were advanced using hollow-stem auger and cased-wash drilling techniques. Split-spoon samples were collected and Standard Penetration Tests (SPTs) were generally performed continuously in the top 8 feet at each boring location. The samples were obtained in general accordance with ASTM D1586, the Standard Penetration Test (SPT). The SPT method consists of driving a 1⅜-inch-inside-diameter (ID) split-spoon sampler 24 inches with a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler from 6 to 18 inches is the SPT blow count (N Value), which is a commonly used indicator of soil density and consistency.

Test Borings GZ-1 through GZ-3 were terminated in the overburden soils between approximately 22 and 32 feet below ground surface. Test Boring GZ-4 was advanced to approximately 62 feet below ground surface. Upon completion, borings GZ-2 and GZ-4 were backfilled with drill cuttings to the approximate ground surface. Test Borings GZ-1 and GZ-3 were completed as a groundwater observation well and finished with a flush mound road box set in concrete.

A GZA representative observed the borings, visually-manually classified the soil samples using the Modified Burmister Soil Classification System, and prepared boring logs. Logs of the test borings are attached as **Appendix B**.

2.2 LABORATORY TESTING

Geotechnical laboratory testing was performed on selected samples obtained during the subsurface explorations to confirm field classification of soils and assist in developing geotechnical engineering recommendations. Results from the laboratory testing were not available at the time of this report, but can be made available upon request to be inserted in **Appendix C**.

3.0 GENERALIZED SUBSURFACE CONDITIONS

The generalized subsurface conditions encountered at the test borings are described below.

3.1 SUBSURFACE PROFILE

Subsurface soil conditions at the test boring locations generally consisted of surficial pavements or topsoil underlain by fill over naturally deposited silt, sand, and clay. The depths, thicknesses, and elevations referenced herein should be considered approximate. See below for stratum descriptions of the soil encountered in order of increasing depth. Refer to the boring logs in **Appendix B** for additional details of the subsurface conditions encountered.

Fill – Existing Fill was encountered at the ground surface, or immediately below pavements, to a depth of about 0.75 to 2 feet bgs at borings GZ-2 and GZ-4. The Fill generally consisted of brown, fine to coarse SAND with a visual estimate (based on weight) of up to 35 percent Silt. SPT N-values within the Fill ranged from 8 to 10 blows per foot (bpf) indicating a loose to medium dense relative density.

SILT – Silt was encountered below the Fill in borings GZ-2, and below a layer of Sand in boring GZ-1. The Silt generally consisted of brown, SILT, with less than 10 percent fine and medium sand. SPT N-values within the silt raged from 2 to 4 bpf, indicating a very loose to loose relative density.

SAND – Naturally deposited Sand was encountered in all four test borings as follows: immediately below the pavement (pavement millings) in boring GZ-1; below the Silt in GZ-2; at ground surface in GZ-3; and below the Fill in GZ-4. A second deposit of Sand was encountered below the Silt stratum in boring GZ-1. The Sand generally consisted of brown or gray, fine to coarse SAND, with up to 50 percent Gravel, up to 35 percent Silt. In boring GZ-3 less than 10 percent organics were encountered within the Sand stratum from approximately 2 and 6 feet bgs. The SPT N-values within the Sand ranged from 2 to 23 bpf indicating a very loose to medium dense relative density. At boring GZ-4 the Sand stratum extended to approximately 45 feet bgs. Borings GZ-1, GZ-2 and GZ-3 were terminated in the Sand stratum.

SILT AND CLAY – Silt and Clay was encountered below the Sand stratum in boring GZ-4, and generally consisted of gray Clayey SILT, with less than 10 percent fine Sand, or gray CLAY. The SPT N-values within the Silt and Clay ranged from weight of hammer (WOH) to 6 bpf, indicating a very soft to medium stiff consistency. Boring GZ-4 was terminated within the Silt and Clay stratum at a depth of approximately 62 feet bgs.

3.2 GROUNDWATER

Groundwater was observed in borings GZ-1 and GZ-2 between approximately 3.5 and 0.5 feet below ground surface, respectively. Due to drilling methods, stabilized groundwater readings were not obtained in borings GZ-3 and GZ-4 at the time of drilling. Monitoring wells were installed at borings GZ-1 and GZ-3. See the boring logs in **Appendix B** for information on monitoring well construction.

Based on discussions with facility personnel, we understand the Site is routinely subject to inundation (flooding) during wet weather. Additionally, per the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the Town of Simsbury, Connecticut (refence FEMA Flood Insurance Rate Map Panel No. 09003C033F, effective date September 26, 2008), the Site is located within FEMA Zone AE (100-year recurrence interval). The FEMA mapped 100-year flood elevation at the site is approximately El. 160.6 feet. The potential for elevated groundwater conditions, including flooding above the existing ground surface should be considered in design of the new building(s) and other site infrastructure.

Note that seasonal fluctuations in the observed groundwater levels will occur due to variations in precipitation, temperature, storm events and other factors different from those existing at the time the measurements were made. We would anticipate that groundwater levels would be higher at certain times of the year and following precipitation events.

4.0 SUMMARY OF KEY GEOTECHNICAL ISSUES

The key geotechnical issues include:

- Existing Fill: Existing fill was encountered at each of the explorations. The thickness of fill generally ranged from 0.75 to 2 feet. The existing Fill is undocumented and due to possible loose and variable densities of the fill and possible degradable material (wood and organics), there is potential for undesirable total and differential settlement of proposed footings and slabs-on-grade bearing on the existing Fill. The existing Fill is not suitable for support of shallow foundations and floor slabs.

- Liquefaction Susceptibility: Loose granular soils were encountered in all four test borings, extending up to 32 feet bgs, or deeper. Below the groundwater table, the loose granular soils may be subject to seismically induced strength loss and settlement (liquefaction) for the design ground motion determined in accordance with the Connecticut State Building Code (CTSBC). Preliminary evaluations indicate that up to 10 inches of seismically induced settlement could occur due to liquefaction of the loose granular soils below proposed footings during the considered earthquake. As discussed below, additional evaluations are required to further evaluate seismic design parameters and response criteria as part of future final design. Depending on the results of the additional evaluations, the amount of predicted seismically-induced settlement may be more or less than estimated in this preliminary report.

- Shallow Groundwater: Shallow groundwater was encountered in the test borings, at depths ranging from approximately 0.5 to 3.5 feet bgs (corresponding to approximately El. 151.5 to El. 148.5 feet, respectively).

- Control of Water and Excavation Dewatering: Excavation for demolition of the existing building foundations and subsurface utilities, removal of unsuitable material, and for construction new foundations, utilities and other site infrastructure may extend below groundwater. Dewatering of the excavations should be anticipated to be required.

5.0 RECOMMENDATIONS FOR DESIGN

5.1 GENERAL

The following sections present preliminary geotechnical design recommendations that are intended to be consistent with 2015 International Building (IBC), and the Connecticut State Supplements, which together constitute the 2018 State of Connecticut Building Code. These preliminary geotechnical design and related earthwork construction recommendations are based on our evaluation of the available data and design information provided to GZA, and are subject to the Limitations contained in **Appendix A**.

5.2 BUILDING FOUNDATIONS

Due to the presence of liquefaction susceptible soils, ground improvement is anticipated to be required to support shallow foundations and slabs-on-grade, or the new building can be supported on deep foundations (e.g., piles) extending to suitable bearing strata below the liquefaction susceptible soils.

Alternatives for ground improvement to increase bearing capacity and liquefaction resistance of the loose granular soils within the bearing zone for the new building, as well as deep foundations to support the new building without ground improvement, are described below.

5.2.1 Shallow Foundations (with Ground Improvement)

Spread footing foundations are considered feasible, provided that ground improvement as described below, is completed prior to foundation construction. After ground improvement and removal of unsuitable materials from within the bearing zones of the footings, the proposed building(s) can be supported on shallow spread footings bearing on a minimum 2-foot-thick layer of compacted Granular Fill, placed over the improved native granular soils.

Unsuitable materials include topsoil, organic soils, existing fill, utilities, tree stumps, pavement, previous building foundations and other deleterious materials encountered above the natural, undisturbed granular soils. The bearing zone is described as a line extending from a point 1-foot outside the exterior edges of new footings, and then downward and outward at a slope of one-horizontal to one-vertical (1H:1V) to the top of natural, undisturbed granular soils.

A maximum net allowable bearing pressure of 4,000 pounds per square foot (4 ksf) is recommended for design of footings supported on improved ground. For footing widths less than 3 feet, the bearing value should be reduced to one third of the above value multiplied by the least lateral footing dimension in feet. Isolated and strip footings should be at least 24 inches in width.

For site preparation and foundations designed and constructed in accordance with the recommendations of this report, the estimated initial (elastic) building settlements are expected to be less than 1 inch and maximum anticipated differential settlement between adjacent footing lines is estimated to be less than ½ inch. However, because the Site is underlain by compressible soils at depth (fine-grained, cohesive soils, Silt and Clay stratum), additional long-term settlement may occur due to consolidation of the underlying cohesive soils. The consolidation settlement magnitude will vary across the site and will be dependent on the thickness of the compressible soils and actual applied load from foundations and site grading (cuts and fills). Collection of additional subsurface information from supplemental explorations is required to further characterize the nature and extent of the compressible soils and allow for evaluation of the potential long-term consolidation settlements as part of future design phases for the project.

If the long-term consolidation settlements predicted during final design cannot be tolerated by the new buildings' structural systems, it may be feasible to reduce the long-term settlement by placing temporary surcharge loads over portions of the site (preloading) to pre-consolidate the compressible soils prior to final grading and constructing the buildings. Pre-loading of similar sites often includes placement of the surcharge load (typically soil that will be used as part of regrading the site) over the proposed building footprint for a period of several months or more. However, the magnitude and duration of preloading required to mitigate long-term settlement will depend on the final site design and foundation loads and will require more detailed review and analysis as part of final design. Monitoring of ground settlement during preloading would be required.

5.2.2 Ground Improvement

Loose, liquefaction susceptible, granular soils within the proposed building area are not considered suitable to support the foundations of the new buildings due to the potential for seismically induced strength loss and settlement (see discussion under Section 5.5, below). Due to the depth of the loose soils (extending on the order of 20 to 30 feet bgs, or more) and shallow groundwater conditions, excavation and replacement of the loose soils will not be possible. To mitigate the potential issues with strength loss and settlement, the ground can be improved to increase resistance to liquefaction and settlement. Ground improvement alternatives include methods for in-situ densification of the loose soils by Dynamic Deep Compaction (DDC) or Vibratory Probe Compaction (VPC). Other methods include installation of proprietary systems, such as aggregate piers or rigid inclusions, or prefabricated earthquake drains.

The actual design of the ground improvement solution is dependent on the specific performance characteristics of the selected technology and varies based on site conditions and contractor methodologies. Detailed design of such ground improvement solutions is typically performed by the specialty contractor. We recommend a performance specification, detailing the required minimum bearing capacity and maximum acceptable settlements be prepared for bidding to ensure proper design of the ground improvement.

Specifications should require that the ground improvement contractor be responsible to review the data in the test borings and determine the required limits of ground improvement. The ground improvement contractor should be solely responsible

for determining the limits of ground improvement; however, the proposed details and limits of ground improvement should be provided to GZA for review.

Some typical ground improvement alternatives are described in more detail in the following sections.

Intensive Surface Compaction (Dynamic Deep Compaction)

Dynamic Deep Compaction (DDC) is a ground improvement technique which achieves in-situ compaction and densification of loose soils. DDC involves repeatedly raising a large weight (typically on the order of 10 to 16 tons) with a crane and dropping it on the ground surface. DDC is typically carried out by performing multiple passes across the area to be improved. During each pass the weight is dropped repeatedly on a grid pattern in the proposed building area (within the building footprint and extending a distance horizontally outward 25 feet from the building perimeter). Between the passes, the previously compacted area is leveled, either by re-working the ground surface, or by placing compacted fill within the depressions (craters) resulting from dropping the weight. The number of passes required will depend on the nature, consistency and depth of the soils to be improved. The final pass, called the ironing pass, is performed to compact the surficial soils which were disturbed during DDC, or placed to level the ground surface. The ironing pass is performed with lower compaction energy and is carried out with a lighter weight with a larger area and a reduced drop height.

The ironing pass only is effective to improve the surficial soils to a depth of 5 to 7 feet below grade and can also be used for densification of the road and parking subgrade soils. In these areas, DDC or ironing pass generally extends a distance horizontally outward of about 10 feet from the outside edge of the pavement.

DDC is an effective method for densification of granular soils above groundwater but may be less effective at densifying soils below the groundwater table. It may be feasible to increase the effective depth of DDC by performing dewatering to lower the groundwater elevation in the area to be improved prior to starting DDC. Additionally, DDC has some disadvantages such as noise, ground vibration and the potential for disturbance or damage to close structures. A preconstruction condition survey of the existing structures near the proposed DDC area, and special measures to monitor and limit ground vibrations, may be required.

At the start of DDC, a verification test boring program should be performed to verify the Contractor's design for the weight size, number of drops, and drop heights will produce the desired density increase with depth. During the verification test program, vibrations will be monitored at various distances from the drop zone so that predictive estimates of vibrations can be determined at other locations on the site. Borings will be drilled after the densification and SPT blow counts will be recorded to verify adequate compaction is achieved in the test section. The results of this verification testing are then used to establish the basis for the compaction of the remaining portion of the site.

Case studies indicate that anticipated settlement from DDC is typically on the order of 5 to 10 percent of the thickness of the soil to be improved. The cost for import and compaction of granular fill to restore the site grades can be significant and should be included in cost estimates for DDC.

Vibratory Probe Compaction

Vibratory probe compaction (VPC), formerly known as "Terra-Probe", is another in-situ compaction technique that can be utilized to improve the loose liquefaction susceptible soils within proposed building footprints.

VPC consists of repeatedly driving and extracting an open-ended large diameter steel pipe into the material to be densified with a large vibratory hammer, typically operating in the 900 cycles/minute range. The probe is generally a 30-inch diameter, 3/8 to 1/2-inch wall pipe that has ½-inch thick by 6-inch-wide plate straps (ribs) welded to the outside surface.

The straps are spaced at approximately 5 feet on center and form a series of ribs that transfer vertical vibrations to the granular soil to be densified. Steel H-piles may also be utilized for VPC. VPC is performed in a grid pattern across the building footprints with typical probe spacings of five to six feet on center. Following VPC, the area is stripped to the bottom of any surface craters that develop during VPC and surface soils are compacted using heavy vibratory compaction equipment. Additional fill required to meet design grades is then placed and compacted in lifts with normal vibratory compaction equipment.

Post-densification test borings are required to confirm the achieved densification of the loose soil layers following VPC operations. A minimum post-VPC SPT N-value of 10 bpf, measured with a hammer operating at approximately 70% efficiency, is recommended throughout the VPC improved soils. The test borings are typically completed after the first day of VPC within the compacted soil layers to review and assess the efficiency of the VPC procedure. The VPC program can then be modified based on the results of the test boring program, as necessary. An experienced earthwork contractor and full-time engineering oversight of this operation are recommended for the implementation of this program.

VPC causes ground vibrations and settlements which may impact existing nearby structures or utilities. GZA recommends vibration monitoring near existing nearby structures or utilities during VPC. GZA also recommends performing preconstruction surveys of existing structures within a minimum of 100 feet of the proposed VPC work to document any existing cracks in foundations, sidewalks, etc.

Densification settlement due to the VPC process could range from several inches to a foot or more, depending on the initial density and makeup of the material and intensity of the VPC process. Additional structural fill material may be required to account for the anticipated settlement from soil densification.

Aggregate Piers

Aggregate piers are densified columns of crushed stone installed by driving a hollow mandrel through the existing poor-quality soils (loose sand). As the mandrel is removed, aggregate (crushed stone or recycled concrete) is fed through it and then densified in lifts, creating columns of aggregate. Aggregate piers increase the bearing capacity of the soil, reduce settlement potential by transferring the vertical loads through poor quality soils and bearing below the liquefaction susceptible soils, and increase resistance to liquefaction. Aggregate piers are typically installed in a grid pattern with a 3- to 5-foot center-to-center spacing below footings. Additionally, aggregate piers can be installed to control settlement of slabs-on-grade, typically at a spacing of around 8 to 10 feet center-to-center.

Earthquake Drains

Earthquake drains are proprietary ground improvement systems that consist of premanufactured drainage assemblies or field-constructed systems that function to reduce the potential for liquefaction-induced strength loss and settlement by limiting excess pore pressure build-up and providing a drain for the water to the ground surface during seismic events. The process of installing the earthquake drains also results in densification of the soils immediately around the drains, which can further reduce liquefaction susceptibility and increase bearing capacity.

Similar to aggregate piers, earthquake drains are installed by driving a vibrating mandrel into the ground and inserting the drainage assembly. One proprietary system utilizes a prefabricated assembly consisting of a 3-inch diameter drain core wrapped with geotextile filter fabric. However, multiple options exist for drainage assemblies that can be designed to accommodate a range of drainage applications and soil conditions.

5.2.3 Deep Foundations

If ground improvement is not performed, the new building(s) may be supported on deep foundations, such as piles, bearing below the liquefaction susceptible soils. Piles may be end-bearing or friction-type, depending on the depth to suitable bearing soils. Additional subsurface explorations are recommended to confirm suitable bearing soils.

We anticipate piles would be installed by driving the piles to the required depth(s) for capacity from the existing ground surface. After pile driving, and before constructing pile caps, additional excavation and pile cut-off may be required to achieve minimum embedment depths for the pile caps/foundations for frost protection. The excavations may extend below groundwater level, potentially requiring dewatering.

For preliminary design, total and differential post-construction settlements 1-inch and 0.5 inches, respectively, are recommended for footings supported on properly designed deep foundations.

Pile capacities should be fully evaluated during final design, including effects of pile groups and resistance to lateral and uplift stresses. Confirmation of pile capacities by pile load testing should be made during construction.

5.3 SLABS-ON-GRADE

New building slabs-on-grade should bear on a base course of at least 12 inches of compacted Sand and Gravel Fill or ¾-inch Crushed Stone underlain by non-woven filter fabric, placed over a prepared subgrade as described below. The recommended modulus of subgrade reaction recommended for slab design is 120 pounds per cubic inch referenced to a 1-foot by 1-foot plate load area. Vapor barrier and waterproofing requirements should be incorporated into the design in accordance with the CTSBC, as appropriate.

Slabs for pile supported structures should be designed as structural slabs supported on pile caps and grade beams.

5.4 SLAB/FOUNDATION DRAINAGE SYSTEM

As described above, groundwater was measured in the test borings at depths ranging from about 0.5 to 3.5 feet bgs. Additionally, the FEMA mapped 100-year flood elevation is approximately El. 162.5. Based on our understanding of the proposed construction (no basements), an underdrain system is not anticipated to be required.

However, where elements of the construction extend below existing grade, such as elevator pits, groundwater should be anticipated to be encountered, and slab underdrain/foundation drainage is recommended, if practical. Because the topography of the Site is relatively flat, gravity discharge from a foundation drainage system may not be feasible and installation of an active (pumped) foundation drainage system may be required. If required, the underdrain system should be designed by a registered Professional Engineer licensed in the State of Connecticut.

As an alternative to a drainage system, below-grade structures can be waterproofed and designed to resist hydrostatic forces, including uplift.

5.5 EARTHQUAKE DESIGN CRITERIA

5.5.1 Seismic Site Class

Based on criteria set forth in Section 1613.3.2 of the CTSBC, Seismic Site Class F is recommended (liquefiable soils).

For Seismic Site Class F, the CTSBC requires a site response analysis be performed in accordance with Section 21.2 of ASCE 7, except for structures having fundamental periods of vibration of 0.5 seconds or less. If the fundamental period of the building is less than or equal to 0.5 seconds, the design spectral accelerations can be determined in accordance with the simplified procedures in Section 20.3 and 11.4 of ASCE 7, as described below

If the fundamental period of the new building(s) is greater than 0.5 seconds, or if requested by the Project Structural Engineer to establish site-specific seismic design parameters use in design of the new building(s), a site response analysis should be performed during future design phases to develop design ground motion parameters in accordance with the CTSBC. Additional explorations (test borings), as well as in-situ shear wave velocity testing (seismic cone testing) is recommended to obtain data for use in the site response analysis.

If the fundamental period of the new training building is 0.5 seconds or less, the site design response spectra can be determined in accordance Section 11.4 of ASCE 7, based Seismic Site Class E, and constructed using the following coefficients:

- Per Section 1613.3.1 (Appendix N) of the CTSBC, the earthquake response accelerations for the maximum considered earthquake at short periods (S_S) and at 1 second (S_1) are 0.179 and 0.064, respectively.

- Per Tables 1613.3.3(1) and 1613.3.3(2) of the CTSBC, the Site coefficients, F_a and F_v are 2.5 and 3.5, respectively.

5.5.2 Liquefaction Potential

In accordance with the requirements of Section 1803.5.12 of the CTSBC, GZA performed a preliminary assessment for the potential for liquefaction and soil strength loss for the maximum considered earthquake ground motions. GZA's assessment was performed in general accordance with the methodology presented in Idriss and Boulanger (2014), which is a site-specific evaluation, and considered by GZA to be sufficient to meet the requirements of Section 1803.5.12 of the CTSBC. Results of the preliminary liquefaction analysis indicate that the loose granular soils underlying the Site may be subject to strength loss and significant vertical settlement may be anticipated at the Site under the design seismic event loading assumed per the Idris and Boulanger methodology.

Based Idriss and Boulanger methodology and the information obtained from test boring GZ-2, up to 10 inches of seismically induced settlement is predicted at the Site.

Liquefaction potential, as well as predicted seismically-induced settlements, should be re-evaluated based on the results of the site-specific response analysis described above, if performed.

5.6 LATERAL EARTH PRESSURES

Active and passive lateral pressure coefficients of 0.33 and 3.0, respectively, and a total unit weight of 130 pounds per cubic foot (pcf) for backfill are recommended for design of retaining walls that are unrestrained at the top, such as site retaining walls. Retaining walls should be backfilled with free-draining Granular Fill and a drain provided just above footing grade and below slab grade, so that hydrostatic pressures are relieved from behind the walls.

For sub-slab walls that are restrained at the top, such as elevator pit walls, an active lateral pressure coefficient of 0.5 is recommended. Walls that are backfilled with free-draining material and have a drain at the base of the wall should be designed using a total unit weight of 130 pcf for backfill. Walls that are waterproofed and designed to resist hydrostatic pressure should be designed assuming water level at the top of the wall and a buoyant unit weight of 68 pcf for the soil.

Where the calculated earth pressure behind the wall is less than 250 pounds per square foot (psf), it should be increased to 250 psf to account for stresses created by compaction within 5 feet of the wall. Walls should also be designed for appropriate sloping backfill, surcharge (such as floor loads), and seismic loads per Section 1610.2 of the CTSBC.

We recommend a minimum vertical surcharge pressure of 250 psf be used for the design of retaining walls.

Lateral loads can be resisted by friction at the base of the footings. The recommended coefficient of friction for resistance to lateral sliding of foundation retaining walls, slabs, and footings is 0.40. This value is for new cast-in-place concrete, placed directly on crushed stone or compacted Granular Fill or Sand and Gravel Fill.

In general, passive soil pressure for footings with a shallow embedment (interior column footings) should be ignored in calculating lateral load resistance. However, for cases where friction is not sufficient to resist lateral loads and the backfill will not be excavated, passive earth pressure may be considered to resist lateral loads. The upper one (1) foot of soil should be ignored and a factor of safety of 1.5 applied to the passive soil pressure coefficient to limit strains associated with higher value passive pressure coefficients.

The minimum factors of safety for sliding and overturning of retaining walls under static loads should be 1.5 and 2, respectively. Passive pressure at the toe of the walls should not be included as a resisting force when analyzing for overturning and sliding except as noted above. For gravity modular block and mechanically stabilized modular block retaining walls, factors of safety and designs should be in accordance with the manufacturer's recommendations.

5.7 FLEXIBLE PAVEMENT DESIGN

GZA recommends the following minimum bituminous concrete (flexible) pavement sections.

Component	**Thickness (inches)**	
	Light Duty Pavement (car parking)	**Heavy Duty Pavement (truck traffic, entrance-ways)**
Bituminous Concrete Surface Course	1	1.5
Bituminous Concrete Base Course (Binder)	2	2.5
Base Course (Processed Aggregate Base	4	6
Subbase Course	10	14

5.8 RIGID PAVEMENT DESIGN

Rigid pavements (such as exterior slabs for loading docks and dumpster/equipment pads) should be minimum 6-inch-thick reinforced cement concrete, designed by the Project Structural Engineer. Subbase for rigid pavements should be supported on a minimum 18-inch-thick Sand-Gravel or Crushed Stone (over non-woven filter fabric) base course placed and compacted over a prepared subgrade.

Design of other site pavements, such as sidewalks or paver systems, including thickness, reinforcement, subbase materials/thickness, subgrade preparation and drainage requirements will be performed by the specifying Project Engineer as part of the final design.

6.0 CONSTRUCTION CONSIDERATIONS

6.1 SUBGRADE PREPARATION

Foundations

Final excavation to establish proposed footing subgrade elevations should be made with a smooth-edged bucket. Exposed footing subgrades should be proof-compacted with a large vibratory plate compactor. Any identified areas of weak or unstable soils should be over-excavated and replaced with compacted Granular Fill or Sand and Gravel Fill. Footing subgrades should be protected by placement of a minimum 4-inch-thick working mat of compacted ¾-inch Crushed Stone or minimum 3-inch-thick lean concrete "mud mat". If the Crushed Stone is greater than 4 inches in thickness, the stone should be underlain by non-woven filter fabric.

Slabs-on-Grade

Prior to placing base course materials, subgrades for slabs-on-grade should be proof compacted with a minimum of 6 passes of a vibratory roller with a minimum static weight of 15,000 pounds. Vibrations should be discontinued if disturbance or weaving of the subgrade is observed. Any identified areas of weak or unstable soils should be over-excavated and replaced with compacted Granular Fill or Sand and Gravel Fill.

Excavations in Building Footprints

Where excavations are made within the building footprints prior to establishing foundation or slab subgrades, such as for demolition of existing utilities or foundations, final excavation to remove existing fill should be made with a smooth-edged bucket. The exposed bottom of excavation on undisturbed naturally-deposited Sand, Sand and Gravel should be proof-compacted with a large vibratory plate compactor. Any identified areas of weak or unstable soils should be over-excavated and replaced with compacted Granular Fill or Sand and Gravel Fill and the excavations should be backfilled to at least the proposed foundation or slab-on-grade base course subgrade elevations with compacted Granular Fill or Sand and Gravel Fill.

Pavements

Beneath new pavements, existing topsoil, pavements, and foundations should be removed to a depth sufficient to construct the total pavement section thickness, including bituminous concrete finish and binder, or cement concrete, and base courses. Topsoil/organics if encountered at excavated subgrade, should be removed to at least 3 feet below proposed finished grade.

Pavement subgrades should be intensively surface compacted with a minimum of 8 passes of a vibratory roller with a minimum static weight of 15,000 pounds. Vibration should be discontinued if disturbance or weaving of the subgrade is observed. Weak or unstable areas identified should be over-excavated and replaced with compacted Granular Fill or Sand and Gravel Fill.

6.2 FROST PROTECTION

If construction is performed during freezing weather, footings on soil should be backfilled to provide adequate frost protection (up to 42 inches) as soon as possible after they are constructed. If backfilling cannot be accomplished, insulating blankets, heated enclosures or other means should be used for protection against freezing.

6.3 RECOMMENDED FILL AND BACKFILLRECOMMENDED FILL AND BACKFILL

Considering project requirements and available on-site and local materials, it is recommended that earth materials for this project be specified as follows:

Granular Fill for use as fill within the building area should be gravelly sand or sand and gravel free from ice, snow, roots, sod, rubbish or other deleterious or organic matter and shall conform to CONNDOT Form 818, Division II Section 2.13 and 2.14 and Division III Section M.02.01 and M.02.06, Gradation "A" except 0 to 12 percent passing the No. 200 sieve.

Sand and Gravel for slab base course and behind retaining walls and other applications requiring free draining, non-frost susceptible backfill should be free of ice, snow, roots, sod, rubbish and other deleterious or organic matter and shall conform to CONNDOT Form 818, Division II, Section 2.16, and Division III, Section M.02.05 and M.02.06.

Processed Aggregate Base below pavements should consist of CTDOT Form 818, Division III, Section M.05.01, Processed Aggregate Base.

Pavement Subbase below pavements should consist of CTDOT Form 818, Division III, Section M.02.06, Grading B.

Crushed Stone for use as subgrade protection, a working mat, in wet conditions to aid in dewatering, and for underslab drainage systems (if any), should be ¾-inch angular crushed stone and shall conform to CONNDOT Form 818, Division III, Section M.01.01, No. 67.

Geotextile Fabric should be used to separate Crushed Stone from surrounding soils. The fabric should consist of a filtration-type non-woven geotextile (Mirafi 140N or equivalent).

Ordinary Fill for use as general fill and backfill in landscaped areas should be friable inorganic soil essentially free of trash, ice, snow, tree stumps, roots and organic materials conforming to CONNDOT Form 818, Division II, Section 2.02. Ordinary Fill should not contain stone or rubble exceeding two-thirds of the specified loose lift thickness for material placement.

The recommended minimum degree of compaction for fill and backfill, based on the percentage of maximum dry density as determined by ASTM D1557 (modified Proctor), is:

Location	Minimum Degree of Compaction (% of maximum dry density)
Bearing Zone of Influence of Footing Foundations and below Slabs-on-Grade	95%
Pavement/Sidewalk/Exterior Slab Base Course and Subbase	95%
Behind Site Retaining Walls	93%
Below Pavement Base Course	92%
Utility Trenches (within 2 feet of surface)	95%
Utility Trenches (more than 2 feet below surface)	92%
Areas of General Landscape	90%
Crushed Stone	compact to a visually unyielding surface

Compaction within 5 feet of foundation and retaining walls should be performed using hand-operated roller or plate compactors to reduce the potential for construction-induced damage to the walls. Extra care should be used when compacting adjacent to walls. Where walls are buried on both sides, backfill and compaction should proceed on both sides of the wall so that the difference in top of fill on either side does not exceed 2 feet. Where backfill of walls is only on one side, the wall should be designed for unbalanced loading conditions. In addition, backfill at walls with unbalanced

loads should be compacted with hand-operated rollers of plates not weighing more than 250 pounds within 5 feet laterally of the walls.

6.4 REUSE OF SITE SOILS

Excavated granular soils may be reused on site for backfill beneath landscaped areas outside the building footprint. Excavated granular soils may also be suitable for re-use in building and pavement areas below base course elevation, provided they can be compacted to the required density subject to review by the Geotechnical Engineer. It should be noted that soils with relatively high fines-content, greater than about 15 percent silt and clay sized particles (passing the No. 200 sieve), as was observed in some of the samples obtained at the site, are sensitive to moisture content and will be difficult to properly place and compact.

Excavated soils that have high fines-content or, if other deleterious materials are observed, such materials should be segregated and may be reused in landscaped areas or managed off-site in accordance with applicable State, federal, and local regulations, guidelines, and policies.

6.4.1 Water Control

Excavations for foundations and utilities may extend below groundwater. Additionally, surface water may enter open excavations during periods of precipitation. It is anticipated that shallow construction dewatering (where required) can be accomplished by pumping from filtered sumps within excavations. Dewatering should be performed as necessary to allow excavation and observation of the subgrades “in the dry” and to maintain stable and dry bottoms. If groundwater cannot be adequately controlled using sumps, more extensive dewatering, such as by installing well points, may be required.

Discharge of pumped groundwater off-site (if required) should be performed in accordance with all federal, State, and/or local regulations, which may require a discharge permit and possible filtration and chemical testing of the water prior to discharge. It may be possible to pump limited quantities of water into onsite pits to allow percolation into the ground.

It is recommended that temporary control measures be implemented to reduce the amount of surface water (from rainfall runoff) from potentially entering and ponding in the excavations. Temporary measures should include, but not be limited to, construction of drainage ditches to divert and/or reduce the amount of surface water flowing over exposed subgrades during construction

6.5 EXCAVATION SLOPES

The Owner and the Contractor should make themselves aware of and become familiar with applicable local, state, and federal safety regulations, including the current Occupational Safety and Health Administration (OSHA) Excavation and Trench Safety Standards. Construction site safety generally is the sole responsibility of the Contractor, who shall also be solely responsible for the means, methods, and sequencing of construction operations. We are providing this information solely as a service to our Client. Under no circumstances should the information provided below be interpreted to mean that GZA is assuming responsibility for construction site safety or the Contractor’s activities; such responsibility is not being implied and should not be inferred.

The Contractor should be aware that slope height, slope inclination, or excavation depths (including utility trench excavations) should in no case exceed those specified in local, state, or federal safety regulations, for example, OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations. Such regulations are strictly

enforced and, if they are not followed, the Owner, Contractor, and/or earthwork and utility subcontractors could be liable for substantial penalties.

As a safety measure, it is recommended that all vehicles and material and soil piles be kept a minimum lateral distance from the top of a vertical excavation or the crest of a sloped excavation equal to no less than the total excavation height. Exposed slope faces should also be protected against the elements.

7.0 FINAL DESIGN AND CONSTRUCTION PHASE SERVICES

As noted above, additional explorations are recommended to confirm the design recommendations provided herein and obtain additional data for use in final design.

In addition to the supplemental explorations, we recommend that GZA be retained for the following additional services:

- Perform additional evaluations, including a site-specific seismic response evaluation, and prepare updated geotechnical recommendations (updated Geotechnical Report) for the project.

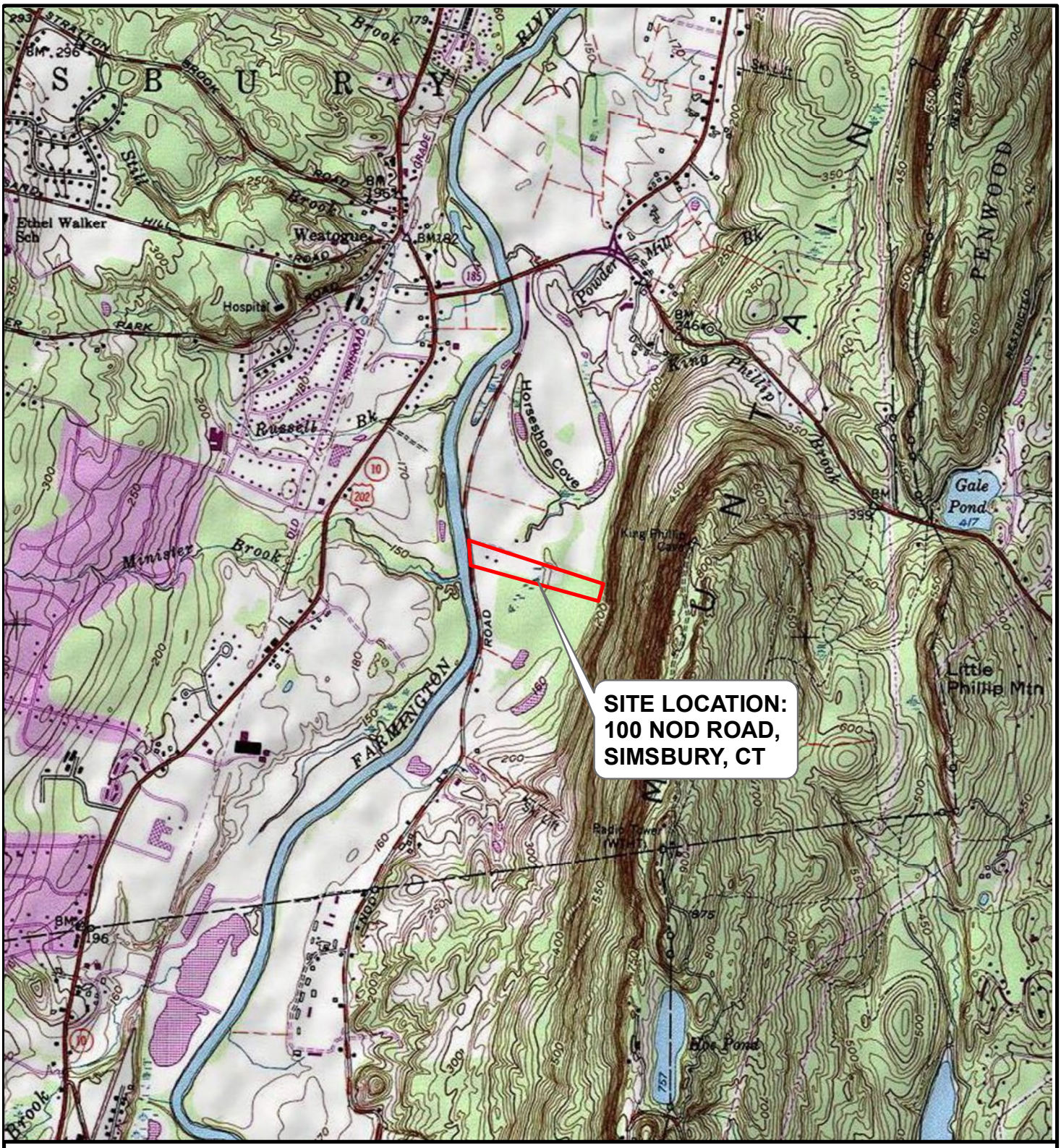
- Prepare geotechnical specifications for the project, such as Subsurface Data, Earth Moving, Management and Disposition of Excavated Materials, Control of Water, Ground Improvement (if required), and Deep Foundations (if required).

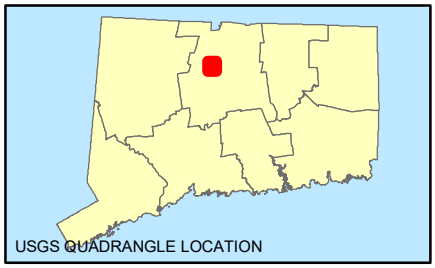
- Review the Contractor's geotechnical-related submittals during construction for general conformance with the recommendations presented in the Geotechnical Report and the Project foundation plans and geotechnical specifications.

- Attend project meetings during construction, as needed, to review geotechnical aspects of the project.

- Observe/document geotechnical construction to evaluate footing and slab subgrades, ground improvement, pile installation, observe and test backfill during placement and compaction, and for general conformance with the recommendations presented in this report and the Project foundation plans and geotechnical specifications. Note that in accordance with Section 1705 of the CTSBC, special inspections are required to be performed for soils, including of the existing site soil conditions, fill placement and load-bearing requirements, to confirm compliance with the Geotechnical Report. Per Section 1704.2.1 of the CTSBC, properly trained and experienced representatives of the *registered design professional in responsible charge* (Geotechnical Engineer) are permitted to act as special inspectors.

FIGURES





SOURCE : THIS MAP CONTAINS THE ESRI ARCGIS ONLINE USA TOPOGRAPHIC MAP SERVICE, PUBLISHED DECEMBER 12, 2009 BY ESRI ARCIMS SERVICES AND UPDATED AS NEEDED. THIS SERVICE USES UNIFORM NATIONALLY RECOGNIZED DATUM AND CARTOGRAPHY STANDARDS AND A VARIETY OF AVAILABLE SOURCES FROM SEVERAL DATA PROVIDERS.

0 1,000 2,000 3,000 4,000

SCALE IN FEET

Data Supplied by : esri

N W E S

208

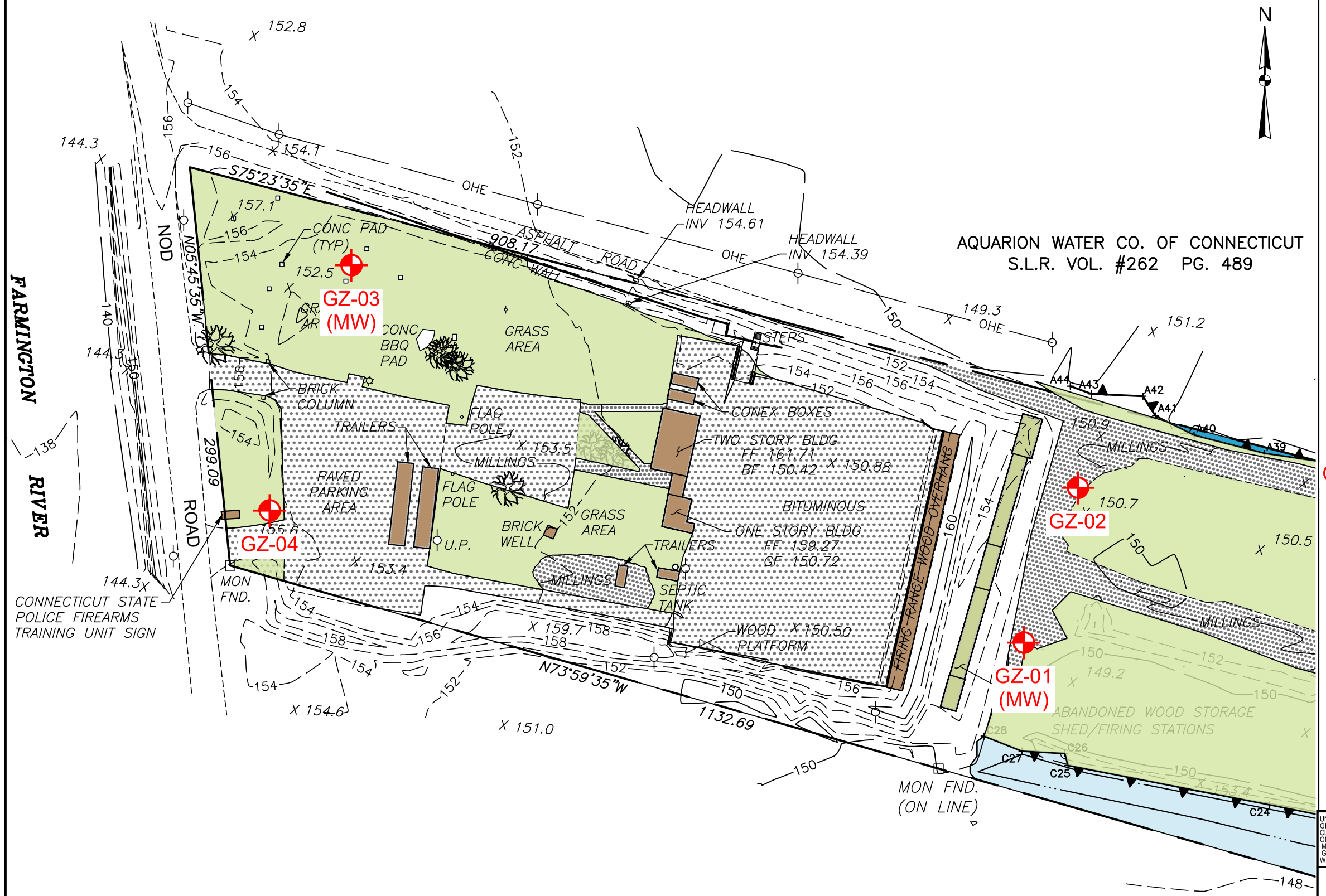
PROJ. MGR.: SJB
DESIGNED BY: MEC
REVIEWED BY: SJB
OPERATOR: MEC
DATE: 8/19/2021

LOCUS MAP

JOB NO. 15.0166960.00

RECONSTRUCTION OF STATE POLICE FIRING RANGE
SIMSBURY, CONNECTICUT

FIGURE NO. 1



GENERAL NOTES

1. THE BASE MAP DEVELOPED FROM A PLAN ENTITLED "EXISTING CONDITIONS PLAN" PREPARED BY GZA GEOENVIRONMENTAL WITH A DATE OF AUGUST, 2021.
2. THE BORING LOCATIONS WERE APPROXIMATELY DETERMINED BY TAPE MEASUREMENTS FROM EXISTING SITE FEATURES. THESE LOCATIONS SHOULD ONLY BE CONSIDERED ACCURATE TO THE THE DEGREE IMPIED BY THE METHOD USED.
3. ELEVATIONS ARE IN FEET AND ARE REFERECNED TO NAVD88.

LEGEND

GZ-01 — BORINGS PERFORMED BY SEABOARD DRILLING, INC. OF CHICOPEE, MASSACHUSETTS BETWEEN OCTOBER 20 AND 21, 2021. OBSERVED AND LOGGED BY GZA PERSONNEL. (MW) INDICATES MONITORING WELL INSTALLED IN BORING.

GRAPHIC SCALE

0 40 80 160

SCALE IN FEET

RECONSTRUCTION OF STATE POLICE FIRING RANGE
100 NOD ROAD
SIMSBURY, CONNECTICUT

EXPLORATION LOCATION PLAN

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: CONNECTICTU DEPARTMENT OF ADMINISTRATIVE SERVICES	
PROJ MGR: NLR	REVIEWED BY: NLR	CHECKED BY: DMB	FIGURE 2
DESIGNED BY: LWP	DRAWN BY: LWP	SCALE: 1"=80'	
DATE: NOVEMBER 2, 2021	PROJECT NO. 15.0166960.00	REVISION NO. _	SHEET NO: X OF XX

APPENDIX A

LIMITATIONS

USE OF REPORT

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in the Proposal for Services and/or Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not expressly identified in the contract documents, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

STANDARD OF CARE

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in Proposal for Services and/or Report, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. If conditions other than those described in this report are found at the subject location(s), or the design has been altered in any way, GZA shall be so notified and afforded the opportunity to revise the report,as appropriate, to reflect the unanticipated changed conditions .

3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made.

4. In conducting our work, GZA relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Inconsistencies in this information which we have noted, if any, are discussed in the Report.

SUBSURFACE CONDITIONS

5. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then become evident, it will be necessary to reevaluate the conclusions and recommendations of this report.

6. In preparing this report, GZA relied on certain information provided by the Client, state and local officials, and other parties referenced therein which were made available to GZA at the time of our evaluation. GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this evaluation.

7. Water level readings have been made in test holes (as described in this Report) and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this Report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The water table encountered in the course of the work may differ from that indicated in the Report.

8. GZA's services did not include an assessment of the presence of oil or hazardous materials at the property. Consequently, we did not consider the potential impacts (if any) that contaminants in soil or groundwater may have on construction activities, or the use of structures on the property.

9. Recommendations for foundation drainage, waterproofing, and moisture control address the conventional geotechnical engineering aspects of seepage control. These recommendations may not preclude an environment that allows the infestation of mold or other biological pollutants.

COMPLIANCE WITH CODES AND REGULATIONS

10. We used reasonable care in identifying and interpreting applicable codes and regulations. These codes and regulations are subject to various, and possibly contradictory, interpretations. Compliance with codes and regulations by other parties is beyond our control.

COST ESTIMATES

11. Unless otherwise stated, our cost estimates are only for comparative and general planning purposes. These estimates may involve approximate quantity evaluations. Note that these quantity estimates are not intended to be sufficiently accurate to develop construction bids, or to predict the actual cost of work addressed in this Report. Further, since we have no control over either when the work will take place or the labor and material costs required to plan and execute the anticipated work, our cost estimates were made by relying on our experience, the experience of others, and other sources of readily available information. Actual costs may vary over time and could be significantly more, or less, than stated in the Report.

SCREENING AND ANALYTICAL TESTING

12. We collected environmental samples at the locations identified in the Report. These samples were analyzed for the specific parameters identified in the report. Additional constituents, for which analyses were not conducted, may be present in soil, groundwater, surface water, sediment and/or air. Future Site activities and uses may result in a requirement for additional testing.

13. Our interpretation of field screening and laboratory data is presented in the Report. Unless otherwise noted, we relied upon the laboratory's QA/QC program to validate these data.

14. Variations in the types and concentrations of contaminants observed at a given location or time may occur due to release mechanisms, disposal practices, changes in flow paths, and/or the influence of various physical, chemical, biological or radiological processes. Subsequently observed concentrations may be other than indicated in the Report.

ADDITIONAL SERVICES

15. GZA recommends that we be retained to provide services during any future: site observations, design, implementation activities, construction and/or property development/redevelopment. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

APPENDIX B

TEST BORING LOGS

LOG KEY

GZA
Geo Environmental, Inc.
Engineers and Scientists

BURMISTER SOIL CLASSIFICATION

COMPONENT	NAME	PROPORTIONAL TERM	PERCENT BY WEIGHT
MAJOR	GRAVEL, SAND, FINES*		>50
Minor	Gravel, Sand, Fines*	and	35 - 50
		some	20-35
		little	10-20
		trace	0-10

*See identification of fines table.

IDENTIFICATION OF FINES

Material	PI	Atterberg Thread Dia.
SILT	0	Cannot Roll
Clayey SILT	1-5	1/4"
SILT & CLAY	5-10	1/8"
CLAY & SILT	10-20	1/16"
Silty CLAY	20-40	1/32"
CLAY	>40	1/64"

GRADATION DESIGNATION	PROPORTION OF COMPONENT
Fine to coarse	All fractions > 10%
Medium to coarse	<10% fine
Fine to medium	<10% coarse
Coarse	<10% fine and medium
Medium	<10% coarse and fine
Fine	<10% coarse and medium

PLASTIC SOILS

Consistency	Blows/Ft. SPT N-Value
Very Soft	< 2
Soft	2 - 4
Medium Stiff	4 - 8
Stiff	8 - 15
Very Stiff	15 - 30
Hard	>30

GRAVEL & SAND

Density	Blows/Ft. SPT N-Value
Very Loose	< 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	> 50

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) (ASTM D 2487)

MAJOR DIVISIONS			Group Symbols
Coarse Grained Soils More than 50% of material larger than No. 200 sieve.	Gravel More than 50% larger than No. 4 sieve.	Clean Gravels (Little or no fines)	GW GP
		Gravels with Fines (Appreciable amount of fines)	GM GC
	Sand More than 50% smaller than No. 4 sieve.	Clean Sands (Little or no fines)	SW SP
		Sands with Fines (Appreciable amount of fines)	SM SC
Fine Grained Soils More than 50% of material smaller than No. 200 sieve.		Silts and Clays Liquid Limit <50	ML CL
		Silts and CLays Liquid Limit >50	OL MH CH OH
		Highly Organic Soils	Pt

ORGANIC SOIL CLASSIFICATION

Fibrous PEAT (Pt) - Lightweight, spongy, mostly visible organic matter, water squeezes readily from sample. Typically near top of deposit.
Fine Grained PEAT (Pt) - Lightweight, spongy, little visible organic matter, water squeezes readily from sample. Typically below fibrous peat.
Organic Silt (OL) - Typically gray to dark gray, often has strong H2S odor. Typically contains shells or shell fragments. Lightweight. Usually found near coastal regions. May contain wide range of sand fractions.
Organic Clay (OH) - Typically gray to dark gray, high plasticity. Usually found near coastal regions. May contain wide range of sand fractions. Need organic content test for final identification.

ABBREVIATIONS

MR = Mud Rotary
HSA = Hollow Stem Auger
SSA = Solid Stem Auger
SS = Split Spoon Sampler
U = Undisturbed Sample (Shelby Tube)
MC = Modified California Sampler
V = Vibracore
M = Macrocore

USCS = Unified Soil Classification System (ASTM D2487)
NYCBC = New York City Building Code
WOR = Weight of Rods
WOH= Weight of Hammer
SPT = Standard Penetration Test (ASTM D1586)

Tv = Field Vane Shear Test (Torvane) Shear Strength
PP = Pocket Penetrometer Shear Strength
PI = Plasticity Index
Wn = Moisture Content
CO = Consolidation
UC = Unconfined Compression Test
UU = Unconsolidated Undrained (Triaxial) Test
SI = Sieve Analysis
DS = Direct Shear
PID = Photoionization Detector
ppm = Parts Per Million
REC = Recovery
RQD = Rock Quality Designation
▼ = Measured Water Level

N-Value = Cumulative number of uncorrected blows for the middle two six-inch intervals (blows/foot).

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Reconstruction of State Police Firing Range
100 Nod Road
Simsbury, Connecticut

EXPLORATION NO.: GZ-1
SHEET: 1 of 1
PROJECT NO: 15.0166960.00
REVIEWED BY: NLR

Logged By: B. Edwards
Drilling Co.: Seaboard Drilling
Foreman: Dale Griffin

Type of Rig: Mobile
Rig Model: B-53
Drilling Method: HSA

Boring Location: See Plan
Ground Surface Elev. (ft.): 152
Final Boring Depth (ft.): 32
Date Start - Finish: 10/20/2021 - 10/20/2021

H. Datum: NAD83
V. Datum: NAVD88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 7 5/8 / 4 1/4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NA

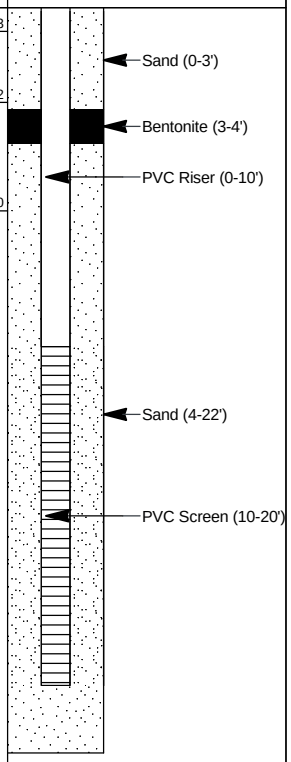
Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/20/21	1150	~3.5	10 min.

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows per 6"	SPT Value	Sample Description Modified Burmister	Remark	Field Test Data
		S-1	0-2	24	14	20 8 7 5	15	S-1: Top 7": PAVEMENT MILLINGS Bottom 7": Brown, fine to medium SAND, some Silt	1	
		S-2	2-4	24	16	3 3 2 3	5	S-2: Top 8": Brown, fine to medium SAND, some Silt		
5		S-3	4-6	24	18	2 1 1 1	2	Bottom 8": Brown SILT, trace fine Sand		
		S-4	6-8	24	12	4 5 8 9	13	S-3: Very loose, brown, SILT, trace fine Sand		
10		S-5	10-12	24	15	1 3 3 4	6	S-4: Medium dense, fine to medium SAND, trace coarse Sand, trace Silt S-5: Loose, brown, fine to coarse SAND, trace Gravel, trace Silt		
15		S-6	15-17	24	22	1 3 3 5	6	S-6: Loose, brown, fine to coarse SAND, trace Gravel, trace Silt		
20		S-7	20-22	24	10	2 1 1 1	2	S-7: Very loose, brown, fine to coarse SAND, trace Silt		
25		S-8	25-27	24	11	2 1 1 2	2	S-8: Very loose, brown, fine SAND, little Silt		
30		S-9	30-32	24		2 1 2 2	3	S-9: Very loose, brown, fine SAND, little Silt	2	
								End of exploration at 32 feet.	3 4	

Stratum Description

Depth (ft.)	Description	Elev. (ft.)
0.7	PAVEMENT MILLINGS	151.3
	SAND	
2.8		149.2
	SILT	
6		146.0
	SAND	
32		120.0



REMARKS

1 - Boring drilled using hollow stem augers. Driller started adding water to augers starting at approximately 4 feet below ground surface (bgs).
2 - Upon completion, boring backfilled with drilling spoils to ground surface.
3 - Monitoring well installed in offset boring, approximately 10 feet north of GZ-1.
4 - Well Construction: 10 feet of 2 inch diameter Schedule 40 threaded, flush-joint PVC well screen set from approximately 10 to 20 feet below bgs. Well completed to ground surface with 2 inch diameter Schedule 40, flush joint PVC riser. Filter sand placed in annulus around well from approximately 4 to 22 feet bgs. Bentonite seal placed from approximately 3 to 4 feet bgs. Annulus backfilled with sand from 1 to 3 feet bgs and protected with flush mount road box set in concrete.

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-1

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Reconstruction of State Police Firing Range
100 Nod Road
Simsbury, Connecticut

EXPLORATION NO.: GZ-2
SHEET: 1 of 1
PROJECT NO: 15.0166960.00
REVIEWED BY: NLR

Logged By: B. Edwards
Drilling Co.: Seaboard Drilling
Foreman: Dale Griffin

Type of Rig: Mobile
Rig Model: B-53
Drilling Method: Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 152
Final Boring Depth (ft.): 32
Date Start - Finish: 10/20/2021 - 10/20/2021

H. Datum: NAD83
V. Datum: NAVD88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4 1/2 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Core Barrel Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
10/20/21	1443	0.5	10 min.

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	STRATUM Depth (ft.)	STRATUM Description	STRATUM Elev. (ft.)
		S-1	0-2	24	18	1 6 4 2	10	S-1: Top 4": ASPHALT Bottom 14": Brown, fine to coarse SAND, some Silt	1		0.4	ASPHALT	151.6
											2	FILL	150.0
		S-2	2-4	24	6	2 2 2 2	4	S-2: Loose, brown, SILT, trace fine Sand				SILT	
											4.3		147.7
5		S-3	4-6	24	10	3 2 2 5	4	S-3: Top 3": Brown, SILT Bottom 7": Brown, fine to medium SAND, trace Silt					
		S-4	6-8	24	22	5 8 8 10	16	S-4: Medium dense, brown, fine to coarse SAND, little Gravel, trace Silt					
10		S-5	10-12	24	11	4 2 3 5	5	S-5: Loose, brown, fine to coarse SAND, trace Gravel, trace Silt					
15		S-6	15-17	24	9	7 5 4 3	9	S-6: Loose, brown, fine to coarse SAND, little Gravel, trace Silt				SAND	
20		S-7	20-22	24	15	2 2 2 2	4	S-7: Loose, brown, fine SAND, little Silt					
25		S-8	25-27	24	11	3 2 2 3	4	S-8: Loose, brown, fine SAND, little Silt, trace Gravel					
30		S-9	30-32	24	11	2 3 2 2	5	S-9: Loose, brown, fine SAND, little Silt					
											32		120.0
								End of Exploration at 32 feet.	2				

REMARKS

1 - Boring drilled with casing using drive and wash techniques.
2 - Upon completion, boring backfilled with drilling spoils to ground surface.

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual.

Exploration No.: GZ-2

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Reconstruction of State Police Firing Range
100 Nod Road
Simsbury, Connecticut

EXPLORATION NO.: GZ-3
SHEET: 1 of 1
PROJECT NO: 15.0166960.00
REVIEWED BY: NLR

Logged By: N. Fonda
Drilling Co.: Seaboard Drilling
Foreman: Dale Griffin

Type of Rig: Mobile
Rig Model: B-53
Drilling Method: Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 153
Final Boring Depth (ft.): 22
Date Start - Finish: 10/20/2021 - 10/20/2021

H. Datum: NAD83
V. Datum: NAVD88

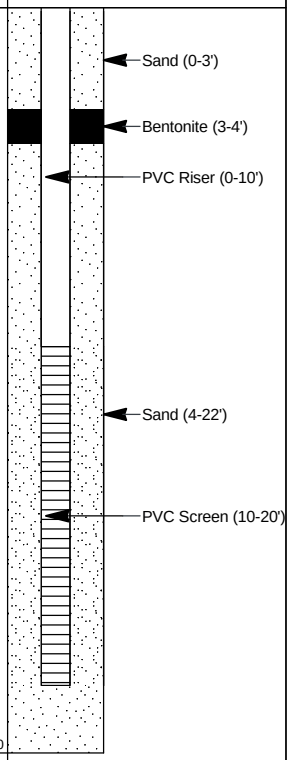
Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4 1/2 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
See Note 4			

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows per 6"	SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
0	21	S-1	0-2	24	18	3 2 3 2	5	S-1: Loose, brown, fine SAND, trace Silt	1				
		S-2	2-4	24	20	2 2 2 2	4	S-2: Loose, dark brown, fine SAND, little Silt, trace Organics					
5	87	S-3	4-6	24	24	2 2 2 2	4	S-3: Loose, dark brown to brown, Clayey SILT, fine Sand, trace Organics					
		S-4	6-8	24	24	3 4 5 3	9	S-4: Loose, light brown to gray, fine SAND, trace Silt					
10	150	S-5	10-12	24	16	4 3 4 3	7	S-5: Loose, brown, fine SAND, trace Silt				SAND	
15	200	S-6	15-17	24	0	14 11 11 8	22	S-6: No Recovery					
20		S-7	20-22	24	5	7 4 3 4	7	S-7: Loose, brownish-red, fine to coarse SAND, little Gravel, trace Silt	2		22		131.0
								End of exploration at 22 feet.	3 4				
25													
30													



REMARKS

1 - Boring drilled with casing using drive and wash techniques.
2 - Boring completed as monitoring well.
3 - Well Construction: 10 feet of 2 inch diameter Schedule 40 threaded, flush-joint PVC well screen set from approximately 10 to 20 feet below ground surface (bgs). Well completed to ground surface with 2 inch diameter Schedule 40, flush joint PVC riser. Filter sand placed in annulus around well from approximately 4 to 22 feet bgs. Bentonite seal placed from approximately 3 to 4 feet bgs. Annulus backfilled with sand from 1 to 3 feet bgs and protected with flush mount road box set in concrete.
4 - Stabilized groundwater measurement not made due to drilling method.

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: GZ-3

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Reconstruction of State Police Firing Range
100 Nod Road
Simsbury, Connecticut

EXPLORATION NO.: GZ-4
SHEET: 1 of 2
PROJECT NO: 15.0166960.00
REVIEWED BY: NLR

Logged By: B. Edwards
Drilling Co.: Seaboard Drilling
Foreman: Dale Griffin

Type of Rig: Mobile
Rig Model: B-53
Drilling Method: Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 154
Final Boring Depth (ft.): 62
Date Start - Finish: 10/21/2021 - 10/21/2021

H. Datum: NAD83
V. Datum: NAVD88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4 1/2 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Core Barrel Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
See Note 3			

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	STRATUM Depth (ft.)	STRATUM Description	STRATUM Elev. (ft.)
		S-1	0-2	24	22	6 6 2 2	8	S-1: Top 8": Dark brown, fine to coarse SAND, some Silt (Pavement Millings) Bottom 14": Brown, fine to medium Sand	1			FILL	
		S-2	2-4	24	11	1 2 2 2	4	S-2: Loose, brown, fine to medium SAND, trace Silt			2		152.0
5		S-3	4-6	24	13	2 2 2 2	4	S-3: Loose, brown, fine SAND, trace Silt					
		S-4	6-8	24	17	3 2 3 3	5	S-4: Loose, brown, fine SAND, trace Silt					
10													
15		S-5	15-17	24	18	6 11 12 12	23	S-5: Medium dense, brown, fine to coarse SAND, little Gravel, trace Silt				SAND	
20		S-6	20-22	24	12	6 9 5 5	14	S-6: Medium dense, fine to coarse SAND, some Gravel, trace Silt					
25		S-7	25-27	24	11	5 8 5 6	13	S-7: Medium dense, brown, fine to coarse SAND, some Gravel, trace Silt					
30		S-8	30-32	24	12	5 3 2 5	5	S-8: Loose, brown, fine SAND, little Silt					
											33.5	SILT AND CLAY	120.5

REMARKS

1 - Boring drilled with casing and drilling mud using drive and wash techniques.

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual.

Exploration No.: GZ-4

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

Reconstruction of State Police Firing Range
100 Nod Road
Simsbury, Connecticut

EXPLORATION NO.: GZ-4
SHEET: 2 of 2
PROJECT NO: 15.0166960.00
REVIEWED BY: NLR

Logged By: B. Edwards
Drilling Co.: Seaboard Drilling
Foreman: Dale Griffin

Type of Rig: Mobile
Rig Model: B-53
Drilling Method: Drive & Wash

Boring Location: See Plan
Ground Surface Elev. (ft.): 154
Final Boring Depth (ft.): 62
Date Start - Finish: 10/21/2021 - 10/21/2021

H. Datum: NAD83
V. Datum: NAVD88

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4 1/2 / 4

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Core Barrel Size: NA

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
See Note 3			

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Depth (ft.)	STRATUM Description	Elev. (ft.)
35		S-9	35-37	24	12	3 2 1 2	3	S-9: Soft, brown, Clayey SILT, trace fine Sand					
40		S-10	40-42	24	13	4 3 3 2	6	S-10: Medium, brown, SILT, little fine Sand					
45		S-11	45-47	24	18	WOH/18" 2		S-11: Gray, CLAY, trace Silt				SILT AND CLAY	
50		S-12	50-52	24	18	2 1 1 1	2	S-12: Soft, gray, Clayey SILT					
55													
60		S-13	60-62	24	15	WOH 2 3 4	5	S-13: Medium stiff, gray, Clayey SILT			62		92.0
								End of Exploration at 62 feet.	2 3				
65													

REMARKS

2 - Upon completion, boring backfilled with drilling spoils to ground surface.
3 - Stabilized groundwater measurement not made due to drilling method.

Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual.

Exploration No.: GZ-4

APPENDIX C

LABORATORY TEST RESULTS

(available on request)

GZA GeoEnvironmental, Inc.

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APPENDIX J

COST ESTIMATE

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RECONSTRUCT STATE POLICE FIRING RANGE

PROBABLE COST - CONSTRUCTION COST ESTIMATE
PRE-DESIGN STUDY

January 13, 2022

STATE POLICE FIRING RANGE
100 NOD ROAD
SIMSBURY, CT 06089

Cost Estimate Prepared By Construction Cost Solutions, LLC
Ken Woodward, 860-748-0718, KW.CCSolutions@gmail.com
PO Box 544, Portland, CT 06480

Construction Cost Solutions, LLC

RECONSTRUCT STATE POLICE
PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE
Table of Contents
January 13, 2022

RECONSTRUCT STATE POLICE FIRING RANGE

PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE

OVERALL PRICING SUMMARY

Construction Cost Solutions, LLC

RECONSTRUCT STATE POLICE FIRING RANGE

PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE

Overall Pricing Summary

1/13/2022

PROBABLE COSTS						Prior Estimate	Variance
#	Description	Quantity	Unit	Unit Cost	**Total Cost**	12/30/2021	
1	New Main Building	6,775	sf	$ 878.48	**$5,951,686**	**$6,482,442**	**($530,756)**
2	Replace 50yd Pistol Range Backstop	2,715	sf	$ 138.76	**$376,720**	**$445,507**	**($68,786)**
3	Replace North Berm Stairs	28	risers	$ 3,765.85	**$105,444**	**$105,444**	**$0**
4	Area	3,143	sf	$ 78.93	**$248,073**	**$248,073**	**$0**
5	Sitework	12.50	acres	$128,325.24	**$1,604,065**	**$1,596,803**	**$7,262**
6	Sub Total Probable Construction Costs	5,899	sf	$1,404.76	**$8,285,989**	**$8,878,269**	**($592,280)**
7	Design Fees and Owner Contingency						
8	Architectural Fee	10%			**$828,599**	**$0**	**$0**
9	DAS Fees	3%			**$248,580**	**$0**	**$0**
10	CA Fees	3%			**$248,580**	**$0**	**$0**
11	Owner Contingency	10%			**$828,599**		
12	Sub Total				**$2,154,357**	**$0**	**$0**
13	TOTAL PROBABLE CONSTRUCTION COST	5,899	sf	$1,770.00	**$10,440,347**	**$8,878,269**	**($592,280)**

ESCALATION MATRIX (based on 25-yr standard construction escalation)						
#	Description	2022	2023	2024	2025	2026
1	Total Construction Costs	$8,285,989	$8,543,014	$8,800,039	$8,959,149	$9,216,174
2	Design Fees and Owner Contingency					
3	Architectural Fee	$828,599	$854,301	$880,004	$895,915	$921,617
4	DAS Fees	$248,580	$256,290	$264,001	$268,774	$276,485
5	CA Fees	$248,580	$256,290	$264,001	$268,774	$276,485
6	Owner Contingency	$828,599	$854,301	$880,004	$895,915	$921,617
7	Sub Total Soft Costs	$2,154,357	$2,221,184	$2,288,010	$2,329,379	$2,396,205
8	TOTAL PROBABLE PROJECT COST	$10,440,347	$10,764,198	$11,088,049	$11,288,528	$11,612,380

RECONSTRUCT STATE POLICE FIRING RANGE

PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE

UNIFORMAT LEVEL 1 ESTIMATES

Construction Cost Solutions, LLC

UNIFORMAT LEVEL 1 PROBABLE COST ESTIMATE - BUILDING WORK
RECONSTRUCT STATE POLICE - BUILDING DETAIL
100 Nod Road, Simsbury, CT
PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE
1/13/2022

Project	RECONSTRUCT STATE POLICE FIRING RANGE - NEW BUILDING		GFA	6,775 SF	
			Element	Cost per Unit GFA	%
Input Code	Description		Cost		
A	**SUBSTRUCTURE**		**622,000**	**92**	**9.67%**
	A10	**FOUNDATIONS**	**622,000**	**92**	**9.67%**
	A20	**BASEMENT CONSTRUCTION**	**-**	**-**	**0.00%**
B	**SHELL**		**1,496,000**	**221**	**23.27%**
	B10	**SUPERSTRUCTURE**	**671,000**	**99**	**10.44%**
	B20	**EXTERIOR ENCLOSURE**	**641,000**	**95**	**9.97%**
	B30	**ROOFING**	**184,000**	**27**	**2.86%**
C	**INTERIORS**		**968,000**	**143**	**15.05%**
	C10	**INTERIOR CONSTRUCTION**	**612,000**	**90**	**9.52%**
	C20	**STAIRS**	**161,000**	**24**	**2.50%**
	C30	**INTERIOR FINISHES**	**195,000**	**29**	**3.03%**
D	**SERVICES**		**1,159,000**	**171**	**18.02%**
	D10	**CONVEYING**	**108,000**	**16**	**1.68%**
	D20	**PLUMBING**	**131,000**	**19**	**2.04%**
	D30	**HVAC**	**327,000**	**48**	**5.09%**
	D40	**FIRE PROTECTION**	**157,000**	**23**	**2.44%**
	D50	**ELECTRICAL**	**436,000**	**64**	**6.78%**
E	**EQUIPMENT & FURNISHINGS**		**20,000**	**3**	**0.31%**
	E10	**EQUIPMENT**	**15,000**	**2**	**0.23%**
	E20	**FURNISHINGS**	**5,000**	**1**	**0.08%**
F	**SPECIAL CONSTRUCTION & DEMOLITION**		**188,000**	**28**	**2.92%**
	F10	**SPECIAL CONSTRUCTION**	**188,000**	**28**	**2.92%**
	F20	**SELECTIVE BUILDING CONSTRUCTION**	**42,000**	**6**	**0.65%**
S	**FF&E**		**245,000**	**36**	**3.81%**
	S20	**FF&E**	**245,000**	**36**	**3.81%**
	SUBTOTAL	**Building Elemental Trade Cost**	**4,698,000**	**693.43**	**73.06%**
Z	**GENERAL REQUIREMENTS**		**493,334**	**73**	**7.67%**
Z	**CONTINGENCIES / PERMITS / INSURANCE / FEE/ TAX / BONDS**		**1,238,000**	**183**	**19.25%**
	SUB TOTAL BUILDING COSTS		**6,430,000**	**949**	**100.00%**

Construction Cost Solutions, LLC

UNIFORMAT LEVEL 1 PROBABLE COST ESTIMATE - SITEWORK
RECONSTRUCT STATE POLICE - BUILDING DETAIL
100 Nod Road, Simsbury, CT
PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE
1/13/2022

Project	RECONSTRUCT STATE POLICE FIRING RANGE - SITEWORK ELEMENTS		NSA	12.50 SF	
			Element	Cost per Unit NSA	%
Input Code	Description		Cost		
G	**BUILDING SITEWORK**		**1,303,000**	**104,240**	**81.13%**
	G10	**Site Preparation**	**222,000**	**17,760**	**13.82%**
	G20	**Site Improvements**	**690,000**	**55,200**	**42.96%**
	G30	**Site Mechanical Utilities**	**105,000**	**8,400**	**6.54%**
	G40	**Site Electrical Utilities**	**286,000**	**22,880**	**17.81%**
	G90	**Other Site Construction**	**-**	**-**	**0.00%**
Z	**GENERAL REQUIREMENTS**		**1,303,000**	**104,240**	**81.13%**
Z	**CONTINGENCIES / PERMITS / INSURANCE / FEE/ TAX / BONDS**		**303,000**	**24,240**	**18.87%**
	Z2060	**TOTAL BUILDING COSTS**	**1,606,000**	**128,480**	**100.00%**

RECONSTRUCT STATE POLICE FIRING RANGE

PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE

CSI FORMATTED ESTIMATES

RECONSTRUCT STATE POLICE FIRING RANGE

PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE

MAIN BUILDING ESTIMATE
CSI FORMAT

Construction Cost Solutions, LLC

RECONSTRUCT STATE POLICE - BUILDING DETAIL
100 Nod Road, Simsbury, CT
PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE
Project Summary: Construct a new elevated structure (+/-14' above grade) to house Ammunition Storage, Armory, Dining/Kitchenette, Classroom, Electrical
January 13, 2022

Area Description	Sq. Ft.	Perimeter
Stair A	235	65
Stair B	235	65
Elevator	75	35
Elevator Lobby	100	40
New Building	6,130	360
Total Gross Square Foot Summary	6,775	400

Yellow highlight = Revised Line Item

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Percent of Total Construction Cost	Cost Per Total Bldg Sq. Ft.	Previous Estimate 12/30/2022	Variance
1	**01 21 00 ALLOWANCES**									
2	Allowances		n/a	$ -	$ -					
3	Allowances - Sub Total					$ -	0.00%	$ -	$ -	$ -
4	**ALLOWANCES**					**$ -**	**0.00%**	**$ -**	**$ -**	**$ -**
5										
6	**02 00 00 EXISTING CONDITIONS AND DEMOLITION**									
7	**Building Demolition**									
8	Demolish existing buildings		w/sitework	$ -	$ -					
9	Building Demolition - Subtotal					$ -	0.00%	$ -	$ -	$ -
10	**Hazardous Material Abatement**									
11	Hazardous Waste Testing, Abatement, Removal & Disposal - allowance		w/sitework	$ -	$ -					
12	HAZMAT - Subtotal					$ -	0.00%	$ -	$ -	$ -
13	**EXISTING CONDITIONS AND DEMOLITION**					**$ -**	**0.00%**	**$ -**	**$ -**	**$ -**
14										
15	**03 00 00 FOUNDATIONS AND CONCRETE**									
16	**Ground Improvements**									
17	Deep Dynamic Compaction			$ -	$ -					
18	- Mobilization		n/a	$ -	$ -					
19	- Testing		n/a	$ -	$ -					
20	- Deep Dynamic Compaction		n/a	$ -	$ -					
21	Ground Improvements - Subtotal					$ -	0.00%	$ -	$ -	$ -
22	**Piles and Pile Driving**									
23	Mobilization	1.00	lsum	$ 18,000.00	$ 18,000.00					
24	Concrete Filled Pipe Piles at columns - 4 each column	4,800.00	lf	$ 60.00	$ 288,000.00					
25	Location Survey, Monitoring, Certified Pile Reports, Concrete Testing	1.00	lsum	$ 30,000.00	$ 30,000.00					
26	VE - Eliminate concrete filled piles	1.00	lsum	$ (336,000.00)	$ (336,000.00)					
27	VE - Timber piles in liue of concrete/steel	1.00	lsum	$ 275,000.00	$ 275,000.00					
28	Piles and Pile Driving - Subtotal					$ 275,000.00	4.82%	$ 40.59	$ 336,000.00	$ (61,000.00)
29	**Foundations**									
30	Foundation for Mass Prow Wall	15.28	cy	$ 540.00	$ 8,250.00					
31	VE - Eliminate Foundation for Mass Prow Wall	(15.28)	cy	$ 540.00	$ (8,250.00)					
32	VE - Foundation for Mass Prow Wall - revies LF from 75lf to 65lf	13.24	cy	$ 540.00	$ 7,150.00					

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Percent of Total Construction Cost	Cost Per Total Bldg Sq. Ft.	Previous Estimate 12/30/2022	Variance
33	Cast In Place Concrete Deck (Columns, Beams, Slab)	6,130.00	sf	$ 60.48	$ 370,742.40					
34	VE - Eliminate Cast In Place Concrete Deck (Columns, Beams, Slab)	(6,130.00)	sf	$ 60.48	$ (370,742.40)					
35	Foundations and slabs for Lobby Entry, Stair A & B, Elevator	645.00	sf	$ 18.00	$ 11,610.00					
36	Footings and Foundations at Elevator Pit with reinforcing		n/a	$ -	$ -					
37	Pile Caps: 6'-6" square x 4' deep	187.78	cy	$ 540.00	$ 101,400.00					
38	Grade Beams at Lobby: 3'wide x 3' deep	13.33	cy	$ 540.00	$ 7,200.00					
39	VE - CIP walls in liue of masonry at exterior grade leve areas	91.11	cy	$ 540.00	$ 49,200.00					
40	VE - Add CIP wall from grade to 1st floor at mass prow wall	33.70	cy	$ 540.00	$ 18,200.00					
41	Concrete Pumping for Foundations	9.00	ea	$ 2,100.00	$ 18,900.00					
42	Concrete Pumping for CIP		included	$ -	$ -					
43	Foundations - Subtotal					$ 213,660.00	3.75%	$ 31.54	$ 516,002.40	$ (302,342.40)
44	**Slabs on Grade**									
45	Slabs for Lobby Entry, Stair A & B, Elevator	645.00	sf	$ 6.12	$ 3,947.40					
46	Housekeeping pads for Electrical	60.00	sf	$ 20.40	$ 1,224.00					
47	Heat for concrete (hot water)		n/a	$ -	$ -					
48	Cold Weather Protection		n/a	$ -	$ -					
49	Concrete Pumping for slab on grade	1.00	ea	$ 2,100.00	$ 2,100.00					
50	Concrete floor sealer/vapor reduction system - Shot Blast Slab and apply Aquafin Vaportight Coat-SG2	645.00	sf	$ 4.20	$ 2,709.00					
51	Slabs on Grade - Subtotal					$ 9,980.40	0.18%	$ 1.47	$ 9,980.40	$ -
52	**Slabs on Deck**									
53	VE - Add Slab on Metal Deck for Podium	6,130.00	sf	$ 5.58	$ 34,205.40					
54	VE - Add "Lid" Slab on Metal Deck above Weapons & Ammo Storage	685.00	sf	$ 11.16	$ 7,644.60					
55	Infill metal pan stairs - Stair #A	2.00	flights	$ 1,800.00	$ 3,600.00					
56	Infill metal pan stairs - Stair #B	2.00	flights	$ 1,800.00	$ 3,600.00					
57	VE - Add Concrete Pumping for SOD	2.00	ea	$ 2,100.00	$ 4,200.00					
58	Concrete Pumping for stair pans	2.00	ea	$ 2,100.00	$ 4,200.00					
59	Heat for concrete (hot water)		n/a	$ -	$ -					
60	Cold Weather Protection		n/a	$ -	$ -					
61	Slabs on Deck - Subtotal					$ 57,450.00	1.01%	$ 8.48	$ 11,400.00	$ 46,050.00
62	**FOUNDATIONS AND CONCRETE**					**$ 556,090.40**	**9.75%**	**$ 82.08**	**$ 873,382.80**	**$ (317,292.40)**
63										
64	**04 00 00 MASONRY**									
65	**Exterior Building Masonry**									
66	Exterior building masonry around grade level elevator lobby, elevator, stair A and B	2,460.00	sf	$ 48.00	$ 118,080.00					
67	VE - CIP walls in liue of masonry at exterior grade leve areas	(2,460.00)	sf	$ 48.00	$ (118,080.00)					
68	Exterior CMU Walls at Ammo, Storage, Laundry, Mech, Elec, Armory, Storage, Shower, etc	2,478.00	sf	$ 45.60	$ 112,996.80					
69	Exterior Building Masonry - Subtotal					$ 112,996.80	1.98%	$ 16.68	$ 231,076.80	$ (118,080.00)
70	**Interior Building Masonry**									
71	Elevator Shaft - 8" CMU	630.00	sf	$ 45.60	$ 28,728.00					
72	Grout in Hollow metal frames	18.00	ea	$ 186.00	$ 3,348.00					
73	Interior CMU Walls at Ammo/Lckr/Armry/Strge/Laundry/Mech/Elec	3,122.00	sf	$ 30.00	$ 93,660.00					
74	VE - Metal Stud Interior Partitions in lieu of CMU Walls everywhere except Ammo/Weapon Storage	(2,240.00)	sf	$ 30.00	$ (67,200.00)					
75	Stair Shaft - 8" CMU - includes grout, reinforcing, scaffolding	910.00	sf	$ 45.60	$ 41,496.00					
76	Stair Shaft - 8" CMU - includes grout, reinforcing, scaffolding	910.00	block	$ 45.60	$ 41,496.00					
77	Vault space for ammunitions storage	1,120.00	sf	$ 45.60	$ 51,072.00					
78	Interior Building Masonry - Subtotal					$ 192,600.00	3.38%	$ 28.43	$ 259,800.00	$ (67,200.00)
79	**MASONRY**					**$ 305,596.80**	**5.36%**	**$ 45.11**	**$ 490,876.80**	**$ (185,280.00)**
80										
81	**05 00 00 METALS**									
82	**Structural Steel:**									

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Percent of Total Construction Cost	Cost Per Total Bldg Sq. Ft.	Previous Estimate 12/30/2022	Variance
83	Tube Steel Structure for Mass Prow Wall	2,776.00	sf	$ 30.00	$ 83,280.00					
84	VE - Eliminate tube steel structure for mass prow wall	(2,776.00)	sf	$ 30.00	$ (83,280.00)					
85	Ammunitions Storage will require increased #/sf for additional weight	360.00	sf	$ 42.00	$ 15,120.00					
86	VE - Eliminate CIP Structure - Add Structural Steel Podium	6,775.00	sf	$ 25.00	$ 169,375.00					
87	VE - Add Structural Steel column and beam above Podium	6,775.00	sf	$ 25.00	$ 169,375.00					
88	Supply metal roof decking	7,662.50	sf	$ 6.00	$ 45,975.00					
89	Elevator Hoist Beam	1.00	ea	$ 4,200.00	$ 4,200.00					
90	Lintels	48.00	lf	$ 30.00	$ 1,440.00					
91	OH Door Supports	26.00	lf	$ 48.00	$ 1,248.00					
92	Structural Steel - Subtotal					$ 406,733.00	7.13%	$ 60.03	$ 151,263.00	$ 255,470.00
93	**Cold Form Metal Framing**									
94	Cold Formed Metal Framing at Prow Shaped Mass Wall	2,776.00	sf	$ 18.00	$ 49,968.00					
95	VE - eliminate cold formed framing at mass prow wall	(2,776.00)	sf	$ 18.00	$ (49,968.00)					
96	- Sheathing	2,776.00	sf	$ 8.43	$ 23,407.20					
97	VE - eliminate cold formed framing at mass prow wall	(2,776.00)	sf	$ 5.97	$ (16,567.20)					
98	Cold Formed Roof Truss 1/4 pitch w/sheathing	7,662.50	sf	$ 27.98	$ 214,427.40					
99	- 15% Factor for increasing load due to solar panels	1,149.38	sf	$ 27.98	$ 32,164.11					
100	VE - elimintae - 15% Factor for increasing load due to solar panels	(1,149.38)	sf	$ 27.98	$ (32,164.11)					
101	Cold Form Metal Framing - with drywall		w/div 9	$ -	$ -					
102	Cold Formed Metal Framing - Subtotal					$ 221,267.40	3.88%	$ 32.66	$ 319,966.71	$ (98,699.31)
103	**Miscellaneous Metals - Building**									
104	Stair Tower #1 - Metal Pan Stairs with Standard Steel Picket & Wall Rails	21.00	risers	$ 900.00	$ 18,900.00					
105	Stair Tower #2 - Metal Pan Stairs with Standard Steel Picket & Wall Rails	21.00	risers	$ 900.00	$ 18,900.00					
106	Miscellaneous Metals - Building - Subtotal					$ 37,800.00	0.66%	$ 5.58	$ 37,800.00	$ -
107	**METALS**					**$ 665,800.40**	**11.68%**	**$ 98.27**	**$ 509,029.71**	**$ 156,770.69**
108										
109	**06 00 00 WOODS, PLASTICS AND COMPOSITES**									
110	**Rough Carpentry**									
111	Rough Carpentry - inwall & window blocking	1,866.00	lf	$ 7.20	$ 13,435.20					
112	Blocking - Roof	1,080.00	lf	$ 10.80	$ 11,664.00					
113	Rough Carpentry - Subtotal					$ 25,099.20	0.44%	$ 3.70	$ 25,099.20	$ -
114	**Interior Finish Carpentry**									
115	Interior Finish Carpentry		n/a	$ -	$ -					
116	Interior Finish Carpentry - Subtotal					$ -	0.00%	$ -	$ -	$ -
117	**Millwork**									
118	**Restrooms (Staff) - Single Gender Neutral**			$ -	$ -					
119	Solid surface vanity tops	12.00	sf	$ 114.00	$ 1,368.00					
120	- Backsplash	3.00	sf	$ 114.00	$ 342.00					
121	- Rakks Brackets	2.00	ea	$ 129.00	$ 258.00					
122	**Restrooms (Trainees) - Men's Room & Women's Room with 3ea toilets and 3 sinks**			$ -	$ -					
123	Solid surface vanity tops	48.00	sf	$ 114.00	$ 5,472.00					
124	- Backsplash	12.00	sf	$ 114.00	$ 1,368.00					
125	- Rakks Brackets	6.00	ea	$ 129.00	$ 774.00					
126	**Dining/Kitchenette**			$ -	$ -					
127	Base cabinets	12.00	lf	$ 414.00	$ 4,968.00					
128	Wall cabinets	12.00	lf	$ 378.00	$ 4,536.00					
129	Solid surface countertops	24.00	sf	$ 114.00	$ 2,736.00					
130	- Backsplash	6.00	sf	$ 114.00	$ 684.00					
131	**Open Office Copy Area**			$ -	$ -					
132	Base cabinets	10.00	lf	$ 414.00	$ 4,140.00					
133	Wall cabinets	10.00	lf	$ 378.00	$ 3,780.00					
134	Solid surface countertops	20.00	sf	$ 114.00	$ 2,280.00					

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135	- Backsplash	5.00	sf	$ 114.00	$ 570.00					
136	**Observation**			$ -	$ -					
137	- Solid Surface Top - work surface	24.00	sf	$ 94.50	$ 2,268.00					
138	Millwork - Subtotal					$ 35,544.00	0.62%	$ 5.25	$ 35,544.00	$ -
139	**WOODS, PLASTICS AND COMPOSITES**					**$ 60,643.20**	**1.06%**	**$ 8.95**	**$ 60,643.20**	**$ -**
140										
141	**07 00 00 THERMAL AND MOISTURE PROTECTION**									
142	**Waterproofing and Damproofing**									
143	Air vapor barrier behind skin	5,040.00	sf	$ 4.20	$ 21,168.00					
144	Air vapor barrier Prow Shaped Mass Wall	2,776.00	sf	$ 4.20	$ 11,659.20					
145	VE - Revise lf of mass prow wall from 75lf to 65lf	(260.00)	sf	$ 4.20	$ (1,092.00)					
146	Waterproofing - Membrane under slab - Preprufe Waterproofing System at Lobby, Stair A and B, and Elevator	645.00	sf	$ 14.40	$ 9,288.00					
147	Damp proofing - Self Stick Membrane	1,025.00	sf	$ 3.90	$ 3,997.50					
148	Damp proofing - Drainage Mat	1,025.00	sf	$ 2.10	$ 2,152.50					
149	Damp proofing - Elevator Pits		n/a	$ -	$ -					
150	Protection Board at frost walls (i.e. 2" rigid insulation)	1,025.00	sf	$ 2.10	$ 2,152.50					
151	2" rigid insulation under slab	645.00	sf	$ 2.10	$ 1,354.50					
152	Waterproofing and Damp proofing - Subtotal					$ 50,680.20	0.89%	$ 7.48	$ 51,772.20	$ (1,092.00)
153	**Insulation**									
154	R38 Faced Thermal Insulation at Roof Area	7,662.50	sf	$ 2.10	$ 16,091.25					
155	R19 Faced Thermal Insulation at exterior perimeter walls	2,562.00	sf	$ 1.50	$ 3,843.00					
156	SAB R11 - Interior Unit Partitions	8,932.00	sf	$ 1.20	$ 10,718.40					
157	VE - Metal Stud Interior Partitions in lieu of CMU Walls everywhere except Ammo/Weapon Storage	2,240.00	sf	$ 1.20	$ 2,688.00					
158	SAB R11 - In Ceilings		n/a	$ -	$ -					
159	VE - Add Thermal Insulation below podium	6,130.00	sf	$ 1.50	$ 9,195.00					
160	Insulation - Subtotal					$ 42,535.65	0.75%	$ 6.28	$ 30,652.65	$ 11,883.00
161	**Metal Roofing Systems**									
162	Standing Seam Roof on flat rigid insulation and protection board - Standard Colors	7,662.50	sf	$ 21.60	$ 165,510.00					
163	- Flat rigid insulation	7,662.50	sf	$ 2.10	$ 16,091.25					
164	- Protection board	7,662.50	sf	$ 2.10	$ 16,091.25					
165	VE - eliminate standing seam roof	(7,662.50)	sf	$ 21.60	$ (165,510.00)					
166	VE - add asphalt shingles	76.63	sq	$ 1,140.00	$ 87,352.50					
167	Metal Roofing Systems - Subtotal					$ 119,535.00	2.10%	$ 17.64	$ 197,692.50	$ (78,157.50)
168	**Gutters and Downspouts**									
169	6K, .050 Aluminum Gutters and .032 Aluminum Leader	942.40	lf	$ 18.00	$ 16,963.20					
170	Gutters and Downspout - Subtotal					$ 16,963.20	0.30%	$ 2.50	$ 16,963.20	$ -
171	**Roof Accessories**									
172	Snow Guards - surface mounted	360.00	ea	$ 18.00	$ 6,480.00					
173	Roof Accessories - Subtotal					$ 6,480.00	0.11%	$ 0.96	$ 6,480.00	$ -
174	**Siding/Exterior Wall Panels**									
175	Wood Composite Siding	50.40	sf	$ 2,160.00	$ 108,864.00					
176	- Gable End	1.92	sf	$ 2,160.00	$ 4,147.20					
177	Prow Shaped Mass Wall - 2 sides not including the exterior building wall - hardie siding	2,776.00	sf	$ 21.60	$ 59,961.60					
178	VE - Revise lf of mass prow wall from 75lf to 65lf	(260.00)	sf	$ 21.60	$ (5,616.00)					
179	Siding at Soffits	720.00	sf	$ 21.60	$ 15,552.00					
180	Siding/Exterior Wall Panels - Subtotal					$ 182,908.80	3.21%	$ 27.00	$ 188,524.80	$ (5,616.00)
181	**Fireproofing**									
182	Sprayed on Cementitious Fire Proofing - Pyrok Premium		n/a	$ -	$ -					
183	Fireproofing - Subtotal					$ -	0.00%	$ -	$ -	$ -
184	**Firesafing/Firestopping**									
185	Firesafing - top of wall	250.00	lf	$ 7.80	$ 1,950.00					
186	Penetrations - smoke seal	25.00	ea	$ 21.60	$ 540.00					

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187	Penetrations - firestop	75.00	ea	$ 42.00	$ 3,150.00					
188	Firesafing/Firestopping - Subtotal					$ 5,640.00	0.10%	$ 0.83	$ 5,640.00	$ -
189	**Joint Sealers**									
190	Joint Sealers - Caulking	6,775.00	sf	$ 0.78	$ 5,284.50					
191	Joint Sealers - Subtotal					$ 5,284.50	0.09%	$ 0.78	$ 5,284.50	$ -
192	**Expansion Joints**									
193	Exterior Expansion Joint		n/a	$ -	$ -					
194	**THERMAL AND MOISTURE PROTECTION**					**$ 430,027.35**	**7.54%**	**$ 63.47**	**$ 503,009.85**	**$ (72,982.50)**
195										
196	**08 00 00 OPENINGS**									
197	**Hollow Metal - Doors and Frames**									
198	Hollow Metal Frames - Exterior - Singles	2	ea	$ 402.00	$ 804.00					
199	Hollow Metal Doors - Exterior Galvanized	2	ea	$ 642.00	$ 1,284.00					
200	Hollow Metal Frames - Interior - Singles	16	ea	$ 312.00	$ 4,992.00					
201	Hollow Metal Frames - Interior - Pairs	3	ea	$ 402.00	$ 1,206.00					
202	Hollow Metal Doors - Interior		n/a	$ -	$ -					
203	Hollow Metal - Doors and Frames - Subtotal					$ 8,286.00	0.15%	$ 1.22	$ 8,286.00	$ -
204	**Wood Doors**									
205	Wood Doors	22	ea	$ 636.00	$ 13,992.00					
206	Wood Doors - Subtotal					$ 13,992.00	0.25%	$ 2.07	$ 13,992.00	$ -
207	**Access Doors**									
208	Non Rated Access Doors in walls for plumbing access	3	ea	$ 432.00	$ 1,296.00					
209	Access Doors - Subtotal					$ 1,296.00	0.02%	$ 0.19	$ 1,296.00	$ -
210	**Overhead Doors**									
211	Loading Dock: 10' x 10' Overhead Coiling Door	100.00	sf	$ 90.00	$ 9,000.00					
212	Overhead Doors - Subtotal					$ 9,000.00	0.16%	$ 1.33	$ 9,000.00	$ -
213	**Automatic Door Hardware**									
214	Automatic Door Operators		n/a	$ -	$ -					
215	Automatic Door Hardware - Subtotal					$ -	0.00%	$ -	$ -	$ -
216	**Door Hardware**									
217	Sound Seals/Gasketing	4	ea	$ 565.20	$ 2,260.80					
218	Door Hardware - Commercial Standard (hinges, closure, lockset, keyed lock)	20	ea	$ 834.00	$ 16,680.00					
219	Door Hardware - Commercial Egress (same as above plus panic device) - Von Duprin	4	ea	$ 1,770.00	$ 7,080.00					
220	Door Hardware - Commercial Egress for Glass Door Leaves (panic devices) - Von Duprin	1	ea	$ 1,770.00	$ 1,770.00					
221	Door Hardware - Subtotal				$ -	$ 27,790.80	0.49%	$ 4.10	$ 27,790.80	$ -
222	**Aluminum Glass & Glazing**				$ -					
223	Aluminum Storefront Entry Door at Lobby	1	ea	$ 4,200.00	$ 4,200.00					
224	Aluminum Window Systems - 25% of building perimeter	360.00	sf	$ 90.00	$ 32,400.00					
225	Observation Window	100.00	sf	$ 90.00	$ 9,000.00					
226	Window Film	460.00	sf	$ 30.00	$ 13,800.00					
227	Fire Rated Glazing for interior sidelights, vision lights, etc - decent quantity, no wire		n/a	$ -	$ -					
228	Bullet resistant glazing		n/a	$ -	$ -					
229	Aluminum Glass & Glazing - Subtotal					$ 59,400.00	1.04%	$ 8.77	$ 59,400.00	$ -
230	**Louvers and Vents**									
231	Arch Louvers and Vents - Large	32.00	sf	$ 90.00	$ 2,880.00					
232	Louvers and Vents - Subtotal					$ 2,880.00	0.05%	$ 0.43	$ 2,880.00	$ -
233	**Architectural Canopies**									
234	Masa Extrudeck Architectural Canopies -5' x 4'			$ -	$ -					
235	- Canopy		n/a	$ -	$ -					
236	- Shipping		n/a	$ -	$ -					
237	- Engineered shop drawings		n/a	$ -	$ -					
238	- Installation		n/a	$ -	$ -					

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239	Architectural Canopies - Subtotal					$ -	0.00%	$ -	$ -	$ -
240	**OPENINGS**					**$ 122,644.80**	**2.15%**	**$ 18.10**	**$ 122,644.80**	**$ -**
241										
242	**09 00 00 FINISHES**									
243	**Gypsum Drywall**									
244	Exterior Perimeter Walls - 18ga, 6" mtl stud, 16" o.c. 5/8" gyp inside, 5/8 gyp sheathing ext	2,562.00	sf	$ 17.26	$ 44,209.87					
245	Partitions - Interior - 3 5/8" metal stud with 5/8" gyp	8,932.00	sf	$ 10.69	$ 95,500.94					
246	VE - Metal Stud Interior Partitions in lieu of CMU Walls everywhere except Ammo/Weapon Storage	2,240.00	sf	$ 10.69	$ 23,950.08					
247	Furred Partitions at CMU	2,310.00	sf	$ 7.03	$ 16,243.92					
248	Hung Drywall Ceilings at Restrooms	353.00	sf	$ 9.76	$ 3,443.87					
249	Hung Drywall Ceilings at Staff Restroom	90.00	sf	$ 9.76	$ 878.04					
250	Hung Drywall Ceilings at Staff Shower	61.00	sf	$ 9.76	$ 595.12					
251	Hung Drywall Ceilings at Stair A	466.00	sf	$ 9.76	$ 4,546.30					
252	Hung Drywall Ceilings at Stair B	466.00	sf	$ 9.76	$ 4,546.30					
253	Hung Drywall Ceilings at Locker	92.00	sf	$ 9.76	$ 897.55					
254	Drywall Soffits - Interior - Per SF	905.00	lf	$ 18.00	$ 16,290.00					
255	Exterior Gyp Sheathing at Soffits	720.00	sf	$ 5.46	$ 3,931.20					
256	Light Gage Metal Framing for Exterior Soffits	720.00	sf	$ 11.40	$ 8,208.00					
257	Gypsum Drywall - Subtotal					$ 223,241.18	3.92%	$ 32.95	$ 199,291.10	$ 23,950.08
258	**Fiberglass Reinforced Panels (FRP)**									
259	FRP Panels at JC Closet	96.00	sf	$ 7.09	$ 680.83					
260	FRP Panels - Subtotal					$ 680.83	0.01%	$ 0.10	$ 680.83	$ -
261	**Tile**									
262	Waterproof Membrane	596.00	sf	$ 3.60	$ 2,145.60					
263	Floor Tile at bathrooms	596.00	sf	$ 12.60	$ 7,509.60					
264	4" Tile Base at bathrooms	219.00	lf	$ 13.80	$ 3,022.20					
265	Full height Tile Walls at bathrooms	1,971.00	sf	$ 15.00	$ 29,565.00					
266	Marble Thresholds	1.00	ea	$ 120.00	$ 120.00					
267	Extra Materials	2%		$ 18,000.00	$ 360.00					
268	Tile - Subtotal					$ 42,722.40	0.75%	$ 6.31	$ 42,722.40	$ -
269	**Acoustical Ceiling Systems**									
270	Acoustical Ceiling Systems - 2x2	5,247.00	sf	$ 9.12	$ 47,852.64					
271	VE - add ACT ceiling below Podium	6,775.00	sf	$ 6.60	$ 44,715.00					
272	Acoustical Ceiling Systems - Subtotal					$ 92,567.64	1.62%	$ 13.66	$ 47,852.64	$ 44,715.00
273	**Resilient**									
274	VCT at Janitor's closet	100.00	sf	$ 3.30	$ 330.00					
275	LVT - Luxury Vinyl Tile at Corridors, Kitchenette, Laundry	1,026.00	sf	$ 7.50	$ 7,695.00					
276	Vinyl Base - Standard Vinyl	895.00	lf	$ 2.70	$ 2,416.50					
277	Wash and Wax		n/a	$ -	$ -					
278	Ardex Underlayment		n/a	$ -	$ -					
279	Moisture mitigation		not included	$ -	$ -					
280	Resilient - Subtotal					$ 10,441.50	0.18%	$ 1.54	$ 10,441.50	$ -
281	**Rubber Flooring**									
282	Premolded Rubber - Treads and Risers	168.00	lf	$ 27.60	$ 4,636.80					
283	Rubber Flooring at Stairwells	230.00	sf	$ 13.80	$ 3,174.00					
284	Rubber Flooring - Subtotal					$ 7,810.80	0.14%	$ 1.15	$ 7,810.80	$ -
285	**Polished Concrete**									
286	Polished concrete at Stairwell #1 and Stairwell #2	230.00	sf	$ 4.20	$ 966.00					
287	Polished concrete at Armory	445.00	sf	$ 4.20	$ 1,869.00					
288	Polished concrete at Storage Areas	922.00	sf	$ 4.20	$ 3,872.40					
289	Polished Concrete - Subtotal					$ 6,707.40	0.12%	$ 0.99	$ 6,707.40	$ -
290	**Carpeting**									
291	Vestibule - walk off mat material	13.89	sy	$ 62.40	$ 866.67					
292	Carpet Tile at Offices, Classrooms, Observation	230.65	sy	$ 49.20	$ 11,347.98					

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293	Carpet at Elevator Floor	11.11	sy	$ 31.20	$ 346.67					
294	Carpeting - Subtotal					$ 12,561.31	0.22%	$ 1.85	$ 12,561.31	$ -
295	**Painting/Wall covering**									
296	Painting Drywall Walls	11,494.00	sf	$ 0.90	$ 10,344.60					
297	Painting Drywall Walls	8,932.00	sf	$ 0.90	$ 8,038.80					
298	VE - Metal Stud Interior Partitions in lieu of CMU Walls everywhere except Ammo/Weapon Storage	4,480.00	sf	$ 0.90	$ 4,032.00					
299	Painting Exterior CMU Walls - block fill	2,478.00	sf	$ 0.90	$ 2,230.20					
300	Painting Drywall Ceilings & Soffits - Interior	2,433.00	sf	$ 0.90	$ 2,189.70					
301	Painting HM Doors and Frames	22	ea	$ 102.00	$ 2,244.00					
302	Painting/Wall covering - Subtotal					$ 29,079.30	0.51%	$ 4.29	$ 27,337.98	$ 1,741.32
303	**FINISHES**					**$ 425,812.37**	**7.47%**	**$ 62.85**	**$ 355,405.97**	**$ 70,406.40**
304										
305	**10 00 00 SPECIALTIES**									
306	**Visual Display Boards**									
307	Classroom: Marker/White Boards - 4' x 12' - 2ea	96.00	sf	$ 21.00	$ 2,016.00					
308	Visual Display Boards - Subtotal					$ 2,016.00	0.04%	$ 0.30	$ 2,016.00	$ -
309	**Toilet Compartments**									
310	Toilet Compartments - Solid Phenolic - Standard	4	ea	$ 1,440.00	$ 5,760.00					
311	Toilet Compartments - Solid Phenolic - Handicap	2	ea	$ 1,620.00	$ 3,240.00					
312	Toilet Compartments - Solid Phenolic - Urinal Screen	1	ea	$ 300.00	$ 300.00					
313	Toilet Compartments - Subtotal					$ 9,300.00	0.16%	$ 1.37	$ 9,300.00	$ -
314	**Corner Guards**									
315	Storage Rooms & Armory - Wall Protection 48 " AFF - CS Acrovyn	1,188	sf	$ 10.50	$ 12,474.00					
316	Corner Guards in Corridor	10	ea	$ 120.00	$ 1,200.00					
317	Corner Guards - Subtotal					$ 13,674.00	0.24%	$ 2.02	$ 13,674.00	$ -
318	**Signage**									
319	Interior Signage - General	18	ea	$ 90.00	$ 1,620.00					
320	Interior Signage - Egress/Handicap	3	ea	$ 102.00	$ 306.00					
321	Signage - Subtotal					$ 1,926.00	0.03%	$ 0.28	$ 1,926.00	$ -
322	**Graphic Branding**									
323	Wall Graphics		not included	$ -	$ -					
324	**Lockers and Benches**									
325	Lockers - Double tier, 12" x 18" x 30" with base and slope tops	15	ea	$ 780.00	$ 11,700.00					
326	Maple Benches	16.00	lf	$ 84.00	$ 1,344.00					
327	Lockers and Benches - Subtotal					$ 13,044.00	0.23%	$ 1.93	$ 13,044.00	$ -
328	**Security Cabinets**									
329	Key cabinet	1	ea	$ 702.00	$ 702.00					
330	Security Cabinets - Subtotal			$ -		$ 702.00	0.01%	$ 0.10	$ 702.00	$ -
331	**Fire-Protection Specialties**									
332	Portable Fire Extinguishers: M/P dry chemical UL 4-A: 60-B:C 10lb	2	ea	$ 90.00	$ 180.00					
333	Fire Extinguisher Cabinets: Recessed #6 Stainless Steel, vertical duo panel tempered glass with black etched letters	2	ea	$ 270.00	$ 540.00					
334	Labor to install	2	ea	$ 78.00	$ 156.00					
335	Fire Protection Specialties - Subtotal			$ -		$ 876.00	0.02%	$ 0.13	$ 876.00	$ -
336	**Operable Partitions**			$ -						
337	Operable Partition in Classroom (manual operation)	300.00	sf	$ 102.00	$ 30,600.00					
338	Structural Framing for Header above operable partition	30.00	lf	$ 90.00	$ 2,700.00					
339	Operable Partition - Subtotal					$ 33,300.00	0.58%	$ 4.92	$ 33,300.00	$ -
340	**Toilet Accessories**									
341	ADA Shower Accessories	1	ea	$ 944.87	$ 944.87					
342	Electric Hand Dryers	4	ea	$ 1,196.87	$ 4,787.49					
343	Paper Towel Holders	4	ea	$ 84.47	$ 337.89					
344	Toilet Tissue Holder	6	ea	$ 84.47	$ 506.83					
345	Waste Receptacles		ea	$ -	$ -					

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Percent of Total Construction Cost	Cost Per Total Bldg Sq. Ft.	Previous Estimate 12/30/2022	Variance
346	Sanitary Napkin Disposal	3	ea	$ 84.47	$ 253.42					
347	Soap Dispenser	6	ea	$ 84.47	$ 506.83					
348	Robe Hooks on bedroom and bathroom doors	6	ea	$ 25.67	$ 154.03					
349	Metal Framed Mirror	6	ea	$ 72.47	$ 434.83					
350	18" Stationary Grab Bars	2	ea	$ 60.47	$ 120.94					
351	30" Stationary Grab Bars	2	ea	$ 84.47	$ 168.94					
352	42" Stationary Grab Bars	2	ea	$ 84.47	$ 168.94					
353	Swing Up Grab Bars	2	ea	$ 258.47	$ 516.94					
354	**Single Gender Neutral Restroom (Staff)**			$ -	$ -					
355	Electric Hand Dryers	1	ea	$ 1,196.87	$ 1,196.87					
356	Paper Towel Holders	1	ea	$ 84.47	$ 84.47					
357	Toilet Tissue Holder	1	ea	$ 84.47	$ 84.47					
358	Towel Bar	1	ea	$ 192.47	$ 192.47					
359	Sanitary Napkin Disposal	1	ea	$ 84.47	$ 84.47					
360	Soap Dispenser	1	ea	$ 84.47	$ 84.47					
361	Robe Hooks on bedroom and bathroom doors	1	ea	$ 25.67	$ 25.67					
362	Metal Framed Mirror	1	ea	$ 72.47	$ 72.47					
363	18" Stationary Grab Bars	1	ea	$ 60.47	$ 60.47					
364	30" Stationary Grab Bars	1	ea	$ 84.47	$ 84.47					
365	42" Stationary Grab Bars	1	ea	$ 84.47	$ 84.47					
366	Swing Up Grab Bars	1	ea	$ 258.47	$ 258.47					
367	**Kitchenette**			$ -	$ -					
368	Paper Towel Holders	1	ea	$ 84.47	$ 84.47					
369	Soap Dispenser	1	ea	$ 84.47	$ 84.47					
370	**Janitor's Closet**			$ -	$ -					
371	Mop and Broom Holders	1	ea	$ 84.47	$ 84.47					
372	Stainless Steel Shelf	1	ea	$ 168.47	$ 168.47					
373	Toilet Accessories-Restrooms - Subtotal					$ 11,637.12	0.20%	$ 1.72	$ 11,637.12	$ -
374	**SPECIALTIES**					**$ 86,475.12**	**1.52%**	**$ 12.76**	**$ 86,475.12**	**$ -**
375										
376	**11 00 00 EQUIPMENT**									
377	**Audio Visual**									
378	Projection Screens - by Owner		w/FFE	$ -	$ -					
379	Projectors - By Owner		w/FFE	$ -	$ -					
380	Audio Visual - Subtotal					$ -	0.00%	$ -	$ -	$ -
381	**Residential Appliances**									
382	Dining/Kitchenette:			$ -	$ -					
383	- Microwave	1	ea	$ 300.00	$ 300.00					
384	- Refrigerator	1	ea	$ 1,320.00	$ 1,320.00					
385	- Dishwasher	1	ea	$ 900.00	$ 900.00					
386	- Garbage Disposal	1	ea	$ 180.00	$ 180.00					
387	Laundry Equipment			$ -	$ -					
388	- Commercial Grade Dryer	1	ea	$ 3,000.00	$ 3,000.00					
389	- Commercial Grade Washer	1	ea	$ 4,200.00	$ 4,200.00					
390	Unloading and Set up	6.00	ea	$ 90.00	$ 540.00					
391	Tenant ready for use - remove and dispose all tape, plastic, boxes	6	ea	$ 90.00	$ 540.00					
392	Residential Appliances - Subtotal					$ 10,980.00	0.19%	$ 1.62	$ 10,980.00	$ -
393	**Industrial Shelving Systems**									
394	Racking system in Storage Areas		w/FFE	$ -	$ -					
395	Industrial Shelving Systems - Subtotal					$ -	0.00%	$ -	$ -	$ -
396	**EQUIPMENT**					**$ 10,980.00**	**0.19%**	**$ 1.62**	**$ 10,980.00**	**$ -**
397										
398	**12 00 00 FURNISHINGS**									
399	**Window Treatment**									

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Percent of Total Construction Cost	Cost Per Total Bldg Sq. Ft.	Previous Estimate 12/30/2022	Variance
400	Classroom: Room darkening shades	108.00	sf	$ 18.00	$ 1,944.00					
401	Mecho shades with 1% open shade cloth and valances	252.00	sf	$ 10.20	$ 2,570.40					
402	Window Treatment - Subtotal					$ 4,514.40	0.08%	$ 0.67	$ 4,514.40	$ -
403	**Furniture & Accessories - ALL BY OWNER**									
404	FFE Allowance: Shelving/Storage systems, AV Systems, Furniture, etc - From Maier's report	1.00	ls	$ 165,000.00	$ 165,000.00					
405	Furniture & Accessories - Subtotal					$ 165,000.00	2.89%	$ 24.35	$ 165,000.00	$ -
406	**FURNISHINGS**					**$ 169,514.40**	**2.97%**	**$ 25.02**	**$ 169,514.40**	**$ -**
407										
408	**13 00 00 SPECIAL CONSTRUCTION**									
409	**Vault and Vault Doors**									
410	Weapons Vault & Vault Doors - Allowance	1.00	ls	$ 9,000.00	$ 9,000.00					
411	Vault and Vault Doors - Subtotal					$ 9,000.00	0.16%	$ 1.33	$ 9,000.00	$ -
412	**SPECIAL CONSTRUCTION**					**$ 9,000.00**	**0.16%**	**$ 1.33**	**$ 9,000.00**	**$ -**
413										
414	**14 00 00 CONVEYING EQUIPMENT**									
415	**Hydraulic Elevators**									
416	Pitless Side Traction or Overhead Hoist Passenger Elevator	2.00	stops	$ 50,000.00	$ 100,000.00					
417	Hydraulic Elevator - Subtotal					$ 100,000.00	1.75%	$ 14.76	$ 100,000.00	$ -
418	**Exterior Hoist**									
419	Exterior Hoist for Ammunitions Storage - 1-ton	1.00	ls	$ 7,500.00	$ 7,500.00					
420	Exterior Hoist - Subtotal					$ 7,500.00	0.13%	$ 1.11	$ 7,500.00	$ -
421	**CONVEYING EQUIPMENT**					**$ 107,500.00**	**1.89%**	**$ 15.87**	**$ 107,500.00**	**$ -**
422										
423	**21 00 00 FIRE SUPPRESSION**									
424	**Sprinklers**									
425	Wet System & Concealed Heads	6,416.00	sf	$ 7.20	$ 46,195.20					
426	FM200 Fire Suppression System at Storage Rooms		n/a	$ -	$ -					
427	Preaction System for Data Center		sf	$ -	$ -					
428				$ -	$ -					
429	**Water Storage Tank**			$ -	$ -					
430	Fire Water Storage Tank	1	ea	$ 42,000.00	$ 42,000.00					
431				$ -	$ -					
432	**Fire Pumps & Controllers**			$ -	$ -					
433	Fire Pump (750 GPM / 75 HP)	1	ea	$ 52,489.20	$ 52,489.20					
434	Fire Pump control panel	1.00	ea	$ 4,978.20	$ 4,978.20					
435	Jockey Pump (1.5 HP / 7.5 GPM)	1.00	ea	$ 2,218.20	$ 2,218.20					
436	Jockey pump control panel	1.00	ea	$ 1,289.10	$ 1,289.10					
437				$ -	$ -					
438	**Dry Chemical System**			$ -	$ -					
439	- Ammunitions Storage	359	sf	$ 21.60	$ 7,754.40					
440	- Other Areas		n/a	$ -	$ -					
441	Sprinklers - Subtotal					$ 156,924.30	2.75%	$ 23.16	$ 156,924.30	$ -
442	**FIRE SUPPRESSION**					**$ 156,924.30**	**2.75%**	**$ 23.16**	**$ 156,924.30**	**$ -**
443										
444	**22 00 00 PLUMBING**									
445	**Fixtures & Piping**									
446	Single Gender Neutral Restroom (Staff)			$ -	$ -					
447	- Lav/Sink	1	ea	$ 4,200.00	$ 4,200.00					
448	- Water Closet/Toilet	1	ea	$ 4,200.00	$ 4,200.00					
449	- Urinal	1	ea	$ 4,200.00	$ 4,200.00					
450	- Shower (Solid Surface)	1	ea	$ 9,000.00	$ 9,000.00					
451	- Floor Drains	2	ea	$ 4,200.00	$ 8,400.00					
452	Restrooms (Trainees) - Men's Room & Women's Room with 3ea toilets and 3 sinks			$ -	$ -					

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Percent of Total Construction Cost	Cost Per Total Bldg Sq. Ft.	Previous Estimate 12/30/2022	Variance
453	- Lav/Sink	6	ea	$ 4,200.00	$ 25,200.00					
454	- Water Closet/Toilet	6	ea	$ 4,200.00	$ 25,200.00					
455	- Urinal	1	ea	$ 4,200.00	$ 4,200.00					
456	- Floor Drains	2	ea	$ 4,200.00	$ 8,400.00					
457	Kitchenette			$ -	$ -					
458	- Kitchen sink	1	ea	$ 4,200.00	$ 4,200.00					
459	- Water for dishwasher and refrigerator	1	ea	$ 1,800.00	$ 1,800.00					
460	- Install disposal	1	ea	$ 2,100.00	$ 2,100.00					
461	General Plumbing			$ -	$ -					
462	- Hot Water Heater	1	ls	$ 9,000.00	$ 9,000.00					
463	- Mop Sink	1	ea	$ 4,200.00	$ 4,200.00					
464	- Water Cooler/Drinking Fountain	1	ea	$ 4,200.00	$ 4,200.00					
465	- Hose Bibbs	1	ea	$ 2,100.00	$ 2,100.00					
466	Demolition (Cut & Cap)	40.00	mhrs	$ 240.00	$ 9,600.00					
467			sf	$ -	$ -					
468	Fixtures & Piping - Subtotal					$ 130,200.00	2.28%	$ 19.22	$ 130,200.00	$ -
469	**PLUMBING**					**$ 130,200.00**	**2.28%**	**$ 19.22**	**$ 130,200.00**	**$ -**
470										
471	**23 00 00 HEATING VENTILATION & AIR CONDITIONING**									
472	Electric Heating and Cooling: roof top unit, zoned VAV boxes, radiant floor panels, duct distribution, automatic temperature controls, air balancing, and rigging.	6,775.00	sf	$ 46.80	$ 317,070.00					
473	Demolition (Cut & Cap)	40.00	mhrs	$ 240.00	$ 9,600.00					
474			ls	$ -	$ -					
475	Heating Ventilation & Air Conditioning - Subtotal					$ 326,670.00	5.73%	$ 48.22	$ 326,670.00	$ -
476	**HEATING VENTILATION & AIR CONDITIONING**					**$ 326,670.00**	**5.73%**	**$ 48.22**	**$ 326,670.00**	**$ -**
477										
478	**26 00 00 ELECTRICAL**									
479	Electric HVAC systems		sf	$ -	$ -					
480	Main Service	6,775.00	sf	$ 2.23	$ 15,121.80					
481	Power Distribution	6,775.00	sf	$ 2.16	$ 14,634.00					
482	Elevator Power and Connections	1.00	ea	$ 10,200.00	$ 10,200.00					
483	Grounding System	6,775.00	sf	$ 0.54	$ 3,658.50					
484	Devices (switches and receptacles)	6,775.00	sf	$ 7.20	$ 48,780.00					
485	Interior Lighting - office space	6,775.00	sf	$ 8.10	$ 54,877.50					
486	Interior Lighting Controls	6,775.00	sf	$ 1.20	$ 8,130.00					
487	Emergency Lighting	6,775.00	sf	$ 0.28	$ 1,869.90					
488	Tele/Data/CATV - box/conduit/pull string	6,775.00	sf	$ 0.18	$ 1,219.50					
489	Fire Alarm	6,775.00	sf	$ 2.22	$ 15,040.50					
490	Security System/Door Entry	6,775.00	sf	$ 0.30	$ 2,032.50					
491	Lightening Protection	6,775.00	sf	$ 0.68	$ 4,634.10					
492	Audio Visual		not included	$ -	$ -					
493	Miscellaneous	6,775.00	sf	$ 0.10	$ 650.40					
494	Temp Power and Lights	6,775.00	sf	$ 0.23	$ 1,544.70					
495	Wiring HVAC	6,775.00	sf	$ 0.52	$ 3,495.90					
496	Diesel Generator - located above the flood plain	1	ea	$ 45,000.00	$ 45,000.00					
497	Photovoltaic System	8,469	sf	$ 22.00	$ 186,312.50					
498	VE - Add heat tape for sanitary at podium	8.00	ea	$ 1,080.00	$ 8,640.00					
499	Demolition (Cut & Cap)	40.00	mhrs	$ 240.00	$ 9,600.00					
500	Electrical - Subtotal					$ 435,441.80	7.64%	$ 64.27	$ 426,801.80	$ 8,640.00
501	**ELECTRICAL**					**$ 435,441.80**	**7.64%**	**$ 64.27**	**$ 426,801.80**	**$ 8,640.00**
502										
503	**27 00 00 TECHNOLOGY**									
504	Technology Allowance	1.00	ls	$ 80,000.00	$ 80,000.00					
505	Technology - Subtotal					$ 80,000.00	1.40%	$ 11.81	$ 80,000.00	$ -
506	**TECHNOLOGY**					**$ 80,000.00**	**1.40%**	**$ 11.81**	**$ 80,000.00**	**$ -**

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Percent of Total Construction Cost	Cost Per Total Bldg Sq. Ft.	Previous Estimate 12/30/2022	Variance
507										
508	**31 00 00 SITEWORK**									
509	**Earthwork for Building**									
510	Excavate and Backfill Frost Walls	280.00	lf	$ 16.80	$ 4,704.00					
511	Excavate and Backfill Pile Caps	30.00	ea	$ 420.00	$ 12,600.00					
512	Base Material Under Slab, Geo Fab and 12" 3/8" Stone	47.82	tn	$ 48.00	$ 2,295.17					
513	Fine Grade Slabs and area below the building	6,775.00	sf	$ 1.80	$ 12,195.00					
514	Earthwork for Building - Subtotal					$ 31,794.17	0.56%	$ 4.69	$ 31,794.17	$ -
515	**SITEWORK**					**$ 31,794.17**	**0.56%**	**$ 4.69**	**$ 31,794.17**	**$ -**
516	**Crosscheck & Sub-Total @ Cost**				**$ 4,111,115.11**	**$ 4,111,115.11**	**72.10%**	$ 606.81	**$ 4,450,852.92**	**$ (339,737.81)**
517	**Crosscheck & % of Total & Cost per SF**									
518	General Conditions and General Requirements	12.00%				$ 493,333.81	8.65%	$ 72.82	$ 534,102.35	$ (40,768.54)
519	**Sub-Total**					**$ 4,604,448.92**	**80.76%**	$ 679.62	**$ 4,984,955.27**	$ (380,506.35)
520	Subcontractor - Payment and Performance Bond (For work over $100,000)	0.00%				$ -	0.00%	$ -	$ -	$ -
521	**Sub-Total**					**$ 4,604,448.92**	**80.76%**	$ 679.62	**$ 4,984,955.27**	$ (380,506.35)
522	Carbon Neutral Design & Construction Allowance - carried below construction total - see below					$ -	0.00%	$ -	$ 250,000.00	$ (250,000.00)
523	**Sub-Total**					**$ 4,604,448.92**	**80.76%**	$ 679.62	**$ 5,234,955.27**	$ (630,506.35)
524	Construction Cost Escalation - Construction to Start June 2022	3.52%				$ 161,929.26	2.84%	$ 23.90	$ 184,102.91	$ (22,173.65)
525	**Sub-Total**					**$ 4,766,378.18**	**83.60%**	$ 703.52	**$ 5,419,058.17**	$ (652,679.99)
526	Cost Estimate Contingency	10.00%				$ 476,637.82	8.36%	$ 70.35	$ 541,905.82	$ (65,268.00)
527	**Sub-Total**					**$ 5,243,016.00**	**91.96%**	$ 773.88	**$ 5,960,963.99**	$ (717,947.99)
528	Building Permit Excluding MEP Trades - Exempt	$0.00			per thousand	$ -	0.00%	$ -	$ -	$ -
529	Builder's Risk Insurance	0.00%			By Owner	$ -	0.00%	$ -	**$ -**	$ -
530	General & Professional Liability Insurance	1.10%				$ 57,673.18	1.01%	$ 8.51	**$ 65,570.60**	$ (7,897.43)
531	**Sub-Total**					**$ 5,300,689.17**	**92.97%**	$ 782.39	**$ 6,026,534.60**	$ (725,845.42)
532	Construction Management Fee	6.50%				$ 344,544.80	6.04%	$ 50.86	$ 391,724.75	$ (47,179.95)
533	**Sub-Total**					**$ 5,645,233.97**	**99.01%**	$ 833.24	**$ 6,418,259.34**	$ (773,025.37)
534	Connecticut State Tax - Exempt	0.00%				$0.00	0.00%	$ -	**$ -**	$ -
535	**Sub-Total**					**$ 5,645,233.97**	**99.01%**	$ 833.24	**$ 6,418,259.34**	$ (773,025.37)
536	Payment and Performance Bond	1.00%				$56,452	0.99%	$ 8.33	$ 64,182.59	$ (7,730.25)
537	**Pre-Design Probability Estimate Sub Total**					**$ 5,701,686.31**	**100.00%**	$ 841.58	**$ 6,482,441.94**	**$ (780,755.63)**
538	Carbon Neutral Design & Construction Allowance					$ 250,000.00				
539	**Pre-Design Probability Estimate Total**					**$ 5,951,686.31**	**104.38%**	$ 878.48	**$ 6,482,441.94**	**$ (530,755.63)**

RECONSTRUCT STATE POLICE FIRING RANGE

PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE

50yd PISTOL RANGE BACKSTOP ESTIMATE - CSI FORMAT

Construction Cost Solutions, LLC

RECONSTRUCT STATE POLICE - REPLACE 50yd PISTOL RANGE BACKSTOP CANOPY STRUCTURE
100 Nod Road, Simsbury, CT
PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE
January 13, 2022

Area Description	Sq. Ft.	Perimeter
Pistol Range Backstop Canopy	2,715	420
Total Gross Square Foot Summary	2,715	

Yellow highlight = Revised Line Item

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Percent of Total Construction Cost	Cost Per Total Bldg Sq. Ft.	Previous Estimate 12/30/2022	Variance
1	**02 00 00 EXISTING CONDITIONS AND DEMOLITION**									
2	**Building Demolition**									
3	- Demolish existing Backstop - heavy timber frame, wood roof joists, plywood sheathing, asphalt shingles, rubber tire column wraps	2,715.00		$ 7.20	$ 19,548.00					
4	- Existing armored barrier in front of the Backstop to remain in place		n/a	$ -	$ -					
5	Building Demolition - Subtotal					$ 19,548.00	5.19%	$ 7.20	$ 19,548.00	$ -
6	**Hazardous Material Abatement**									
7	Hazardous Waste Testing, Abatement, Removal & Disposal		not included	$ -	$ -					
8	HAZMAT - Subtotal					$ -	0.00%	$ -	$ -	$ -
9	**EXISTING CONDITIONS AND DEMOLITION**					**$ 19,548.00**	**5.19%**	**$ 7.20**	**$ 19,548.00**	**$ -**
10										
11	**03 00 00 FOUNDATIONS AND CONCRETE**									
12	**Foundations**									
13	Foundations for proposed backstop structure - Column Footings	21.00	ea	$ 600.00	$ 12,600.00					
14	Foundations - Subtotal					$ 12,600.00	3.34%	$ 4.64	$ 12,600.00	$ -
15	**FOUNDATIONS AND CONCRETE**					**$ 12,600.00**	**3.34%**	**$ 4.64**	**$ 12,600.00**	**$ -**
16										
17	**05 00 00 METALS**									
18	**Structural Steel:**									
19	Structural Steel column and beam, roof deck - galvanized	2,715.00	sf	$ 21.60	$ 58,644.00					
20	- Add galvanizing	2,715.00	sf	$ 5.83	$ 15,833.88					
21	Structural Steel - Subtotal					$ 74,477.88	19.77%	$ 27.43	$ 74,477.88	$ -
22	**METALS**					**$ 74,477.88**	**19.77%**	**$ 27.43**	**$ 74,477.88**	**$ -**
23										
24	**06 00 00 WOODS, PLASTICS AND COMPOSITES**									
25	**Rough Carpentry**									
26	Blocking - Roof	420.00	lf	$ 10.80	$ 4,536.00					
27	Roof Sheathing	2,715.00	sf	$ 7.20	$ 19,548.00					
28	Rough Carpentry - Subtotal					$ 24,084.00	6.39%	$ 8.87	$ 24,084.00	$ -
29	**WOODS, PLASTICS AND COMPOSITES**					**$ 24,084.00**	**6.39%**	**$ 8.87**	**$ 24,084.00**	**$ -**
30										
31	**07 00 00 THERMAL AND MOISTURE PROTECTION**									
32	**Metal Roofing Systems**									
33	Standing Seam Roof - Standard Colors	2,715.00	sf	$ 21.60	$ 58,644.00					
34	VE - Eliminate Standing Seam Roof	(2,715.00)	sf	$ 21.60	$ (58,644.00)					
35	VE - Asphalt shingles in lieu of standing seam metal roof	2.72	sq	$ 1,140.00	$ 3,095.10					
36	Metal Roofing Systems - Subtotal					$ 3,095.10	0.82%	$ 1.14	$ 58,644.00	$ (55,548.90)
37	**Siding/Exterior Wall Panels**									
38	Siding		n/a	$ -	$ -					
39	Siding/Exterior Wall Panels - Subtotal					$ -	0.00%	$ -	$ -	$ -

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Percent of Total Construction Cost	Cost Per Total Bldg Sq. Ft.	Previous Estimate 12/30/2022	Variance
40	**THERMAL AND MOISTURE PROTECTION**					**$ 3,095.10**	**0.82%**	**$ 1.14**	**$ 58,644.00**	**$ (55,548.90)**
41										
42	**09 00 00 FINISHES**									
43	**Painting/Wall covering**									
44	Paint galvanized structure		n/a	$ -	$ -					
45	Painting/Wall covering - Subtotal					$ -	0.00%	$ -	$ -	$ -
46	**FINISHES**					**$ -**	**0.00%**	**$ -**	**$ -**	**$ -**
47										
48	**13 00 00 SPECIAL CONSTRUCTION**									
49	**Ballistic Materials**									
50	Ballistic Baffles under roof	2,715.00	sf	$ 27.01	$ 73,345.32					
51	- Bullet proof batten strips	1,365.00	lf	$ 8.70	$ 11,875.50					
52	- Tenryu saw blades & and misc fasteners	1.00	lf	$ 17,520.00	$ 17,520.00					
53	Ballistic rubber ricochet material at vertical posts	9.00	columns	$ 604.80	$ 5,443.20					
54	- Framing system behind rubber ricochet material	9.00	columns	$ 4,200.00	$ 37,800.00					
55	Ballistic Materials - Subtotal					$ 145,984.02	38.75%	$ 53.77	$ 145,984.02	$ -
56	**SPECIAL CONSTRUCTION**					**$ 145,984.02**	**38.75%**	**$ 53.77**	**$ 145,984.02**	**$ -**
57										
58	**31 00 00 SITEWORK**									
59	**Earthwork for Building**									
60	Prep for building columns	2,715.00	sf	$ 9.00	$ 24,435.00					
61	Earthwork for Building - Subtotal					$ 24,435.00	6.49%	$ 9.00	$ 24,435.00	$ -
62	**SITEWORK**					**$ 24,435.00**	**6.49%**	**$ 9.00**	**$ 24,435.00**	**$ -**
63	**Crosscheck & Sub-Total @ Cost**				**$ 304,224.00**	**$ 304,224.00**	**80.76%**	$ 112.05	**$ 359,772.90**	**$ (55,548.90)**
64	**Crosscheck & % of Total & Cost per SF**									
65	General Conditions and General Requirements	0.00%				$ -	0.00%	$ -	$ -	$ -
66	**Sub-Total**					**$ 304,224.00**	**80.76%**	$ 112.05	**$ 359,772.90**	$ (55,548.90)
67	Subcontractor - Payment and Performance Bond (For work over $100,000)	0.00%				$ -	0.00%	$ -	$ -	$ -
68	**Sub-Total**					**$ 304,224.00**	**80.76%**	$ 112.05	**$ 359,772.90**	$ (55,548.90)
69	Carbon Neutral Design & Construction Allowance - carried below construction total - see below	0.00%				$ -	0.00%	$ -	$ -	$ -
70	**Sub-Total**					**$ 304,224.00**	**80.76%**	$ 112.05	**$ 359,772.90**	$ (55,548.90)
71	Construction Cost Escalation - Construction to Start June 2022	3.52%				$ 10,698.95	2.84%	$ 3.94	$ 12,652.49	$ (1,953.54)
72	**Sub-Total**					**$ 314,922.95**	**83.60%**	$ 115.99	**$ 372,425.39**	$ (57,502.44)
73	Cost Estimate Contingency	10.00%				$ 31,492.29	8.36%	$ 11.60	$ 37,242.54	$ (5,750.24)
74	**Sub-Total**					**$ 346,415.24**	**91.96%**	$ 127.59	**$ 409,667.93**	$ (63,252.69)
75	Building Permit Excluding MEP Trades - Exempt	$ -			per thousand	$ -	0.00%	$ -	$ -	$ -
76	Builder's Risk Insurance	0.00%			By Owner	$ -	0.00%	$ -	**$ -**	$ -
77	General & Professional Liability Insurance	1.10%				$ 3,810.57	1.01%	$ 1.40	**$ 4,506.35**	$ (695.78)
78	**Sub-Total**					**$ 350,225.81**	**92.97%**	$ 129.00	**$ 414,174.28**	$ (63,948.47)
79	Construction Management Fee	6.50%				$ 22,764.68	6.04%	$ 8.38	$ 26,921.33	$ (4,156.65)
80	**Sub-Total**					**$ 372,990.49**	**99.01%**	$ 137.38	**$ 441,095.61**	$ (68,105.12)
81	Connecticut State Tax - Exempt	0.00%				$0.00	0.00%	$ -	**$ -**	$ -
82	**Sub-Total**					**$ 372,990.49**	**99.01%**	$ 137.38	**$ 441,095.61**	$ (68,105.12)
83	Payment and Performance Bond	1.00%				$3,730	0.99%	$ 1.37	$ 4,410.96	$ (681.05)
84	**Pre-Design Probability Estimate Total**					**$ 376,720.39**	**100.00%**	$ 138.76	**$ 445,506.56**	**$ (68,786.17)**

RECONSTRUCT STATE POLICE FIRING RANGE

PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE

NORTH BERM STAIR REPLACEMENT ESTIMATE CSI FORMAT

Construction Cost Solutions, LLC

RECONSTRUCT STATE POLICE - NORTH BERM STAIR REPLACEMENT DETAIL
100 Nod Road, Simsbury, CT
PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE
January 13, 2022

Area Description	Sq. Ft.
# of Risers - Stair #1	14
# of Risers - Stair #2	14
Total Gross Square Foot Summary	28

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Percent of Total Construction Cost	Cost Per Total Bldg Sq. Ft.	Previous Estimate 12/30/2022	Variance
1	**02 00 00 EXISTING CONDITIONS AND DEMOLITION**									
2	**Building Demolition**									
3	Demolish 2 sets of existing stairs that access the pistol deck	16.00	chrs	$ 402.00	$ 6,432.00					
4	Building Demolition - Subtotal					$ 6,432.00	6.10%	$ 229.71	$ 6,432.00	$ -
5	**Hazardous Material Abatement**									
6	Hazardous Waste Testing, Abatement, Removal & Disposal		not included	$ -	$ -					
7	HAZMAT - Subtotal					$ -	0.00%	$ -	$ -	$ -
8	**EXISTING CONDITIONS AND DEMOLITION**					**$ 6,432.00**	**6.10%**	**$ 229.71**	**$ 6,432.00**	**$ -**
9										
10	**03 00 00 FOUNDATIONS AND CONCRETE**									
11	**Foundations**									
12	Foundations for new stairs		n/a	$ -	$ -					
13	Foundations - Subtotal					$ -	0.00%	$ -	$ -	$ -
14	**Precast Concrete**									
15	Precast Stairs		sf	$ -	$ -					
16	- Ascending south side of Pistol Deck side berm	14.00	risers	$ 900.00	$ 12,600.00					
17	- Descending from berm to unpaved access road on north side	14.00	risers	$ 900.00	$ 12,600.00					
18	Precast Concrete - Subtotal					$ 25,200.00	23.90%	$ 900.00	$ 25,200.00	$ -
19	**FOUNDATIONS AND CONCRETE**					**$ 25,200.00**	**23.90%**	**$ 900.00**	**$ 25,200.00**	**$ -**
20										
21	**05 00 00 METALS**									
22	**Miscellaneous Metals - Site**									
23	North side stairs: Galvanized steel tube handrails and guard rails	38.00	lf	$ 420.00	$ 15,960.00					
24	South side stairs: Galvanized steel tube handrails and guard rails	38.00	lf	$ 420.00	$ 15,960.00					
25	Miscellaneous Metals - Site - Subtotal					$ 31,920.00	30.27%	$ 1,140.00	$ 31,920.00	$ -
26	**METALS**					**$ 31,920.00**	**30.27%**	**$ 1,140.00**	**$ 31,920.00**	**$ -**
27										
28	**31 00 00 SITEWORK**									
29	**Earthwork for Building**									
30	Prep, excavation and backfill for new precast stairs - North	24.00	sf	$ 300.00	$ 7,200.00					
31	Prep, excavation and backfill for new precast stairs - North	48.00	tn	$ 300.00	$ 14,400.00					
32	Earthwork for Building - Subtotal					$ 21,600.00	20.48%	$ 771.43	$ 21,600.00	$ -
33	**SITEWORK**					**$ 21,600.00**	**20.48%**	**$ 771.43**	**$ 21,600.00**	**$ -**
34	**Crosscheck & Sub-Total @ Cost**				**$ 85,152.00**	**$ 85,152.00**	**80.76%**	$ 3,041.14	**$ 85,152.00**	**$ -**
35	**Crosscheck & % of Total & Cost per SF**									
36	General Conditions and General Requirements	0.00%				$ -	0.00%	$ -	$ -	$ -
37	**Sub-Total**					**$ 85,152.00**	**80.76%**	$ 3,041.14	**$ 85,152.00**	$ -
38	Subcontractor - Payment and Performance Bond (For work over $100,000)	0.00%				$ -	0.00%	$ -	$ -	$ -
39	**Sub-Total**					**$ 85,152.00**	**80.76%**	$ 3,041.14	**$ 85,152.00**	$ -
40	Carbon Neutral Design & Construction Allowance - carried below construction total - see below	0.00%				$ -	0.00%	$ -	$ -	$ -

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Percent of Total Construction Cost	Cost Per Total Bldg Sq. Ft.	Previous Estimate 12/30/2022	Variance
41	**Sub-Total**					**$ 85,152.00**	**80.76%**	$ 3,041.14	**$ 85,152.00**	$ -
42	Construction Cost Escalation - Construction to Start June 2022	3.52%				$ 2,994.63	2.84%	$ 106.95	$ 2,994.63	$ -
43	**Sub-Total**					**$ 88,146.63**	**83.60%**	$ 3,148.09	**$ 88,146.63**	$ -
44	Cost Estimate Contingency	10.00%				$ 8,814.66	8.36%	$ 314.81	$ 8,814.66	$ -
45	**Sub-Total**					**$ 96,961.29**	**91.96%**	$ 3,462.90	**$ 96,961.29**	$ -
46	Building Permit Excluding MEP Trades - Exempt	$ -			per thousand	$ -	0.00%	$ -	$ -	$ -
47	Builder's Risk Insurance	0.00%			By Owner	$ -	0.00%	$ -	**$ -**	$ -
48	General & Professional Liability Insurance	1.10%				$ 1,066.57	1.01%	$ 38.09	**$ 1,066.57**	$ -
49	**Sub-Total**					**$ 98,027.86**	**92.97%**	$ 3,501.00	**$ 98,027.86**	$ -
50	Construction Management Fee	6.50%				$ 6,371.81	6.04%	$ 227.56	$ 6,371.81	$ -
51	**Sub-Total**					**$ 104,399.67**	**99.01%**	$ 3,728.56	**$ 104,399.67**	$ -
52	Connecticut State Tax - Exempt	0.00%				$0.00	0.00%	$ -	**$ -**	$ -
53	**Sub-Total**					**$ 104,399.67**	**99.01%**	$ 3,728.56	**$ 104,399.67**	$ -
54	Payment and Performance Bond	1.00%				$1,044	0.99%	$ 37.29	$ 1,044.00	$ -
55	**Pre-Design Probability Estimate Total**					**$ 105,443.67**	**100.00%**	$ 3,765.85	**$ 105,443.67**	**$ -**

RECONSTRUCT STATE POLICE FIRING RANGE

PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE

200yd NEW CANOPY ESTIMATE - CSI FORMAT

Construction Cost Solutions, LLC

RECONSTRUCT STATE POLICE - REPLACE 200yd CANOPY STRUCTURE
100 Nod Road, Simsbury, CT
PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE
January 13, 2022

Area Description	Sq. Ft.	Perimeter
Pistol Range Backstop Canopy	3,143	484
Total Gross Square Foot Summary	3,143	

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Percent of Total Construction Cost	Cost Per Total Bldg Sq. Ft.	Previous Estimate 12/30/2022	Variance
1	**02 00 00 EXISTING CONDITIONS AND DEMOLITION**									
2	**Building Demolition**									
3	- Demolish existing Backstop - heavy timber frame, wood roof joists, plywood sheathing, asphalt shingles, rubber tire column wraps	3,143.00		$ 4.80	$ 15,086.40					
4	- Existing armored barrier in front of the Backstop to remain in place		n/a	$ -	$ -					
5	Building Demolition - Subtotal					$ 15,086.40	6.08%	$ 4.80	$ 15,086.40	$ -
6	**Hazardous Material Abatement**									
7	Hazardous Waste Testing, Abatement, Removal & Disposal		not included	$ -	$ -					
8	HAZMAT - Subtotal					$ -	0.00%	$ -	$ -	$ -
9	**EXISTING CONDITIONS AND DEMOLITION**					**$ 15,086.40**	**6.08%**	**$ 4.80**	**$ 15,086.40**	**$ -**
10										
11	**03 00 00 FOUNDATIONS AND CONCRETE**									
12	**Foundations**									
13	Foundations for proposed structure - Column Footings	24.00	ea	$ 600.00	$ 14,400.00					
14	Foundations - Subtotal					$ 14,400.00	5.80%	$ 4.58	$ 14,400.00	$ -
15	**FOUNDATIONS AND CONCRETE**					**$ 14,400.00**	**5.80%**	**$ 4.58**	**$ 14,400.00**	**$ -**
16										
17	**05 00 00 METALS**									
18	**Structural Steel:**									
19	Structural Steel		n/a	$ -	$ -					
20	- Add galvanizing		n/a	$ -	$ -					
21	Structural Steel - Subtotal					$ -	0.00%	$ -	$ -	$ -
22	**METALS**					**$ -**	**0.00%**	**$ -**	**$ -**	**$ -**
23										
24	**06 00 00 WOODS, PLASTICS AND COMPOSITES**									
25	**Timber Framing**									
26	Timber Frame	3,143.00	sf	$ 26.00	$ 81,718.00					
27	Roof Sheathing	3,300.15	sf	$ 6.00	$ 19,800.90					
28	Timber Framing - Subtotal					$ 101,518.90	40.92%	$ 32.30	$ 101,518.90	
29	**WOODS, PLASTICS AND COMPOSITES**					**$ 101,518.90**	**40.92%**	**$ 32.30**	**$ 101,518.90**	**$ -**
30										
31	**07 00 00 THERMAL AND MOISTURE PROTECTION**									
32	**Asphalt Roofing Systems**									
33	50yr asphalt roofing	33.00	sq	$ 1,140.00	$ 37,621.71					
34	Asphalt Roofing Systems - Subtotal					$ 37,621.71	15.17%	$ 11.97	$ 37,621.71	$ -
35	**Siding/Exterior Wall Panels**									
36	Siding		n/a	$ -	$ -					
37	Siding/Exterior Wall Panels - Subtotal					$ -	0.00%	$ -	$ -	$ -
38	**THERMAL AND MOISTURE PROTECTION**					**$ 37,621.71**	**15.17%**	**$ 11.97**	**$ 37,621.71**	**$ -**
39										

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Percent of Total Construction Cost	Cost Per Total Bldg Sq. Ft.	Previous Estimate 12/30/2022	Variance
40	**09 00 00 FINISHES**									
41	**Painting/Wall covering**									
42	Paint timber structure		n/a	$ -	$ -					
43	Painting/Wall covering - Subtotal					$ -	0.00%	$ -	$ -	$ -
44	**FINISHES**					**$ -**	**0.00%**	**$ -**	**$ -**	**$ -**
45										
46	**31 00 00 SITEWORK**									
47	**Earthwork for Building**									
48	Prep for building columns	3,143.00	sf	$ 9.00	$ 28,287.00					
49	Earthwork for Building - Subtotal					$ 28,287.00	11.40%	$ 9.00	$ 28,287.00	$ -
50	**Fencing**									
51	Fenced in Storage Enclosure	84.00	lf	$ 30.00	$ 2,520.00					
52	Gate	1.00	ea	$ 900.00	$ 900.00					
53	Fencing - Subtotal					$ 3,420.00	1.38%	$ 1.09	$ 3,420.00	$ -
54	**SITEWORK**					**$ 31,707.00**	**12.78%**	**$ 10.09**	**$ 31,707.00**	**$ -**
55	**Crosscheck & Sub-Total @ Cost**				**$ 200,334.01**	**$ 200,334.01**	**80.76%**	$ 63.74	**$ 200,334.01**	**$ -**
56	**Crosscheck & % of Total & Cost per SF**									
57	General Conditions and General Requirements	0.00%				$ -	0.00%	$ -	$ -	$ -
58	**Sub-Total**					**$ 200,334.01**	**80.76%**	$ 63.74	**$ 200,334.01**	$ -
59	Subcontractor - Payment and Performance Bond (For work over $100,000)	0.00%				$ -	0.00%	$ -	$ -	$ -
60	**Sub-Total**					**$ 200,334.01**	**80.76%**	$ 63.74	**$ 200,334.01**	$ -
61	Carbon Neutral Design & Construction Allowance - carried below construction total - see below	0.00%				$ -	0.00%	$ -	$ -	$ -
62	**Sub-Total**					**$ 200,334.01**	**80.76%**	$ 63.74	**$ 200,334.01**	$ -
63	Construction Cost Escalation - Construction to Start June 2022	3.52%				$ 7,045.35	2.84%	$ 2.24	$ 7,045.35	$ -
64	**Sub-Total**					**$ 207,379.36**	**83.60%**	$ 65.98	**$ 207,379.36**	$ -
65	Cost Estimate Contingency	10.00%				$ 20,737.94	8.36%	$ 6.60	$ 20,737.94	$ -
66	**Sub-Total**					**$ 228,117.29**	**91.96%**	$ 72.58	**$ 228,117.29**	$ -
67	Building Permit Excluding MEP Trades - Exempt	$ -			per thousand	$ -	0.00%	$ -	$ -	$ -
68	Builder's Risk Insurance	0.00%			By Owner	$ -	0.00%	$ -	**$ -**	$ -
69	General & Professional Liability Insurance	1.10%				$ 2,509.29	1.01%	$ 0.80	**$ 2,509.29**	$ -
70	**Sub-Total**					**$ 230,626.58**	**92.97%**	$ 73.38	**$ 230,626.58**	$ -
71	Construction Management Fee	6.50%				$ 14,990.73	6.04%	$ 4.77	$ 14,990.73	$ -
72	**Sub-Total**					**$ 245,617.31**	**99.01%**	$ 78.15	**$ 245,617.31**	$ -
73	Connecticut State Tax - Exempt	0.00%				$0.00	0.00%	$ -	**$ -**	$ -
74	**Sub-Total**					**$ 245,617.31**	**99.01%**	$ 78.15	**$ 245,617.31**	$ -
75	Payment and Performance Bond	1.00%				$2,456	0.99%	$ 0.78	$ 2,456.17	$ -
76	**Pre-Design Probability Estimate Total**					**$ 248,073.48**	**100.00%**	$ 78.93	**$ 248,073.48**	**$ -**

RECONSTRUCT STATE POLICE FIRING RANGE

PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE

SITEWORK DETAIL
CSI FORMAT

Construction Cost Solutions, LLC

RECONSTRUCT STATE POLICE FIRING RANGE - SITE DETAIL
100 Nod Road, Simsbury, CT
PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE
1/13/2022

Area Description	Acres	Perimeter
Site Area #1	12.50	4,528
Total Gross Square Foot Summary	12.50	

Yellow highlight = Revised Line Item

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Cost Per Acre	Previous Estimate 12/30/2022	Variance
1	**31 00 00 SITEWORK**								
2	**Building Demolition**								
3	- Demolish range house, decks and foundations	2,893.00	sf	$ 6.00	$ 17,358.00				
4	- Demolish connex boxes	1,375.00	sf	$ 6.00	$ 8,250.00				
5	- Demolish Connex Boxes supporting wood structure	1,375.00	sf	$ 6.00	$ 8,250.00				
6	- Demolish temporary trailers	595.00	sf	$ 6.00	$ 3,570.00				
7	- Demolish existing Backstop - heavy timber frame, wood roof joists, plywood sheathing, asphalt shingles, rubber tire column wraps		w/other estimate	$ -	$ -				
8	- Demolish existing armored barrier in front of the Backstop		not required	$ -	$ -				
9	- Demolish rifle range canopy and storage building		w/other estimate	$ -	$ -				
10	Building Demolition - Subtotal					$ 37,428.00	$ 2,994.24	$ 71,610.00	$ (34,182.00)
11	**Hazardous Material Abatement**								
12	ADD Hazardous Waste Testing, Abatement, Removal & Disposal - allowance	1.00	lsum	$ 20,000.00	$ 20,000.00				
13	HAZMAT - Subtotal					$ 20,000.00	$ 1,600.00	$ -	$ 20,000.00
14	**General Earthwork**								
15	Mobilization	16.00	chrs	$ 816.00	$ 13,056.00				
16	Engineering and Layout	4.00	acre	$ 4,500.00	$ 18,000.00				
17	Erosion Control (Silt Fencing)	1,509.33	lf	$ 2.40	$ 3,622.40				
18	Anti Tracking Pad	1.00	ea	$ 1,800.00	$ 1,800.00				
19	Dust Control	10.00	months	$ 649.50	$ 6,495.00				
20	Tree Protection	500.00	lf	$ 5.70	$ 2,850.00				
21	Snow Removal		n/a	$ -	$ -				
22	Site Demolition & Removals (over and above building demo and bituminous pavement removal): site light poles, conduits, etc	40.00	chrs	$ 432.00	$ 17,280.00				
23	Remove underground tanks		n/a	$ -	$ -				
24	Site Clearing	1.00	Acre	$ 9,000.00	$ 9,000.00				
25	General Earthwork - Subtotal					$ 72,103.40	$ 5,768.27	$ 72,103.40	$ -
26	**Soil Management**								
27	Off-Site Soil Disposal	1.00	lsum	$ 20,000.00	$ 20,000.00				
28	Soil Management - Subtotal					$ 20,000.00	$ 1,600.00	$ -	$ 20,000.00
29	**Earthwork for Building**								

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Cost Per Acre	Previous Estimate 12/30/2022	Variance
30	Earthwork for Building		w/building	$ -	$ -				
31	Earthwork for Building - Subtotal					$ -	$ -	$ -	$ -
32	**Mass Excavation**								
33	Strip Top Soil - Average 6" thick	1,126.67	cy	$ 10.80	$ 12,168.00				
34	Dewatering		n/a	$ -	$ -				
35	Mass Excavation			$ -	$ -				
36	- Minor grading	120.00	chrs	$ 300.00	$ 36,000.00				
37	Earthwork/Rock Blasting		not included	$ -	$ -				
38	Respread Top Soil and Grade	7,730.67	sy	$ 2.04	$ 15,770.56				
39	- Top Soil Import	194.13	cy	$ 42.00	$ 8,153.60				
40	Mass Excavation - Subtotal					$ 72,092.16	$ 5,767.37	$ 72,092.16	$ -
41	**Site Utilities**								
42	**Utility Relocations**								
43	Utility Relocation		n/a	$ -	$ -				
44	Utility Relocation Allowance - Sub Total					$ -	$ -	$ -	$ -
45				$ -	$ -				
46	**Water Services**		n/a	$ -	$ -				
47	Drill new well	650.00	lf	$ 36.00	$ 23,400.00				
48	Water Service - 4" domestic	150.00	lf	$ 114.00	$ 17,100.00				
49	Water Service - 6" fire	150.00	lf	$ 126.00	$ 18,900.00				
50	Water Services - Subtotal					$ 59,400.00	$ 4,752.00	$ 59,400.00	$ -
51				$ -	$ -				
52	**Foundation drainage system**			$ -	$ -				
53	Foundation drain system		n/a	$ -	$ -				
54	Foundation drainage system - Subtotal					$ -	$ -	$ -	$ -
55				$ -	$ -				
56	**Trenching for underslab utilities**		n/a	$ -	$ -				
57	- Sand cushion			$ -	$ -				
58	Trenching for Underslab Utilities - Subtotal					$ -	$ -	$ -	$ -
59				$ -	$ -				
60	**Site Storm Drainage - Roof Drainage**			$ -	$ -				
61	Roof drainage to drain at grade		n/a	$ -	$ -				
62	Roof Drainage - Subtotal					$ -	$ -	$ -	$ -
63				$ -	$ -				
64	**Site Storm Drainage**			$ -	$ -				
65	Storm drainage to flow on grade		n/a	$ -	$ -				
66	Site Storm Drainage - Subtotal					$ -	$ -	$ -	$ -
67				$ -	$ -				
68	**Sanitary Sewer System**			$ -	$ -				
69	Sanitary Sewer - Structures - Above Ground Septic Tank	1.00	ea	$ 30,000.00	$ 30,000.00				
70	Sanitary Sewer - Piping - 6" DR-18 PVC	150.00	lf	$ 76.80	$ 11,520.00				
71	Sanitary - Stone bedding	44.80	tons	$ 48.00	$ 2,150.40				
72	Sanitary - Sand cushion	26.67	cy	$ 42.00	$ 1,120.00				
73	Sanitary Sewer - Subtotal					$ 44,790.40	$ 3,583.23	$ 44,790.40	$ -
74				$ -	$ -				

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Cost Per Acre	Previous Estimate 12/30/2022	Variance
75	**Site Electrical**			$ -	$ -				
76	Transformer Pad	1.00	ea	$ 3,000.00	$ 3,000.00				
77	Tele/data trenching	245.00	lf	$ 15.84	$ 3,880.80				
78	- Sand cushion	43.56	cy	$ 42.00	$ 1,829.33				
79	Electrical trenching - primary		n/a	$ -	$ -				
80	- Sand cushion		cy	$ -	$ -				
81	Electrical trenching - secondary		n/a	$ -	$ -				
82	- Sand cushion		cy	$ -	$ -				
83	Precast Light Pole Bases - Parking	10.00	ea	$ 1,140.00	$ 11,400.00				
84	Precast Light Pole Bases - Pistol Deck	6.00	ea	$ 1,140.00	$ 6,840.00				
85	5.3 Exterior Lighting - Parking Lot			$ -	$ -				
86	- Site Lighting Trenching - conduit by electrical	735.00	lf	$ 15.84	$ 11,642.40				
87	- Sand cushion	130.67	cy	$ 42.00	$ 5,488.00				
88	- Site Lighting Poles - single head		w/electrical	$ -	$ -				
89	Site Lighting - Bollard Lighting		n/a	$ -	$ -				
90	Site Lighting Conduit and wire		w/electrical	$ -	$ -				
91	5.4 Exterior Lighting - Pistol Deck			$ -	$ -				
92	- Site Lighting Trenching - conduit by electrical	610.00	lf	$ 15.84	$ 9,662.40				
93	- Sand cushion	108.44	cy	$ 42.00	$ 4,554.67				
94	- Site Lighting Poles - single head		w/electrical	$ -	$ -				
95	Site Lighting - Bollard Lighting		n/a	$ -	$ -				
96	Site Lighting Conduit and wire		w/electrical	$ -	$ -				
97	Site Electrical - Subtotal					$ 58,297.60	$ 4,663.81	$ 58,297.60	$ -
98				$ -	$ -				
99	**Support Services for Utility Work**			$ -	$ -				
100	Traffic Control - City Police Officer for work in the street		n/a	$ -	$ -				
101	Support Services for Utility Work - Subtotal				$ -	$ -	$ -	$ -	$ -
102				$ -	$ -				
103	**Paving, Curbs & Walks**				$ -				
104	5.4 Entry Drives			$ -	$ -				
105	Milling/Reclaiming			$ -	$ -				
106	- Reclaim	2,711.33	sy	$ 1.50	$ 4,067.00				
107	Prep and Pave			$ -	$ -				
108	- Box and Grade subbase	18,141.00	sf	$ 1.20	$ 21,769.20				
109	- Geofabric	2,015.67	sy	$ 2.10	$ 4,232.90				
110	- 6" Process Aggregate	403.13	cy	$ 33.60	$ 13,545.28				
111	- 14" Gravel Base - reuse on site material	1,258.06	cy	$ (27.60)	$ (34,722.42)				
112	- Fine Grade base	18,141.00	sf	$ 1.20	$ 21,769.20				
113	- 4" thick 2-course Bituminous Paving - Paving only - Furnish and Install - per ton	268.76	tons	$ 150.00	$ 40,313.33				
114	5.4 Parking			$ -	$ -				
115	Milling/Reclaiming			$ -	$ -				
116	- Reclaim		w/entry drive	$ -	$ -				
117	Prep and Pave			$ -	$ -				

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Cost Per Acre	Previous Estimate 12/30/2022	Variance
118	- Box and Grade subbase	11,243.00	sf	$ 1.20	$ 13,491.60				
119	- Geofabric	1,249.22	sy	$ 2.10	$ 2,623.37				
120	- 4" Process Aggregate	164.90	cy	$ 33.60	$ 5,540.55				
121	- 10" Gravel Base - reuse on site material	3,732.68	cy	$ (27.60)	$ (103,021.86)				
122	- Fine Grade base	11,243.00	sf	$ 1.20	$ 13,491.60				
123	- 3" thick 2-course Bituminous Paving - Paving only - Furnish and Install - per ton	145.74	tons	$ 150.00	$ 21,861.39				
124	5.4 Pistol Deck Paving			$ -	$ -				
125	Milling/Reclaiming			$ -	$ -				
126	- Reclaim	4,119.22	sy	$ 1.50	$ 6,178.83				
127	Prep and Pave			$ -	$ -				
128	- Box and Grade subbase	33,958.00	sf	$ 1.20	$ 40,749.60				
129	- Geofabric	3,773.11	sy	$ 2.10	$ 7,923.53				
130	- 3" Process Aggregate	377.31	cy	$ 33.60	$ 12,677.65				
131	- 3" Gravel Base - reuse on site material	411.92	cy	$ (27.60)	$ (11,369.05)				
132	- Fine Grade base	33,958.00	sf	$ 1.20	$ 40,749.60				
133	- 3" thick 2-course Bituminous Paving - Paving only - Furnish and Install - per ton	1,261.30	tons	$ 150.00	$ 189,194.44				
134	5.5 Access Road Improvement (remove, regrade, pave with gravel or stone dust)			$ -	$ -				
135	- Box and Grade subbase (including the site and parking)	48,910.00	sf	$ 1.20	$ 58,692.00				
136	- Supplement 50% stone dust	24,455.00	sf	$ 2.70	$ 66,028.50				
137	5.5 Access Lane Improvement (remove, reduce width, regrade, pave with gravel or stone dust)			$ -	$ -				
138	- Box and Grade subbase (including the site and parking)	9,500.00	sf	$ 1.20	$ 11,400.00				
139	- Supplement 50% stone dust	4,750.00	sf	$ 2.70	$ 12,825.00				
140	Sweep Paved Areas	63,342.00	sf	$ 0.03	$ 2,111.40				
141	Excavate and backfill integral curb	125.00	lf	$ 14.40	$ 1,800.00				
142	Concrete for integral curb at concrete sidewalks	3.47	cy	$ 540.00	$ 1,875.00				
143	5" concrete sidewalks - standard	625.00	sf	$ 5.10	$ 3,187.50				
144	- Box and Grade	625.00	sf	$ 1.50	$ 937.50				
145	- 6" Process Aggregate Base	11.57	cy	$ 30.00	$ 347.22				
146	- Detectable warning surface	36.00	sf	$ 9.60	$ 345.60				
147	Paving, Curbs & Walks - Subtotal					$ 470,615.48	$ 37,649.24	$ 470,615.48	$ -
148	**Site Improvements**								
149	Line Painting - per space - new	61.00	ea	$ 42.00	$ 2,562.00				
150	Line Painting - 4" line	200.00	lf	$ 1.98	$ 396.00				
151	Line Painting - x-hatch	162.00	sf	$ 0.90	$ 145.80				
152	Line Painting - HC Symbol	2.00	ea	$ 60.00	$ 120.00				
153	Line Painting - Arrows	4.00	ea	$ 60.00	$ 240.00				
154	Line Painting - cross walk	70.00	lf	$ 12.00	$ 840.00				
155	Line Painting - stop bar	12.00	lf	$ 12.00	$ 144.00				
156	Signage - directional/handicap	11.00	ea	$ 300.00	$ 3,300.00				
157	Signage - bollard signs	2.00	ea	$ 900.00	$ 1,800.00				
158	5.2 Road Side Signage			$ -	$ -				

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Cost Per Acre	Previous Estimate 12/30/2022	Variance
159	- Remove existing sign, reinstall into new trim along property line in a location were it is easily visible to both directions of travel on Nod Road	1.00	ls	$ 9,000.00	$ 9,000.00				
160	Bollards	6.00	ea	$ 1,140.00	$ 6,840.00				
161	Wheel Stops		n/a	$ -	$ -				
162	5.1 Roadside Security Fencing:			$ -	$ -				
163	- 6' high tubular black aluminum security fence at the property line along Nod Road	315.00	lf	$ 180.00	$ 56,700.00				
164	- 6' high tubular black aluminum security fence returns from Nod Road to the brick columns at the main entry	200.00	lf	$ 180.00	$ 36,000.00				
165	- Simple vehicle/barrier swinging gate at entrance - MAYBE TWO	2.00	ea	$ 5,400.00	$ 10,800.00				
166	Flag Pole - 25'-30' - Aluminum	1.00	ea	$ 5,400.00	$ 5,400.00				
167	Bike Racks	3.00	ea	$ 1,320.00	$ 3,960.00				
168	Site Improvements - Subtotal					$ 138,247.80	$ 11,059.82	$ 138,247.80	
169	**Landscaping**								
170	Landscaping Allowance	1.00	ls	$ 30,000.00	$ 30,000.00				
171	Irrigation for lawn and plantings		n/a	$ -	$ -				
172	Seeding	69,576.00	sf	$ 0.30	$ 20,872.80				
173	5.5 Rifle Range: Employ an arborist to manage the foliage (i.e. miscellaneous trimming) and remove any dead and dying trees from the range perimeter - allowance	1.00	ls	$ 18,000.00	$ 18,000.00				
174	Landscaping - Subtotal					$ 68,872.80	$ 5,509.82	$ 68,872.80	$ -
175	**SITEWORK**					**$ 1,061,847.64**	**$ 84,947.81**	**$ 1,056,029.64**	**$ 5,818.00**
176									
177	**04 00 00 SITE MASONRY**								
178	**Site Masonry**								
179	Site Masonry - clean up entry columns	2.00	ea	$ 6,000.00	$ 12,000.00				
180	Site Masonry - Subtotal					$ 12,000.00	$ 960.00	$ 12,000.00	$ -
181	**MASONRY**					**$ 12,000.00**	**$ 960.00**	**$ 12,000.00**	**$ -**
182									
183	**26 00 00 ELECTRICAL**								
184	Transformer pad grounding	1.00	ea	$ 1,245.56	$ 1,245.56				
185	Telecomm service 2x 4" PVC Duct bank	245.00	lf	$ 26.15	$ 6,406.26				
186				$ -	$ -				
187	5.3 Exterior Lighting - Parking Lot			$ -	$ -				
188	- 16' tall aluminum light poles with Photocell LED fixtures	10.00	ea	$ 12,600.00	$ 126,000.00				
189	- Site lighting branch 1" 4#8	732.00	lf	$ 6.87	$ 5,028.49				
190	5.4 Exterior Lighting - Pistol Deck Perimeter			$ -	$ -				
191	- 16' tall aluminum light poles with Photocell LED fixtures - bullet resistant	6.00	ea	$ 12,600.00	$ 75,600.00				
192	- Lighting Controls accessible from both ground level of the Deck as well as the Observation Room of the building to allow for shooting at night	1.00	ls	$ 9,000.00	$ 9,000.00				
193	- Site lighting branch 1" 4#8	607.00	lf	$ 6.87	$ 4,169.80				
194	Electrical - Sub Total					$ 227,450.11	$ 18,196.01	$ 227,450.11	$ -
195	**ELECTRICAL**					**$ 227,450.11**	**$ 18,196.01**	**$ 227,450.11**	**$ -**
196									

Line Item No.	Description	Total Quantity	Unit Description	Total Unit Price For This Line Item	Total Cost By Line Item	Pre-Design Probability Estimate 1/13/2022	Cost Per Acre	Previous Estimate 12/30/2022	Variance
197	**35 00 00 ALLOWANCES**								
198	Allowances		w/various	$ -	$ -				
199	Allowances - Sub Total					$ -	$ -	$ -	$ -
200	**ALLOWANCES**					**$ -**	**$ -**	**$ -**	**$ -**
201	**Crosscheck & Sub-Total @ Cost**				**$ 1,301,297.75**	**$ 1,301,297.75**	$104,103.82	**$ 1,295,479.75**	**$ 5,818.00**
202	**Crosscheck & % of Total & Cost per SF**								
203	General Conditions and General Requirements	0.00%				$ -	$ -	$ -	$ -
204	**Sub-Total**					**$ 1,301,297.75**	$104,103.82	**$ 1,295,479.75**	$ 5,818.00
205	Subcontractor - Payment and Performance Bond (For work over $100,000)	0.00%				$ -	$ -	$ -	$ -
206	**Sub-Total**					**$ 1,301,297.75**	$104,103.82	**$ 1,295,479.75**	$ 5,818.00
207	Carbon Neutral Design & Construction Allowance - carried below construction total - see below	0.00%				$ -	$ -	$ -	$ -
208	**Sub-Total**					**$ 1,301,297.75**	$104,103.82	**$ 1,295,479.75**	$ 5,818.00
209	Construction Cost Escalation - Construction to Start June 2022	3.52%				$ 45,764.04	$ 3,661.12	$ 45,559.43	$ 204.61
210	**Sub-Total**					**$ 1,347,061.79**	$107,764.94	**$ 1,341,039.18**	$ 6,022.61
211	Cost Estimate Contingency	10.00%				$ 134,706.18	$ 10,776.49	$ 134,103.92	$ 602.26
212	**Sub-Total**					**$ 1,481,767.96**	$118,541.44	**$ 1,475,143.10**	$ 6,624.87
213	Building Permit Excluding MEP Trades - Exempt	$ -			per thousand	$ -	$ -	$ -	$ -
214	Builder's Risk Insurance	0.00%			By Owner	$ -	$ -	**$ -**	$ -
215	General & Professional Liability Insurance	1.10%				$ 9,484.28	$ 758.74	**$ 9,357.61**	$ 126.67
216	**Sub-Total**					**$ 1,491,252.24**	$119,300.18	**$ 1,484,500.71**	$ 6,751.53
217	Construction Management Fee	6.50%				$ 96,931.40	$ 7,754.51	$ 96,492.55	$ 438.85
218	**Sub-Total**					**$ 1,588,183.64**	$127,054.69	**$ 1,580,993.26**	$ 7,190.38
219	Connecticut State Tax - Exempt	0%				$0.00	$ -	**$ -**	$ -
220	**Sub-Total**					**$ 1,588,183.64**	$127,054.69	**$ 1,580,993.26**	$ 7,190.38
221	Payment and Performance Bond	1.00%				$15,882	$ 1,270.55	$ 15,809.93	$ 71.90
222	**Pre-Design Probability Estimate Total**					**$ 1,604,065.48**	$128,325.24	**$ 1,596,803.19**	**$ 7,262.29**

RECONSTRUCT STATE POLICE FIRING RANGE

PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE

BASIS OF ESTIMATE

Construction Cost Solutions, LLC

RECONSTRUCT STATE POLICE FIRING RANGE
PRE-DESIGN STUDY PROBABLE COST - CONSTRUCTION COST ESTIMATE
BASIS OF ESTIMATE
1/13/2022

Basis of Estimating

1 This estimate is based upon:
2 - Pre-Design Study prepared by GZA Geoenvironmental, Inc and Maier Design Group, LLC dated 11/7/2021.
3 Cost estimating is based on the measurement and quantities from the drawings wherever possible.
4 Costs are formulated from current and historical cost data on products and materials.
thoroughly designed in this iteration of the documents. As the scope and
5 documentation is developed the contingency will be reduced to ultimately zero
6 Escalation is derived from a 25-year cost escalation index from Design Cost Data.

Mark-Up Costs included in this cost estimate

1	General Conditions and General Requirements	12.00%	
2	SubGuard Insurance	0.00%	
3	Site Logistics Factor	0.00%	
4	Construction Cost Escalation - Construction to Start June 2022	3.52%	
5	Cost Estimate Contingency	10.00%	
6	Building Permit Fee - Exempt	$0.00	per $1,000
7	Builder's Risk Insurance - Not included, to be carried by Owner	0.00%	
8	Contractor General & Professional Liability Insurance	1.10%	
9	Contractor Overhead & Profit / Construction Management Fee	6.50%	
10	Connecticut State Tax - exempt	0.00%	
11	Payment and Performance Bond	1.00%	

Allowances included in this cost estimate

1	FFE Allowance: Shelving/Storage systems, AV Systems, Furniture, etc	$165,000
2	Technology	$ 80,000
3	Weapons Vault & Vault Doors - Allowance	$ 9,000
4	Landscaping Allowance	$ 30,000
5	Arborist Allowance	$ 18,000
6	Carbon Neutral Design and Construction Allowance	$250,000
7	Hazmat - building demo	$ 20,000
8	Soil Management	$ 20,000

Clarifications

1 General conditions costs can vary widely depending upon the sophistication of the selected contractor. This estimate accounts for a contractor that is appropriate for the type and size of the construction project.
2 Specific inclusions and exclusions are as per the line items included in the detailed estimate.
3 The construction costs in this estimate represent the fair market value and are not intended to be a prediction of the
4 The costs include: labor, material, equipment, and the subcontractor's overhead and profit.
Pricing assumes competitive bidding on all elements of the construction work, assuming a minimum of three competitive
5 bidders for all general contractors, subcontractors, materials, and vendors.
6 Prices can be expected to be higher due to the lack of competition if fewer bids are received or solicited.
7 Regular work hours are included.
8 Prevailing wage is included.
9 CMU walls are included at the perimeter and interior walls at the Weapons Storage Vault and the Ammo Storage Room.

Exclusions

1 Design and engineering fees are not included.
2 Removal and replacement of unsuitable soil materials.
3 Extra materials over and above industry standards.
4 Unforeseen conditions.
5 Additional liability insurance is not included.
6 Off hour/premium time is not included.
7 Hazardous material abatement is not included.
8 Premium costs for "quick ship" of materials and/or equipment are not included.
9 Removal, storage, and reinstallation of Owner contents.
10 Removal, replacement, and/or repairs to the existing armored barrier and moving target system is not included.
11 Pistol deck canopy and secondary berm is not included as per the firing range report.
12 Soft costs are not included including but not limited to: furniture, AV equipment, workstations, side tables, chairs, desks,
13 Observation equipment, monitors, displays, scopes, cameras and all associated raceways, wiring, and terminations are not included.
14 Removal and replacement of site retaining walls is not included.
15 Deep dynamic compaction (DDC) is not included.
16 Temporary heat or hot water is not included.
17 Spray foam insulation is not included.
18 Intumescent paint is not included.
19 Bullet resistant windows and glazing is not included.
20 Graphics branding is not included.
21 Storage shelving is assumed to part of the FFE allowance.
22 Modifications, repairs, and/or replacement of the 50 yard range sidewalls is not included.
23 Painting the 50yd Pistol Range Canopy Steel is not included. Galvanized steel is assumed.
24 An engineered dewatering and/or well point dewatering system is not included.
25 Utility fees are not included.
26 A structural steel superstructure is not included.
27 Remdiation or reconstruction of the existing trap (earth berm) is not included.
28 Providing a concrete pad under the existing trap (earth berm) is not included.
29 Controlling run off at the trap (earth berm) is not included.
30 Tactical baffles are not included.
31 Targets are not included.
32 Range equipment is not icluded.