

**ENVIRONMENTAL ASSESSMENT
FOR**

**United States Air Force Academy (USAFA)
Combat Survival Training (CST)**

Draft



PREPARED BY:
U.S. Air Force

January 2024

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COVER SHEET

ENVIRONMENTAL ASSESSMENT

UNITED STATES (U.S.) AIR FORCE ACADEMY (USAFA) COMBAT SURVIVAL TRAINING (CST)

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- b. Proposed Action: United States Air Force Academy (USAFA) Combat Survival Training (CST)
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Abstract: The Survival, Evasion, Resistance, and Escape (SERE) training capacity of the USAF does not meet current or projected demands, and there is a backlog of USAFA Cadets and Airmen who require this training. To increase its overall SERE training capacity and streamline the aircrew training timeline pipeline, the USAF proposes to implement a CST program at USAFA that trains Cadets in long-term survival and evasion through land survival, water survival, and emergency parachute training. Land survival training already occurs at USAFA and would continue to operate with no new requirements under the Proposed Action. This EA evaluates the potential environmental impacts associated with three alternatives for this Proposed Action: Alternative 1 (Preferred Alternative), Alternative 2, and the No Action Alternative.

Under the Preferred Alternative, the USAF would construct and operate water survival training facilities on the northwest bank of Kettle Lake #3, while emergency parachute training would occur at a separate new facility, constructed within the Davis Airfield. Under Alternative 2, water survival training would take place on the south bank of Kettle Lake #3, while emergency parachute training would occur at a new facility constructed within the Davis Airfield (as under the Preferred Alternative) or in Jacks Valley, where portions of land survival training occur. The Preferred Alternative and Alternative 2 would also require additional storage of equipment and materials on USAFA; the potential locations for this storage are the same for both alternatives. Under the No Action Alternative, the USAF would not implement a CST program at USAFA, and the USAF's SERE training program would continue to operate at insufficient capacity.

The following environmental resources were analyzed in the EA: visual resources, airspace, air quality and climate, noise, earth resources, water resources, biological resources, cultural resources, land use and recreation, utilities, and socioeconomics and environmental justice. The USAF determined that transportation would not be meaningfully or measurably affected by the Proposed Action and dismissed this resource from detailed analysis. Based on the analysis presented in this EA, the USAF determined that with incorporation of best management practices and minimization measures, the Proposed Action would have no significant impacts on the human or natural environment.

This Draft EA and Draft Finding of No Significant Impact/Finding of No Practicable Alternative are available on the USAFA website at <https://www.usafa.af.mil>.

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ABBREVIATIONS AND ACRONYMS

ACAM	Air Conformity Applicability Model	dB	Decibel
AETC	Air Education Training Command	dBA	A-Weighted Decibel Scale
AFB	Air Force Base	DNL	Day-Night Sound Level
AFI	Air Force Instruction	DoD	Department of Defense
AFMAN	Air Force Manual	DoDI	Department of Defense Instruction
AFPD	Air Force Policy Directive	EA	Environmental Assessment
AICUZ	Air Installation Compatible Use Zone	EIAP	Environmental Impact Analysis Process
APE	Area of Potential Effects	EISA	Energy Independence and Security Act
APZ	Accident Potential Zones	EJ	Environmental Justice
BASH	Bird Aircraft Strike Hazard	EO	Executive Order
BCC	Birds of Conservation Concern	ERP	Environmental Restoration Program
BMP	Best Management Practice	ESA	Endangered Species Act
BA	Biological Assessment	FAA	Federal Aviation Administration
BO	Biological Opinion	FICUN	Federal Interagency Committee on Urban Noise
CAA	Clean Air Act	FONSI	Finding of No Significant Impact
CDOT	Colorado Department of Transportation	FONPA	Finding of No Practicable Alternative
CDPHE	Colorado Department of Public Health and Environment	FPPA	Farmland Protection Policy Act
CDWR	Colorado Division of Water Resources	GHG	Greenhouse Gas
CEQ	Council on Environmental Quality	GWP	Global Warming Potential
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980	HAP	Hazardous Air Pollutant
CFR	Code of Federal Regulations	HTMW	Hazardous and Toxic Materials and Waste
CGP	Construction General Permit	HUD	Housing and Urban Development
CNHP	Colorado Natural Heritage Program	HWMP	Hazardous Waste Management Plan
CPW	Colorado Department of Parks and Wildlife	I-25	Interstate 25
CST	Combat Survival Training	ICRMP	Integrated Cultural Resources Management Plan
CSU	Colorado Springs Utilities	IDP	Installation Development Plan
CZ	Clear Zone	IFR	Instrument Flight Rule

INRMP	Integrated Natural Resources Management Plan	ROI	Region of Influence
		SERE	Survival, Evasion, Resistance, and Escape
IPAC	Information for Planning and Consultation	SHPO	State Historic Preservation Office
JPRA	Joint Personnel Recovery Agency	SIP	State Implementation Plan
JTS	Joint Training Standards	SPCCP	Spill Prevention, Control, and Countermeasure Plan
JVDP	Jacks Valley Development Plan	SQG	Small Quantity Generator
LID	Low-Impact Development	SUA	Special Use Airspace
LOD	Limits of disturbance	SWMP	Stormwater Management Program
NAAQS	National Ambient Air Quality Standards	SWPPP	Stormwater Pollution Prevention Plan
NAGPRA	Native American Graves Protection and Repatriation Act	TMDL	Total Maximum Daily Load
NEPA	National Environmental Policy Act	U.S.	United States
NHPA	National Historic Preservation Act	USACE	U.S. Army Corps of Engineers
NMCI	North Monument Creek Interceptor	USEPA	United States Environmental Protection Agency
NRHP	National Register of Historic Places	USAF	U.S. Air Force
OSHA	Occupational Safety and Health Administration	USAFA	U.S. Air Force Academy
PMJM	Preble's Meadow Jumping Mouse	USFS	U.S. Forest Service
PPB	Parts Per Billion	USFWS	U.S. Fish and Wildlife Service
PPM	Parts Per Million	USGS	U.S. Geological Survey
		VFR	Visual Flight Rule
		WWTP	Wastewater Treatment Plan
		19 AF	19th Air Force

1.0 PURPOSE AND NEED

1.1 INTRODUCTION

This environmental assessment (EA) evaluates the potential environmental impacts associated with the United States (U.S.) Air Force's (USAF) Proposed Action, led by the U.S. Air Force Academy (USAFA), to construct training support facilities and implement a Combat Survival Training (CST) program¹ at the USAFA in El Paso County, Colorado (**Figure 1**).

The USAF prepared this EA in compliance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code 4321, et seq.); the Council on Environmental Quality (CEQ) regulations implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508); and the Air Force Environmental Impact Analysis Process (EIAP; 32 CFR Part 989).

To facilitate public review of this EA, the USAF published this Draft EA and a Draft Finding of No Significant Impact (FONSI)/Finding of No Practicable Alternative (FONPA) on the USAFA website at <https://www.usafa.af.mil>.

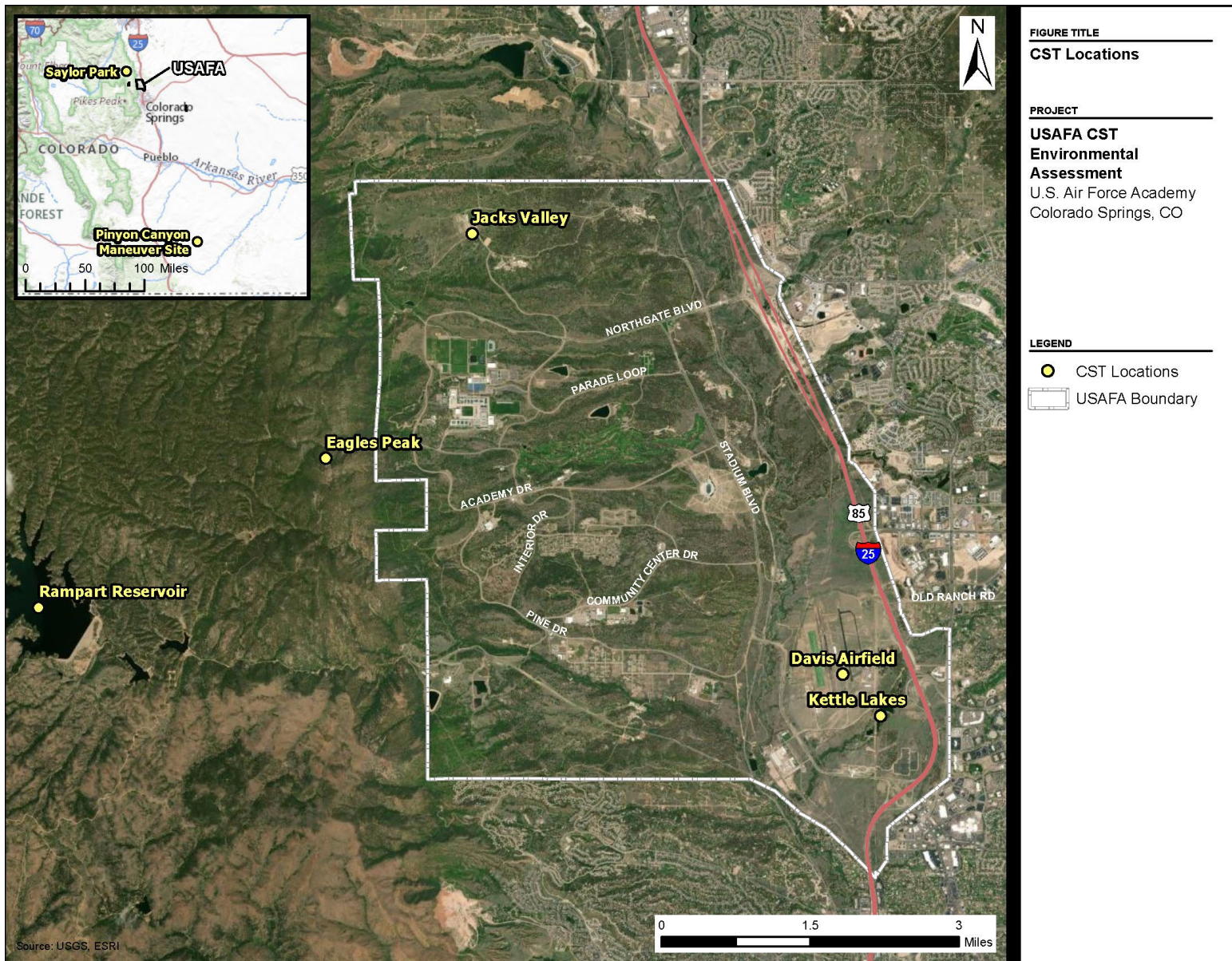
1.2 BACKGROUND

The 19th Air Force (19 AF), a unit within the Air Education and Training Command (AETC), is responsible for training U.S. and allied military members. This includes administering Survival, Evasion, Resistance, and Escape (SERE) training. The SERE program provides training for personnel who, once commissioned and mission qualified, will have an elevated risk of isolation, capture, and exploitation. The AETC provides hands-on survival and evasion task performance training in a rural operational setting. SERE training also includes the employment of emergency parachute tactics, techniques, and procedures; post-egress procedures; pre-ditching/ditching procedures; and survival in water environments. SERE training equips personnel with the skills needed to survive in the most remote and hostile environments. Fairchild Air Force Base (AFB) in Washington State is currently the only location in the U.S. that provides full spectrum SERE training.

USAFA has intermittently offered portions of SERE training through legacy programs dating back to the 1960s. In 2000, the USAFA obtained a 20-year special use permit from the U.S. Forest Service (USFS) for conducting the land-based survival and evasion portions of SERE training at Saylor Park, a location within Pike National Forest approximately 10 miles northwest of the USAFA. Concurrently, USAFA conducted water survival training on-base at Kettle Lake #3. However, in 2013, the USAFA discontinued its SERE training program due to a lack of funding.

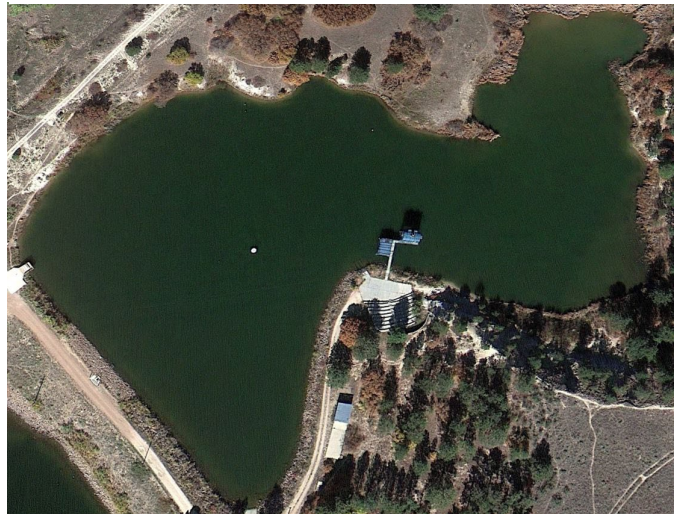
¹ The CST program includes land survival, water survival, and emergency parachute training.

Figure 1: CST Locations



Most recently, the USAFA reinstated on-base accredited SERE training on a temporary basis (i.e., summer of 2022 only) through a new CST program. The CST program replaced the legacy SERE training that occurred from 2000 to 2013 and includes the long-term survival and evasion portions of SERE while also incorporating new emergency parachute training requirements. CST is a USAFA graduation requirement for Cadets. However, USAFA previously removed its water survival training facilities located on the southern bank of Kettle Lake #3, including an in-water tower and stadium seating (**Figure 2**). Thus, while the available training facilities were technically insufficient for realistic training activities, this 2022 CST program enabled Cadets to complete accredited survival and evasion training at the USAFA, before travelling to Fairchild AFB to complete resistance and escape training. Land survival training occurred at Jacks Valley and Pinyon Canyon, while Building 9204, which is located within the Davis Airfield and serves as the USAFA's Parachuting Ground Training Facility, was used for parachute training (**Figure 1**). Water survival training took place at Kettle Lake #3 (**Figure 2**).

Figure 2: Aerial Image of Former Water Survival Training Tower and Stadium Seating (10/2011)



1.3 PURPOSE AND NEED

The current USAF SERE program is not able to meet current or projected training demands, resulting in a backlog of all personnel waiting to complete accredited SERE training. This deficiency is a result of limited training capacity at Fairchild AFB and reductions in personnel capacity across training facilities in response to the COVID-19 pandemic. Despite temporary implementation of CST at USAFA in the summer of 2022, there remains a backlog of USAFA Cadets and 19 AF Airmen waiting to complete the CST required to graduate and become fully operational, respectively. The requirements for SERE have also recently changed, including the addition of emergency parachute training, which was not covered in previous SERE training at USAFA. The Joint Training Standards (JTS) are currently being revised by the Joint Personnel Recovery Agency (JPRA) to reflect the new training requirements and incorporate these changes into training courses. Subsequently, the 19 AF Commander and USAFA Superintendent has issued a directive to bring back portions of accredited SERE training to USAFA by implementing a CST program.

Therefore, the purpose of the Proposed Action is to follow the leadership directive to offer CST at USAFA, meet the new standards for SERE set by the JPRA, and increase the overall SERE training capacity of the USAF. The Proposed Action is needed because the training capacity at Fairchild AFB does not meet the current and projected demand for SERE training (including CST) and there is a backlog of USAFA Cadets and Airmen who require this training.

1.4 INTERAGENCY AND INTERGOVERNMENTAL COORDINATION/CONSULTATION

The USAF coordinated with the following federal, state, and local agencies with jurisdiction by law or special expertise over the Proposed Action to inform the range of issues to be addressed in the EA.

- U.S. Army Corps of Engineers (USACE)
- U.S. Fish and Wildlife Service (USFWS)
- Colorado Department of Transportation (CDOT)
- Colorado Natural Heritage Program (CNHP)

- Colorado Department of Parks and Wildlife (CPW)
- History Colorado (State Historic Preservation Office [SHPO])
- City of Colorado Springs
- El Paso County Community Services Department, Environmental Division
- Pikes Peak Area Council of Governments

Coordination letters, and responses received, are consolidated in **Appendix A** and discussed in **Section 3.0**, as appropriate. USAFA's consultation with the USFWS under Section 7 of the Endangered Species Act (ESA) is included in **Appendix B**. USAFA's consultation with the Colorado SHPO under Section 106 of the National Historic Preservation Act of 1966 (NHPA) is included in **Appendix C**.

Consistent with NHPA implementing regulations (36 CFR Part 800), Department of Defense (DoD) Instruction 4710.02, *Interactions with Federally-Recognized Tribes*, Air Force Instruction (AFI) 90-2002, *Air Force Interaction with Federally-Recognized Tribes*, and Air Force Manual (AFMAN) 32-7003, *Environmental Conservation*, the USAF is also consulting with federally recognized tribes that are historically affiliated with the geographic region of the USAFA regarding the potential for the Proposed Action to affect properties of cultural, historical, or religious significance to the tribes (**Appendix D**).

1.5 PUBLIC AND AGENCY REVIEW OF THE EA

An early public notice was published in the *Colorado Springs Gazette* and the *Colorado Springs Independent* on March 23, 2023, to disclose that the Proposed Action would take place within a wetland and a floodplain (**Appendix E**). The USAF requested advanced public comment on the Proposed Action regarding its potential impacts as well as potential alternatives. The comment period for public input on this early public notice ended on April 22, 2023. No comments were received.

In accordance with CEQ and USAF NEPA regulations, this Draft EA and a Draft FONSI/FONPA have been made available for a 30-day public review and comment period between January 31, 2024, and March 1, 2024. A Notice of Availability for the Draft EA and Draft FONSI was published in the *Colorado Springs Gazette* and the *Colorado Springs Independent* on January 31, 2024.

The Draft EA and Draft FONSI/FONPA were published digitally on the USAFA website at <https://www.usafa.af.mil>. Printed copies of the Draft EA and Draft FONSI/FONPA are available at the Pikes Peak Library District – Library 21c located at 1175 Chapel Hills Drive, Colorado Springs, CO 80920 for public review.

During the Draft EA public review period, written comments may be mailed to Barry Schatz, Environmental Element Chief, 8120 Edgerton Drive, USAFA, CO 80840; or emailed to 10CES.CENPP.Planning_Programming@us.af.mil. The USAF will only respond to public comments during specified, formal public comment and review periods.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The Proposed Action entails implementation of a CST program, including construction and operation of supporting facilities, at the USAFA. The CST program would include three, 21-day sessions in the summer each year, accommodating approximately 400 Cadets each session (1,200 Cadets per summer). In addition, up to 1,000 Airmen could be trained in the remaining seasons when weather conditions allow. CST would include three primary components: land survival training; water survival training; and emergency parachute training. Training would occur Monday through Sunday during daytime hours.

Land survival training: Land survival training prepares Cadets for survival in rural hostile environments and includes both classroom and field instruction. This training includes instruction on land navigation, food and water procurement, shelter construction, fire craft, survival medicine, and other skills needed to prepare Cadets to operate in remote and hostile environments (USAF, 2022b). USAFA currently uses Jacks Valley and the Pinyon Canyon Maneuver Site² for land survival training in accordance with existing authorization. Under the Proposed Action, USAFA would continue to conduct land survival training in these areas as under existing conditions. As no changes are proposed for this element of CST, it is dismissed from detailed analysis in this EA.

Water survival training: Water survival training prepares Cadets for survival in open water and ocean environments. Training includes both classroom and field instruction. Classroom instruction educates Cadets on techniques for water survival, sustainment in an ocean environment, medical considerations, and signaling and communication in an open ocean environment. During field instruction, Cadets are trained in water survival techniques, including but not limited to parachute drags (i.e., as part of emergency parachute training, discussed below), raft procedures, and utilization of anti-exposure suits. Water survival training utilizes a tower and lateral drift apparatus (i.e., a zipline-like feature) to simulate lateral drift, jet skis to simulate parachute drags, and a helicopter to create environmental conditions reminiscent of the open ocean (USAF, 2021; USAF, 2022b). While the USAFA has used Kettle Lake #3 in the past for water survival training, it does not currently have adequate facilities to facilitate a realistic training environment (e.g., lateral drift apparatus, showers, etc.).

Emergency parachute training: Emergency parachute training includes both land-based and water-based training. Land-based emergency parachute training occurs indoors and includes five primary components: (1) hanging harness; (2) simulation of being caught in powerlines/trees; (3) proper parachute falling; (4) harness drags; and (5) hoisting on land. A dedicated emergency parachute training facility is required to accommodate this training, which requires a high ceiling to simulate harness hanging and a slick cement floor to accommodate harness drags. Water-based emergency parachute training involves simulating descent and landing tactics over water and survival in an open water environment, which are integrated into the water survival training, discussed above (USAF, 2021; USAF, 2022b). While the USAFA currently uses Building 9204 for parachute training, it lacks the space and equipment needed to conduct emergency parachute training.

2.2 SCREENING OF ALTERNATIVES

The USAF developed selection standards to evaluate specific reasonable alternatives by which to implement the Proposed Action. “Reasonable alternatives” are those that could be utilized to meet the

² The Pinyon Canyon Maneuver Site is controlled by U.S. Army Garrison Fort Carson.

purpose of and need for the Proposed Action. The USAF's five selection standards used to evaluate reasonable alternatives include the following:

1. **Standard 1 – Achieves Mission Requirements:** The 19 AF is addressing a deficiency in the USAF's SERE training program and needs to safely and efficiently implement a CST program that provides Cadets with requisite training to meet graduation and operational requirements. The USAF evaluated each alternative based on its potential to increase training capacity and address the current backlog of Cadets who need to complete this required training in a safe and efficient manner.
2. **Standard 2 – Adequate Resources:** An adequate amount of land and water (including water depth) is required to safely complete CST. CST also requires an adequate number of qualified personnel to conduct and oversee training. The USAF evaluated alternatives based on their ability to provide the required amount of resources to facilitate training activities and construct support facilities.
3. **Standard 3 – Accessibility:** Successful implementation of the CST program requires Cadets to travel quickly and easily between training sites. The USAF evaluated alternatives for their proximity to existing training facilities, as well as to existing roadways, infrastructure, and utility systems.
4. **Standard 4 – Control:** The CST program at USAFA would be a long-term addition to the USAF's training regime and would include the construction of permanent support facilities. The USAF evaluated each alternative based on whether the site is owned or managed by USAF and the ability to conduct long-term training activities without interfering with conflicting land uses.
5. **Standard 5 – Environmental Impacts:** Portions of Kettle Lakes contain suitable habitat for the Preble's Meadow Jumping Mouse (PMJM), a federally threatened species which lives and reproduces in and near riparian areas. The USAF evaluated each alternative based on the total area of permanently disturbed PMJM habitat.

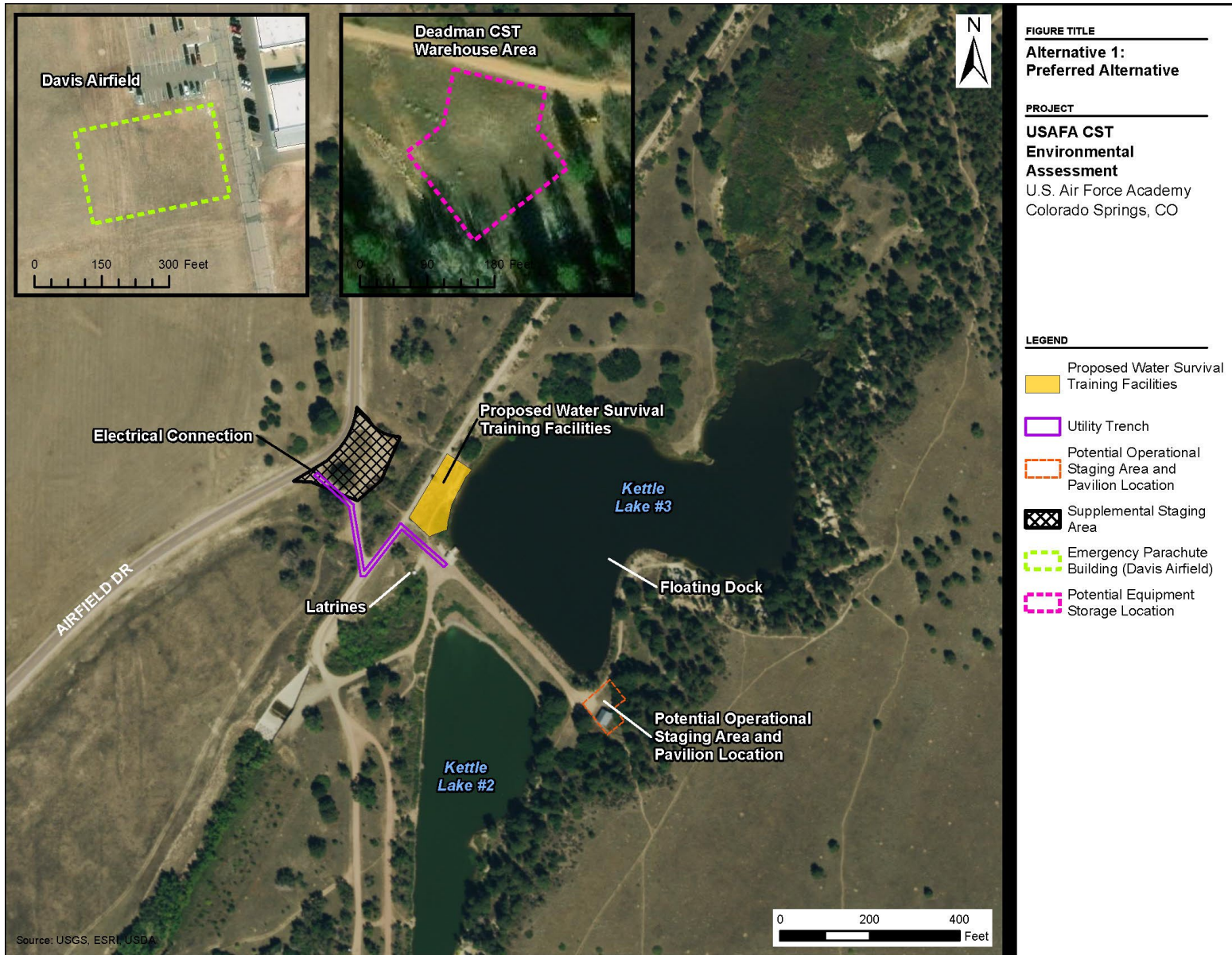
2.3 EVALUATED ALTERNATIVES

2.3.1 Alternative 1 – The Preferred Alternative

Under the Preferred Alternative, a CST program would be implemented at USAFA as described in **Section 2.1**. The USAF would construct and operate water survival training facilities on the northwest bank of Kettle Lake #3 (**Figure 3**). Kettle Lake #3 is approximately 6.5 acres and up to 18 feet deep. The water survival training features would include a tower and lateral drift apparatus, as well as adjacent facilities containing bathrooms and storage space. A new permanent emergency parachute training facility would be constructed within the Davis Airfield (**Figure 3**).

Constructing the training facilities in these locations would allow the USAF to offer the water survival training and emergency parachute training at central locations within the USAFA. Additionally, a new emergency parachute training facility within the Davis Airfield would be less than a mile from training that would occur at Kettle Lake #3. This would reduce the amount of time Cadets spend traveling between training facilities. The locations identified under the Preferred Alternative are within the USAFA, have adequate space to accommodate all required training activities, and are proximate to existing roadways, infrastructure, and utilities. These locations contain limited PMJM habitat (less than 1 acre) and no high quality PMJM habitat would be impacted by this alternative. Therefore, the Preferred Alternative meets each identified selection standard and the purpose and need for the Proposed Action.

Figure 3: Alternative 1: Preferred Alternative



2.3.1.1 Construction

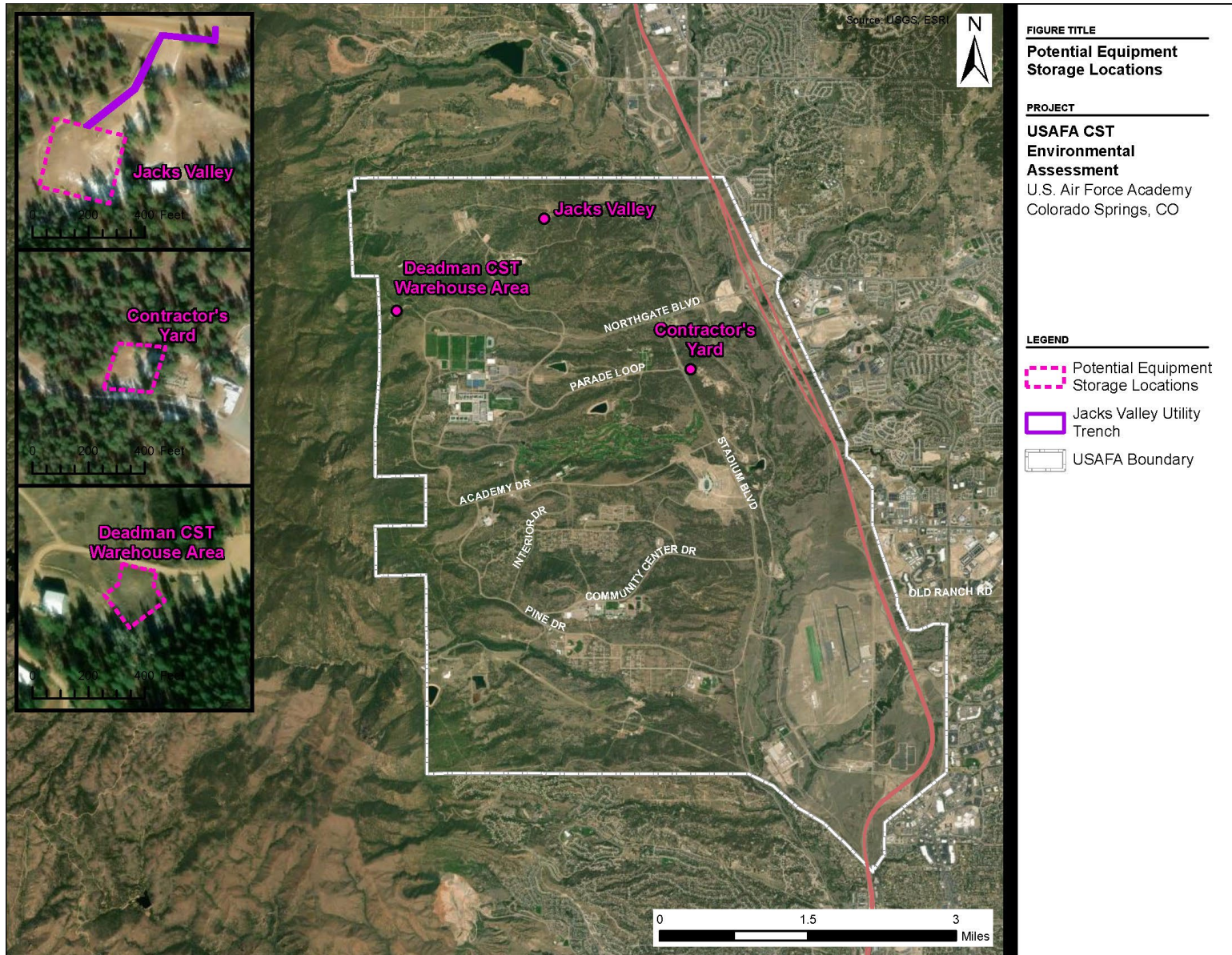
Facilities to support water survival training would be constructed within a 0.3-acre area on the northwest bank of Kettle Lake #3 (**Figure 3**). The proposed tower and lateral drift apparatus would either be a steel or Conex container (three wide by three high) structure with an overhang rooftop and a lateral drift apparatus anchored to the second level of the tower. The tower and lateral drift apparatus would be prefabricated off-site and installed either in-water, similar to the prior tower shown in **Figure 2**, or on the adjacent northwestern bank. The tower and lateral drift apparatus would be approximately 40 feet high with a reinforced deck. If constructed on the bank, rock removal, and installation of a concrete retaining wall may be required. In addition, latrines in the form of portable bathrooms would be seasonally installed on the north end of the dam that separates Kettle Lake #3 from Kettle Lake #2. No vegetation clearance or ground disturbance would occur to facilitate latrine installation. A supplemental construction staging area would be available in the existing parking lot off Airfield Drive, and construction access would occur via Airfield Drive and existing dirt roads (**Figure 3**). Some vegetation clearing would be required to construct the new facilities; however, removal of mature trees is not anticipated. Electric utilities would be extended to the site from USAFA's existing utility infrastructure. Electrical utilities are present within the supplemental construction staging area and would be extended 530 linear feet along the rights-of-way of existing roadways (**Figure 3**). In addition, trash cans and animal-resistant dumpsters would be installed within the newly constructed facility area.

The emergency parachute training building would be constructed within the Davis Airfield, approximately 0.7 mile west of Kettle Lake #3 (**Figure 3**). This building would be about 40 feet long, 25 feet wide, and 30 feet tall. The building would be located within an approximately 0.9-acre site designed to comply with the imaginary surfaces associated with the airfield. Construction access would occur via Airfield Drive and Talon Drive. All construction activities would be coordinated with the Davis Airfield to ensure no interruptions occur to the Airfield's operations.

Finally, equipment for CST, such as transportation trailers, utility terrain vehicles, communication devices, etc., would be stored in one of three potential locations (**Figure 4**). Temporary storage options include storing equipment in two 65-foot by 65-foot weatherproof bare base tents, in the contractor's yard or Jacks Valley. The temporary location just south of Jacks Valley Road is already flattened and used for staging activities, and a fence would not be installed. The area in contractor's yard is already fenced. The USAF is also considering the Deadman CST warehouse area and the Jacks Valley area as the permanent warehouse location for CST equipment (**Figure 4**). The Jacks Valley area would require electric utilities be extended from existing electric lines along Jacks Valley Road. The utility extension would be approximately 570 feet long and installed via underground trenching approximately 4 feet wide and 2 feet deep. The Deadman CST warehouse area is on a significant slope, so extensive grading would be required for construction of this storage facility. In addition, two outdoor security lights would be installed on the front and rear of the warehouse, at whichever location is ultimately chosen. The USAF has identified the Deadman CST warehouse as the preferred location for a permanent storage facility as this location is adjacent to existing CST storage facilities.

Construction of the Preferred Alternative would be anticipated to begin in 2024.

Figure 4: Potential Equipment Storage Locations



2.3.1.2 Operation

Under the Preferred Alternative, USAF would operate a CST program utilizing newly constructed training support facilities along the northwest bank of Kettle Lake #3. As described in **Section 2.1**, the USAFA's CST program would include land survival training, water survival training, and emergency parachute training. Land survival training would continue to occur in Jacks Valley and Pinyon Canyon as under current conditions.

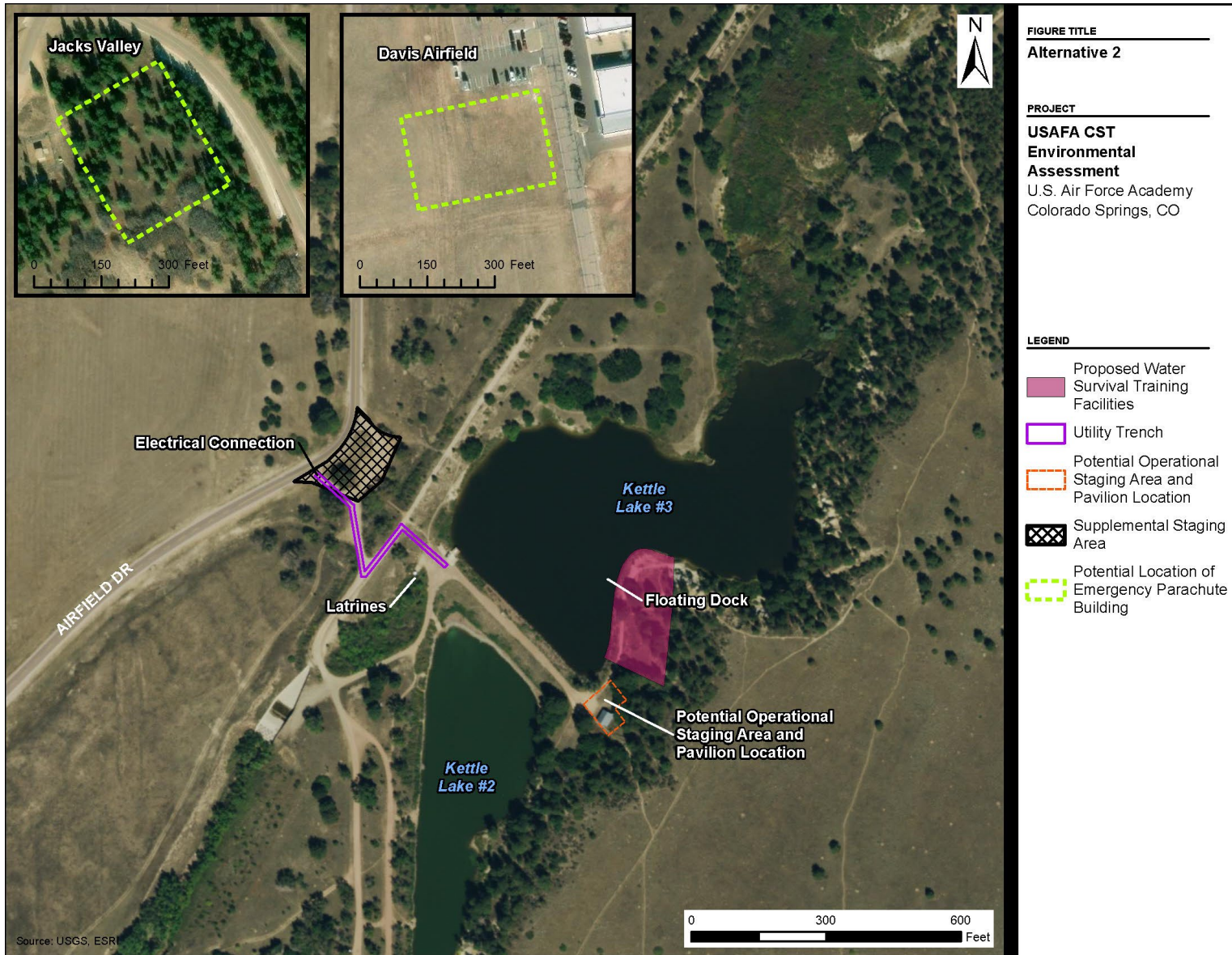
Water survival training (and water-based portions of emergency parachute training) under the Preferred Alternative would include Cadets utilizing the lateral drift apparatus to simulate parachute landings in water. Jet skis would be deployed in Kettle Lake #3 to simulate parachute drags across the lake. One helicopter would hover over Kettle Lake #3 for several hours per training day to create choppy water to simulate a rough open ocean environment. Helicopter use would be coordinated with the Davis Airfield (0.4-mile northwest of the Preferred Alternative site) prior to conducting water survival training. Other in-water training would include techniques to escape from beneath a parachute and life raft operations. Loud music would sometimes be played during this training to simulate a noisy environment. During in-water training, a floating dock would be deployed into Kettle Lake #3 and would be pulled ashore when not in use. A generator may be used to power the proposed water survival training facilities. A pavilion is located across the dam, on the southwest side of the lake; the pavilion and the surrounding area would potentially be used as a staging area for equipment during training activities (**Figure 3**). No vegetation clearing or ground disturbance would occur in the pavilion and surrounding area. Water survival training instances would last approximately 4 to 6 hours each instance and occur eight times per each 21-day session.

The remaining portions of emergency parachute training would occur indoors at the newly constructed emergency parachute training building within the Davis Airfield. Once constructed, the training area would be managed in accordance with USAFA's 2022 Environmental Standards, Integrated Natural Resources Management Plan (INRMP), and Integrated Pest Management Plan.

2.3.2 Alternative 2

Under Alternative 2, a CST program would be implemented at USAFA similar to the Preferred Alternative; however, water survival training facilities would be constructed along the southern bank of Kettle Lake #3 on the site of the previous water survival training facilities (**Figure 5**). Additionally, the emergency parachute training facility would either be constructed at the Davis Airfield as described under the Preferred Alternative, or in Jacks Valley. These sites (south bank of Kettle Lake #3, within the Davis Airfield, and in Jacks Valley) all offer an adequate amount of space within the USAFA to conduct training activities and construct supporting infrastructure. Additionally, locations identified under Alternative 2 are located near existing roadways, infrastructure, and utilities. Constructing a new emergency parachute training facility in the Davis Airfield would be less than a mile from training that would occur at Kettle Lake #3. Alternatively, building the new parachute facility within Jacks Valley would keep emergency parachute training near existing land survival training. These locations contain minimal suitable PMJM habitat (less than 1 acre) and contain no high quality PMJM habitat. Therefore, Alternative 2 meets each identified selection standard and the purpose and need for the Proposed Action.

Figure 5: Alternative 2



2.3.2.1 Construction

Construction activities under Alternative 2 are largely identical to those described under the Preferred Alternative with the exception that construction locations would be different. Alternative 2 would entail installing the water survival training facilities in a 0.8-acre area along the southern bank of Kettle Lake #3, either in the water or along the bank (**Figure 5**). Utilities would be extended to the same location as under the Preferred Alternative. Site access to the south Kettle Lake site would branch off Airfield Drive and follow existing dirt roads between Kettle Lake #2 and Kettle Lake #3 to the Alternative 2 site. The emergency parachute training building would be constructed either within the Davis Airfield in the same manner as described for the Preferred Alternative, or at a location in Jacks Valley (**Figure 5**). If constructed at Jacks Valley, the new parachute training facility would be the same size but within an approximately 1.9-acre site, and construction access would occur via Jacks Valley Road. This area is currently forested and some clearing of mature trees would be required to facilitate construction. Overall, the construction timeframe for Alternative 2 would be approximately the same as for the Preferred Alternative. Equipment storage options would also be the same as under the Preferred Alternative.

2.3.2.2 Operation

Operational activities under Alternative 2 would be the same as described for the Preferred Alternative (**Section 2.3.1.2**).

2.3.3 No Action Alternative

Under the No Action Alternative, the USAF's SERE training program would continue to operate at insufficient capacity. The backlog of Cadets waiting to complete this required training would continue to grow as the current program struggles to meet current and projected training demand. At USAFA, foundational CST and basic field survival would continue to occur, without the addition of water survival or emergency parachute training. Cadets would be required to travel to Fairchild AFB to meet the CST graduation requirement. While the No Action Alternative would not meet the Proposed Action's purpose and need, it is analyzed in this EA to provide a comparative baseline for the Preferred Alternative and Alternative 2.

2.4 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

The USAF initially considered eight additional alternatives to achieve the purpose of and need for the Proposed Action. These alternatives included conducting CST at different locations in Colorado: (1) Saylor Park; (2) Eagles Peak; (3) Kettle Lake #1 or #2; (4) Deadmans Lake; (5) Rampart Reservoir; (6) a consolidated training area on the north side of Kettle Lake #3; and (7) emergency parachute training area adjacent to Building 9204 within the Davis Airfield. USAFA also initially discussed implementing full-spectrum SERE training at USAFA. The USAF eliminated these alternatives from further consideration because they did not meet one or more of the selection standards (**Section 2.2**), as described below.

2.4.1 Saylor Park

USAF initially considered conducting CST at Saylor Park (**Figure 1**). Saylor Park is owned and managed by the USFS and served as a location for SERE training for approximately 30 years. After ceasing use of Saylor Park in 2013, the USAFA terminated the special use permit with USFS for SERE training at Saylor Park on November 15, 2019, following completion of site restoration activities (USFS, 2019). Since then, this area has been heavily used for recreational purposes and the USFS is not amenable to a new special use permit. The USAF determined that the Saylor Park alternative did not meet Selection Standards #3 or #4 and thus eliminated it from further consideration.

2.4.2 Eagles Peak

Eagles Peak is a mountainous area bordering the northwestern boundary of the USAFA and is also managed by the USFS (**Figure 1**). The USAF initially considered conducting CST at this location because it is already authorized to conduct other training at this location; however, Eagles Peak has only been authorized for land navigation purposes, which includes extremely limited disturbance. The Proposed Action would involve a greater level of disturbance and thus is not authorized to occur in Eagles Peak (USAF, 2022a). Therefore, this alternative did not meet Selection Standards #3 or #4 and thus was eliminated from further consideration.

2.4.3 Kettle Lake #1 or #2

The USAF considered conducting CST at either Kettle Lake #1 or #2. These Kettle Lakes are within the USAFA and proximate to existing infrastructure. However, the USAF determined upon investigation that these locations are not of adequate size and water depth to accommodate CST. Therefore, this alternative did not meet Selection Standard #2 and thus was eliminated from further consideration.

2.4.4 Deadmans Lake

Deadmans Lake is a small water feature located on USAFA near Jacks Valley (**Figure 1**). While this site is within the USAFA, it is not of adequate size and water depth to accommodate water training activities. Therefore, this alternative did not meet Selection Standard #2 and thus was eliminated from further consideration.

2.4.5 Rampart Reservoir

Rampart reservoir is a large waterbody located approximately 4 miles west of the USAFA within USFS land (**Figure 1**). This reservoir is open to the public and utilized for hiking, fishing, and boating (USFS, 2022). Swimming is not permitted in the reservoir. Furthermore, utility systems are not available in this area. The USAF determined that this alternative did not meet Selection Standards #3 and #4 and thus eliminated it from further consideration.

2.4.6 Consolidated Training Area on North Side of Kettle Lake #3

The USAF initially considered constructing and operating a consolidated training area on the north side of Kettle Lake #3, approximately 500 feet east of the Preferred Alternative location. Under this alternative, facilities to support water survival and emergency parachute training would have been constructed along the north bank of Kettle Lake #3 as a single training area. While this area has adequate space for water survival and emergency parachute training facilities, much of the area is located within some of the better quality habitat for the PMJM around the Kettle Lakes. On March 15, 2023, an onsite survey conducted along the banks of Kettle Lake #3 determined this alternative would have impacted 3.0 acres of medium quality and 0.3 acre of low quality PMJM habitat. Following this site survey, the USAF determined habitat impacts to the PMJM under this alternative would be unnecessarily high. Therefore, the USAF determined that this alternative did not meet Selection Standard #5 and eliminated it from further consideration.

2.4.7 Constructing the Emergency Parachute Training Area Adjacent to Building 9204

The USAF initially considered constructing the emergency parachute training facility in the Davis Airfield either as an extension or directly adjacent to the existing Building 9204, which serves as USAFA's parachute training facility. Following an initial investigation, USAF determined that an emergency parachute training facility at this location would not comply with airspace safety regulations at the Davis Airfield.

Therefore, the USAF determined that this alternative did not meet Selection Standard #1 and eliminated it from further consideration.

2.4.8 Full-Spectrum SERE Training

The USAF considered conducting a full-spectrum SERE training program at USAFA. Full-spectrum SERE includes resistance and escape training, which prepares Cadets for hardships that may be encountered if captured by hostile forces. Resistance training requires highly trained personnel to administer the training, as well as significant oversight of training activities. USAFA does not have an adequate number of personnel who meet these requirements and therefore lacks the resources to implement a full-spectrum SERE training program. Thus, this alternative did not meet Selection Standard #2 and was eliminated from further consideration.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This chapter describes the affected environment and potential environmental consequences for resource areas that could be affected by the Proposed Action. The USAF has dismissed transportation from detailed analysis in this EA. Construction activities would result in a temporary increase in traffic associated with contractor vehicles and transporting construction equipment/materials to the project area(s). However, construction activities would not substantially increase traffic or affect the existing level of service on any roads. Additionally, during CST operation, cadets would be transported in groups between training sites, utilizing existing roadways on USAFA. Therefore, there would be no impact on the transportation network on or near the USAFA.

3.2 VISUAL RESOURCES

Visual resources refer to the visible features on a landscape, both manmade and natural, moving and stationary. Although visual quality is partly subjective, visual characteristics that often render an area less attractive include clashing or incoherent architectural elements; unorganized mixing of open and built spaces; presence of litter; and dead or dying vegetation. Actions that remedy or mitigate such characteristics generally improve visual quality.

The Region of Influence (ROI) for visual resources includes the viewshed from which the Proposed Action would be notably visible. The ROI includes viewsheds within roughly 0.5 mile of the Project Sites in accordance with the area of potential affects (APE) for cultural resources (**Section 3.9**).

3.2.1 Affected Environment

The overall visual landscape of the ROI varies between the Kettle Lakes, potential equipment storage locations, Davis Airfield, and Jacks Valley. The visual landscape of the Kettle Lakes is undeveloped, lakeside grassland with trees interspersed throughout the area. Several small structures, including a pavilion and a pier, are also present near the shoreline of Kettle Lake #3 (**Figure 6** and **Figure 7**). The potential equipment storage locations are each located near existing outdoor storage or maintenance areas. The landscapes near the potential equipment storage locations include open grassland along unimproved roads and adjacent to mature evergreen tree stands (**Figure 4**). The emergency parachute training building would be located southwest of the Davis Airfield runway across from a cluster of airfield maintenance buildings and parking lots. Land uses near the potential Jacks Valley emergency parachute building location are also similar, with training grounds, parking lots, and outdoor storage north of the site, and evergreen forests south and east of the site. Figures depicting the viewshed are included in USAF's Section 106 consultation letter to the SHPO in **Appendix C**.

There are few publicly accessible locations with views of the Proposed Action locations because the Proposed Action would be located entirely within the USAFA. The Proposed Action would not be visible from any residences or recreational resources such as parks or trails. The emergency parachute training building location in the Davis Airfield may be visible to motorists traveling through the USAFA on Interstate 25 (I-25), including the popular Ackerman Overlook on southbound I-25; however, trees and topography obstruct views of the Kettle Lakes from I-25. Jacks Valley and all potential equipment storage locations are within areas of USAFA not visible to the public.

**Figure 6: Photo of Kettle Lake #3
(October 24, 2022)**



**Figure 7: Photo of the Pavilion adjacent to
Kettle Lake #3 (October 24, 2022)**



3.2.2 Environmental Consequences

A visual resources impact would be significant if it would introduce discordant elements or remove important (i.e., visually appealing) elements in a previously cohesive and valued viewscape.

3.2.2.1 Alternative 1 – The Preferred Alternative

Construction of the Preferred Alternative would alter viewsheds in the ROI around the Kettle Lakes during the installation of the water survival training facilities on the northwest bank of Kettle Lake #3. Construction activities near the Kettle Lakes would be most visible to those traveling within the USAFA along Airfield Drive. The construction of the emergency parachute training building would also be visible from Airfield Drive and South Gate Boulevard, and potentially visible but indiscernible from I-25 due to distance and intervening features. Overall, construction activities would be routine and of limited duration in each proposed component location and would not strike viewers as out of the ordinary. The tower and lateral drift apparatus would be prefabricated off-site, which would further limit the duration of construction near the Kettle Lakes. The Preferred Alternative would have *short-term, less-than-significant adverse impacts* on visual resources within the ROI during construction.

The Preferred Alternative would permanently alter the viewsheds in the ROI by installing new facilities throughout the USAFA. However these impacts to viewsheds regarding cultural resources present do not reach a level of concern under NHPA Section 106, as explained in **Section 3.9** and **Section 4.2.7**. Along the northwest bank of Kettle Lake #3, for the water survival training area, the proposed tower and lateral drift apparatus would be approximately 40 feet high and would be discernable only in the immediate vicinity. While the precise location and form would be slightly different, these facilities would be reminiscent of the prior water survival training facilities that were previously present at Kettle Lake #3. Additionally, during training exercises, low-flying helicopters would be visible above Kettle Lake #3, including from I-25 and the Ackerman Overlook. However, given the close proximity to Davis Airfield, this would be consistent with other activities in the area.

The emergency parachute training building would alter the viewshed of Davis Airfield slightly; however, the building would be similar in size and consistent with existing structures around the airfield. Due to its distance from I-25 and the Ackerman Overlook, and the presence of intervening facilities, vegetation, and

topography, the emergency parachute building would either not be visible, or be indiscernible from the interstate.

Each potential equipment storage location would have limited impacts on viewsheds in the ROI because all potential locations are either screened by trees or proposed for locations adjacent to similar existing land uses; these areas in the northern portion of the USAFA are also less trafficked than the Davis Airfield and Kettle Lakes areas in the southeastern portion of the installation.

Overall, operation of the Preferred Alternative, including new facilities and associated training activities, would be consistent with existing facilities and training at the USAFA and would have *long-term, negligible adverse impacts* on visual resources.

3.2.2.2 Alternative 2

Under Alternative 2, potential impacts on visual resources would be similar to Alternative 1. Since the equipment storage component of Alternative 2 would be the same as under Alternative 1, potential impacts would also be the same.

Potential adverse impacts from the construction process would be slightly less than under Alternative 1. The proposed water survival training facilities near Kettle Lake #3 would be on the south side of the lake, adjacent to mature forest and further removed from the primary viewpoint along Airfield Drive. This would be less visible than the more exposed area on the northwest bank considered under Alternative 1. Similarly, Alternative 2 may not include construction in the Davis Airfield, which is the most visible location being considered within this EA; if the emergency parachute facility is constructed in the Jacks Valley location, it would only be visible from personnel on Jacks Valley Road and adjacent training facilities. If the emergency parachute facility is constructed at the Davis Airfield location, impacts would be the same as under Alternative 1. Overall, Alternative 2 would have *short-term, less-than-significant adverse impacts* on visual resources within the ROI during construction.

The operation of Alternative 2 would alter viewsheds at Kettle Lake #3; however, the site on the south shore of Kettle Lake #3 was previously used for water survival training. Therefore, the presence of water survival training facilities in this location, as well as the periodic visual impacts from the operation of Alternative 2, such as low-flying helicopters, would be the same or slightly less than the Preferred Alternative.

The operation of the emergency parachute training facility at Davis Airfield would be consistent with existing operations in the area and the same as under Alternative 1. Although the visual impact of a new building in Jacks Valley would be greater than that of a new building at Davis Airfield, it would be visible from a much smaller area, and no portions of the building at Jacks Valley would be visible to the public. Therefore, Alternative 2 would have *long-term, negligible adverse impacts* on visual resources.

3.2.2.3 No Action Alternative

Under the No Action Alternative, implementation of a CST program, including construction and operation of supporting facilities, would not occur and there would be no impacts to visual resources. Viewsheds within the ROI would remain under current conditions.

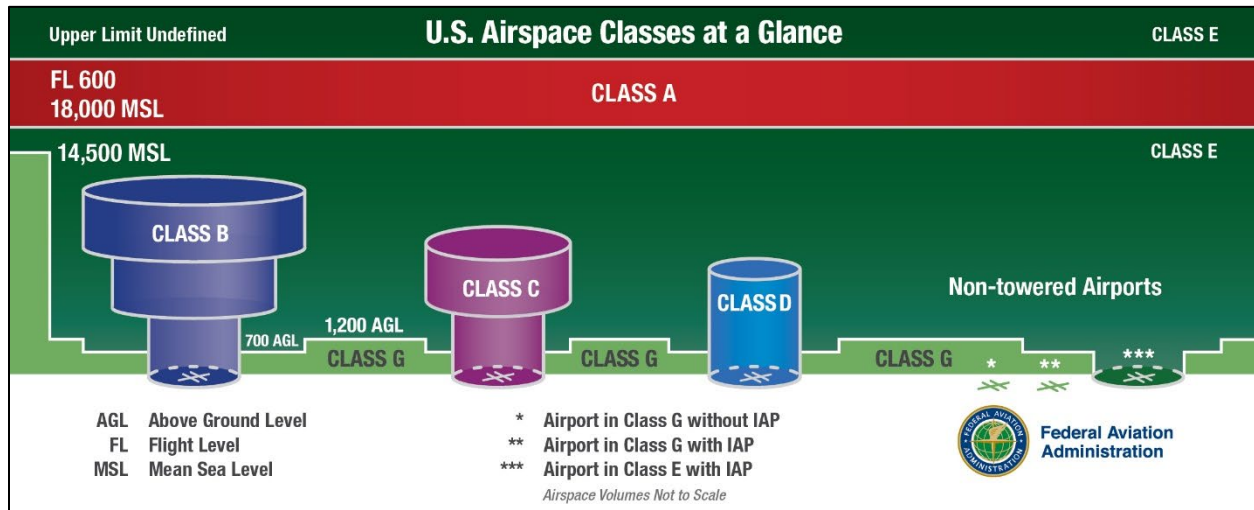
3.3 AIRSPACE

Airspace management and use consists of the direction, control, and coordination of flight operations in the “navigable airspace” that overlies the borders of the US and its territories. Under Title 49, U.S.C 40103, *Sovereignty and Use of Airspace*, and Public Law No. 103-272, the US government has exclusive

sovereignty over the nation’s airspace. The Federal Aviation Administration (FAA) employs multiple categories to manage the US’s airspace, among these are controlled airspace, Special Use Airspace (SUA), other airspace, and uncontrolled airspace. Controlled airspace refers to airspace with defined dimensions within which air traffic control is provided to Instrument Flight Rule (IFR) flights³ and to Visual Flight Rule (VFR) flights⁴ in accordance with the airspace classification. Controlled airspace is grouped into five separate classes, designated as Classes A through E (Figure 8). Figure 8 also shows Class G airspace, which is categorized as uncontrolled.

The ROI for airspace includes the vicinity of the Davis Airfield and the Kettle Lakes.

Figure 8: Airspace Classes



Source: (FAA, 2023)

3.3.1 Affected Environment

At USAFA, airspace structure is designed to ensure safe separation between USAF flight operations and other flight operations in the region, notably by the FAA. The Davis Airfield is located approximately 0.5 mile north of Kettle Lake #3. This airfield is USAFA’s main airfield and is one of the most highly trafficked airfields in the world (USAFA, 2023a). The Davis Airfield is comprised of four hard surface runways, assorted support buildings, and administrative offices and an air traffic control tower (USAFA, 2019). Airspace overlying the ROI is considered Class D Airspace by the FAA, which extends from the surface to 2,500 feet above the airfield’s elevation (USAFA, 2023b).

3.3.2 Environmental Consequences

An impact on airspace would be considered significant if it would adversely affect the efficiency, utility, capacity, or safety of air operations in the vicinity of the USAFA.

³ IFR flights refer to flights governed by FAA rules and regulations for aircraft flying under conditions in which flight by outside visual reference is not safe (i.e., flying by reference to instruments only) (FAA, 2012).

⁴ VFR flights refer to flights governed by FAA rules and regulations for aircraft using visual references. VFR operations specify the amount of ceiling and visibility a pilot must have to operate according to these rules (FAA, 2012).

3.3.2.1 Alternative 1 – The Preferred Alternative

Construction of the Preferred Alternative would have no potential to adversely impact airspace in the ROI. The contractor would obtain a Temporary Construction Waiver for work within USAFA's Air Installation Compatible Use Zone (AICUZ) prior to starting construction. No construction would occur within clear zones or accident potential zones (APZ) (see **Section 3.13**).

Proposed water survival training activities would require the use of a single military helicopter. The helicopter would take off from the Davis Airfield and travel approximately 0.5 mile to Kettle Lake #3, where it would hover above the lake surface to create rough water conditions that simulate an open ocean environment. The helicopter is anticipated to operate for a minimum of 22 hours during each 21-day training course (approximately 66 hours annually) (USAF, 2022b). Helicopter operations would be scheduled and coordinated with air traffic control at the Davis Airfield so that no conflicts with other operations in the airspace arise and to maintain the efficiency, utility, capacity, and safety of air operations at USAFA. No SUA or modifications of the existing SUA are planned as part of the Preferred Alternative. Therefore, the Preferred Alternative would have *no short or long-term impacts* to airspace in the ROI.

3.3.2.2 Alternative 2

Impacts to airspace under Alternative 2 would be identical to those described under the Preferred Alternative.

3.3.2.3 No Action Alternative

Under the No Action Alternative, the CST program at USAFA would not be implemented, and there would be *no impact* on airspace at USAFA.

3.4 AIR QUALITY AND CLIMATE

Air quality conditions at a given location are a function of several factors including the quantity and type of pollutants emitted locally and regionally, as well as the dispersion rates of pollutants in the region. Primary factors affecting pollutant dispersal include wind speed and direction, atmospheric stability, climate and temperature, and topography.

The ROI for air quality is El Paso County.

3.4.1 Affected Environment

3.4.1.1 Criteria Pollutants

National Ambient Air Quality Standards (NAAQS) are established by the U.S. Environmental Protection Agency (USEPA) for six "criteria pollutants" (as listed under Section 108 of the Clean Air Act [CAA] of 1970) (**Table 1**): carbon monoxide (CO); lead (Pb); nitrogen dioxide (NO₂); ozone (O₃); particulate matter (PM), divided into two size classes of 1) aerodynamic size less than or equal to 10 micrometers (PM₁₀), and 2) aerodynamic size less than or equal to 2.5 micrometers (PM_{2.5}); and sulfur dioxide (SO₂). The State of Colorado has adopted the NAAQS to regulate air pollution levels.

The ambient air quality in an area is characterized in terms of whether it complies with the NAAQS. Areas where monitored outdoor air concentrations are within an applicable NAAQS are considered in *attainment* of that NAAQS. If sufficient ambient air monitoring data are not available to make a determination, the area is instead deemed as *attainment/unclassifiable*. Areas where monitored outdoor air concentrations exceed

the NAAQS are designated by the USEPA as *nonattainment*. Nonattainment designations for some pollutants (e.g., O₃) can be further classified based on the severity of the NAAQS exceedances. Lastly, areas that have historically exceeded the NAAQS but have since instituted controls and programs that have successfully remedied these exceedances are known as *maintenance* areas.

The General Conformity Rule of the federal CAA mandates that the federal government abide by approved State Implementation Plans (SIP) (i.e., air quality control plans). Air Force Policy Directive (AFPD) 32-70, *Environmental Considerations in Air Force Programs and Activities*, mandates that the USAF comply with all federal, state, and local environmental laws and standards. In accordance with AFPD 32-70, AFMAN 32-7002, *Environmental Compliance and Pollution Prevention*, explains responsibilities and specific details on how to comply with the CAA and other federal, state, and local air quality regulations. This AFMAN provides further and more specific instruction on the requirements of the USAF’s EIAP for air quality promulgated at 32 CFR 989.30, which mandates that EIAP documents, such as this EA, address General Conformity.

El Paso County is in *attainment* for all criteria pollutants NAAQS; therefore, the General Conformity Rule does not apply to this Proposed Action (USAF, 2023).

Table 1: National and Colorado Ambient Air Quality Standards

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)	Primary	8-hour	9 parts per million (ppm)	Not to be exceeded more than once per year
		1-hour	35 ppm	
Lead	Primary and Secondary	Rolling 3-month average	0.15 micrograms per cubic meter (µg/m ³) ⁽¹⁾	Not to be exceeded
Nitrogen Dioxide (NO ₂)	Primary	1-hour	100 (parts per billion) ppb	98th percentile, averaged over 3 years
	Primary and Secondary	Annual	53 ppb ⁽²⁾	Annual mean
Ozone	Primary and Secondary	8-hour	0.070 ppm ⁽³⁾	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particulate matter equal to or less than 2.5 microns in diameter (PM _{2.5})	Primary	Annual	12 µg/m ³	Annual mean, averaged over 3 years
	Secondary	Annual	15 µg/m ³	Annual mean, averaged over 3 years
	Primary and Secondary	24-hour	35 µg/m ³	98th percentile, averaged over 3 years
Particulate matter equal to or less than 10 microns in diameter (PM ₁₀)	Primary and Secondary	24-hour	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO ₂)	Primary	1-hour	75 ppb ⁽⁴⁾	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

- (1) In areas designated nonattainment for Lead standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m³ as a calendar quarter average) also remain in effect.
- (2) The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of a clearer comparison to the 1-hour standard.
- (3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O₃ standards additionally remain in effect in some areas. Revocation of the previous (2008) O₃ standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.
- (4) The previous SO₂ standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO₂ standards or is not meeting the requirements of a SIP call under the previous SO₂ standards (40 CFR 50.4(3)). A SIP call is a USEPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

Source: (USEPA, 2023a)

3.4.1.2 Climate Change and Greenhouse Gas Emissions

The primary long-lived greenhouse gases (GHGs) directly emitted by human activities are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. To estimate global warming potential (GWP), all GHGs are expressed relative to a reference gas, CO₂, which is assigned a GWP equal to 1. All six GHGs are multiplied by their GWP and the results are added to calculate the total equivalent emissions of CO₂ (CO₂e). However, the dominant GHG emitted is CO₂, mostly from fossil fuel combustion (85.4 percent). This EA considers CO₂e as the representative GHG emission.

The current level of air emissions from all natural and human activities within a region represent the baseline emissions for that area. The National Emissions Inventory, updated every 3 years by the USEPA, can be used to identify the baseline emissions. It contains estimates of annual air emissions by county. The most recent publicly available inventory data is for calendar year 2020. **Table 2** presents the baseline GHG emission levels obtained from the 2020 National Emissions Inventory for El Paso County. Nationally, the baseline 2021 GHG emission level is 6,340 million metric tons of CO₂e (USEPA, 2023a). **Table 2** also summarizes climate conditions for the ROI.

Table 2: Climate Conditions in the ROI

Climate Feature	Conditions in ROI
General Climate Description	Warm-summer Humid Continental
Average Annual Precipitation (Inches)	15.7
Wettest Month / Average Monthly Precipitation (inches)	July 2.9
Driest Month / Average Monthly Precipitation (inches)	January 0.3
Annual Mean Temperature (°F)	49.0
Warmest Month / Average Temperature (°F)	July 71.1
Coollest Month / Average Temperature (°F)	January 29.6
County ¹ Baseline GHG Emissions (Metric Tons CO ₂ e) ²	6,260,522

Note: 1. El Paso County, Colorado.
2. CO₂e = Carbon Dioxide Equivalent
Sources: (WRCC, 2022; USEPA, 2023b)

3.4.1.3 Other Air Quality Considerations

In addition to the criteria pollutants discussed above, Hazardous Air Pollutants (HAPs) also are regulated under the CAA. The USEPA has identified 187 HAPs that are known or suspected to cause health effects in small concentrations. HAPs are emitted by a wide range of man-made and naturally occurring sources, including combustion mobile and stationary sources. However, unlike the NAAQS for criteria pollutants, federal ambient air quality standards do not exist for non-criteria pollutants. Therefore, HAPs are generally regulated through specific air emission permit provisions for stationary sources and HAP emission limits for mobile sources.

Special goals for visibility in many “Class I Federal areas” were also established by the CAA; these areas generally include national parks, wilderness areas, and international parks. The Regional Haze Rule (40 CFR Part 51) was subsequently enacted in 1999 and requires states to establish goals for improving visibility in national parks and wilderness areas and to develop long-term strategies for reducing emissions of air pollutants that cause visibility impairment. Visibility-impairing pollutants can be transported over great distances; therefore, states are encouraged to work together to develop regional visibility goals and strategies. Visibility-impairing pollutants are emitted by a wide variety of activities and sources, including mobile source fuel combustion, agriculture, and manufacturing. Emissions of these pollutants are regulated by complying with the NAAQS, through state-specific programs, and through specific air emission permit provisions.

3.4.2 Environmental Consequences

Air quality is affected by stationary sources (e.g., boilers, emergency generators, and industrial processes), mobile sources (e.g., motor vehicles, construction equipment, and aircraft), and area sources (e.g., vehicle and aircraft fuel transfer, storage, and dispensing). The nature and magnitude of the Proposed Action under Alternatives 1 and 2 are expected to create only localized air quality impacts to the area surrounding the Project Sites. The air quality impact analysis follows the EIAP Air Quality Guidelines for criteria pollutants and GHG emissions (Solutio Environmental Inc., 2021). The USAF used the Air Conformity Applicability Model (ACAM) and the Air Emissions Guide for Air Force Mobile Sources (Solutio Environmental Inc., 2021) for the sources not covered by ACAM to analyze the potential air quality impacts associated with the Proposed Action in accordance with AFMAN 32-7002, the EIAP, and the General Conformity Rule (40 CFR 93 Subpart B). Please note that the General Conformity Rule does not apply to the Proposed Action as USAFA is in *attainment* for all criteria pollutant NAAQS. The ACAM report is available in **Appendix F**.

Construction and operation emissions resulting from the Proposed Action were calculated using ACAM. The project emissions are “netted” on an annual basis. The impact analysis must consider the greatest annual emissions associated with the Proposed Action. Construction activities are expected to occur in 2024.

Current USAF guidance provides methodology for performing an Air Quality EIAP Level II, Quantitative Assessment, which is an insignificance assessment that can determine if an action poses an insignificant impact on air quality (Solutio Environmental Inc., 2020). An air quality impact is considered insignificant if the action does not cause or contribute to exceedance of one or more of the NAAQS. The USAF defines “insignificance indicators” for each criteria pollutant according to current air quality conditions.

The General Conformity Rule formally defines *de minimis* (insignificant) levels that must be used as insignificance indicators. However, General Conformity Rule *de minimis* levels have not been established for *attainment* criteria pollutant emissions. In areas the USAF considers *clearly attainment* (i.e., where all criteria pollutant concentrations are currently less than 95 percent of applicable NAAQS), the insignificance

indicators are 250 tons per year (i.e., the USEPA’s Prevention of Significant Deterioration threshold), except for Pb, which is 25 tons per year. El Paso County is in *clear attainment* for all criteria pollutants.

The change in climate conditions caused by GHGs is a global effect. The Proposed Action would have no impact on overall global or regional GHG emissions and global climate change. For NEPA disclosure purposes, however, this EA analyzes the potential GHG emissions, as calculated by the ACAM and the emission factors associated with helicopter operations available from the Air Emissions Guide for Air Force Mobile Sources (Solutio Environmental Inc., 2021), anticipated under the Proposed Action, which could contribute to climate change.

3.4.2.1 Alternative 1 – The Preferred Alternative

Criteria Pollutants: Construction of the Preferred Alternative would result in *short-term, less-than-significant adverse impacts* on air quality. Construction activities would temporarily generate fugitive dust from grading, trenching, and clearing, and criteria pollutant emissions (e.g., VOCs and NO_x [as precursors of O₃], CO, PM₁₀, and PM_{2.5} [including its precursor SO₂]) and GHG emissions from the use of diesel-powered and gasoline-powered construction equipment. The construction workforce commute would also contribute to a short-term increase in emissions. Construction period emissions typically depend on expected material quantities, such as clean fill import and off-site disposal of excess excavated material, and equipment/vehicle utilization requirements for each project component. The construction emissions would occur in 2024. Overall, the majority of air emissions associated with the Preferred Alternative would be temporary in nature (limited to the duration of construction activities).

After the construction phase is complete, the proposed CST program would generate both criteria pollutant and GHG emissions from the utilization of equipment including an emergency generator, vehicles, and helicopters necessary to conduct each type of survival training exercises. Since the emission database for helicopters is not available in ACAM, the helicopter emissions during a total of 44 water survival training days per year were estimated using the default emissions factors and time in mode applicable for a typical Blackhawk helicopter provided in the USAF guidance book (Solutio Environmental Inc., 2021) and the same ACAM methodology for calculating aircraft emissions.

Table 3 depicts annual netted emissions for the construction year (2024) and the operational years afterwards under the Preferred Alternative. All criteria pollutants are below the insignificance indicators. Therefore, the potential air quality impact from all criteria pollutants is *less than significant*.

Table 3: Projected Annual Emissions from the Preferred Alternative

Pollutant	Preferred Alternative 2024 Emissions (ton/year) ¹	Preferred Alternative Steady State Emissions (ton/year) ¹	NEPA Insignificance Indicator (ton/year)
VOC	0.262	0.087	250
NO _x	1.317	2.470	250
CO	2.075	1.094	250
SO _x	0.006	0.157	250
PM ₁₀	3.062	0.224	250
PM _{2.5}	0.048	0.206	250
Pb	0.000	0.000	25

Pollutant	Preferred Alternative 2024 Emissions (ton/year) ¹	Preferred Alternative Steady State Emissions (ton/year) ¹	NEPA Insignificance Indicator (ton/year)
NH ₃	0.002	0.001	250
CO ₂ e	479.7	468.6	--

Notes:

1. 2024 represents the construction year. Steady State represents long term operational years.
 NO_x = nitrogen oxides, SO_x = sulfur oxides, NH₃ = ammonia, CO₂e = Carbon Dioxide Equivalent
 Source: ACAM version 5.0.17b, run on October 6, 2023 (Appendix F).

Greenhouse Gas Emissions and Climate Change: CO₂ represents approximately 99.9974 percent of potential GHG emissions from the Preferred Alternative, while CH₄ and N₂O represent approximately 0.0023 percent and 0.0003 percent, respectively (based on weighted averages of USEPA emission factors for natural gas, gasoline, and diesel in 40 CFR Subpart C of Part 98 Appendix Tables C-1 and C-2).

Table 4 depicts the Preferred Alternative’s annual construction (2024) and steady state GHG emissions increases over the applicable county and national baselines. When compared to the national 2021 GHG emissions baseline, the increases in annual GHG emissions would represent approximately 0.000007 percent of the national baseline under the construction year or operational years.

Table 4: Comparison of Greenhouse Gas Emissions

Alternative	Preferred Alternative GHG Emissions Increase Over County Baseline ¹		Preferred Alternative GHG Emissions Increase Over National Baseline ²	
	2024	Steady State	2024	Steady State
Alternative 1	0.007%	0.007%	0.000007%	0.000007%

Notes:

1. El Paso County, Colorado = 6,260,552 metric tons of CO₂e.
 2. Annual national GHG emissions = 6,340 million metric tons of CO₂e.
 Sources: (USEPA, 2023a); ACAM version 5.0.17b, run on October 6, 2023 (Appendix F).

The USAF addresses the potential future impacts of climate change to both current and future USAF facilities by assessing site-specific potential impacts as part of long-range planning, project design, and permitting activities. Potentially relevant long-term climate change areas of concern for the Proposed Action include increases in flooding, drought, and wildfires. The Proposed Action alternatives would involve construction of new facilities and their related training operations. Since these facilities would be on USAFA grounds, they would be constructed and managed to mitigate potential risks from flooding or wildfire through site design. Similarly, training activities would be managed in accordance with USAFA’s other training programs to minimize potential effects on training opportunities. Thus, climate change would have *negligible long-term impacts* on the Preferred Alternative.

Other Air Quality Considerations: Federal ambient air quality standards do not exist for non-criteria pollutants; therefore, the USAF has not established HAPs insignificance indicators. However, the Preferred Alternative would have minimal stationary or steady state emissions, and thus no significant impacts to HAP emissions.

Similarly, there is no specific insignificance indicator established for assessing the Preferred Alternative’s impact on visibility in Class I Federal areas. However, many pollutants responsible for impairing visibility are regulated by NAAQS either directly (e.g., PM_{2.5}) or indirectly (e.g., NO₂ and SO₂ emissions, which can

form visibility-impairing nitrates and sulfates, respectively, once emitted). Because the Preferred Alternative would result in insignificant increases in criteria pollutants, it is unlikely that the Preferred Alternative would result in adverse impacts on visibility in Class I Federal areas.

3.4.2.2 Alternative 2

Under Alternative 2, the same training facilities would be constructed and the same training activities would be conducted as under the Preferred Alternative. While the water survival training facilities would be on the south side of Kettle Lake #3 and the emergency parachute building may be located in Jacks Valley, these minor changes in location would have no meaningful impact on the potential air quality impacts of Alternative 2, including the estimated emissions. Therefore, the analysis presented under the Preferred Alternative is also applicable to Alternative 2. Both construction and operational activities under Alternative 2 would result in *less-than-significant* adverse impacts to air quality and climate change.

3.4.2.3 No Action Alternative

Under the No Action Alternative, there would be *no impact* to air quality as air emissions at the Project Site would remain the same as compared to the existing condition. There would be no increase over baseline GHG emissions.

3.5 NOISE

Sound is vibrations in the air, which are known as compression waves. Just like a pebble dropped into a pond creates ripples, the compression waves, formed of air molecules pressed together, radiate from a source and decrease with distance. If these vibrations reach a human eardrum at a sufficient rate and intensity, we perceive it as sound. When the sound is unwanted, we refer to it as noise. Generally, sound becomes noise to a listener when it interferes with normal activities. Sound within the range of human hearing is measured on a logarithmic scale, known as the decibel (dB). The human ear does not hear all frequencies equally; the A-weighted decibel scale (dBA) is used to reflect the selective sensitivity of human hearing.

Because the sound pressure level unit of dBA describes a noise level at just one moment and very few noises are constant, other ways of describing noise over extended periods have been developed. One way of describing fluctuating sound is to describe the fluctuating noise heard over a specific time period as if it had been a steady, unchanging sound. For this condition, a descriptor called the “equivalent sound level,” L_{eq} , can be computed. L_{eq} is the constant sound level that, in a given situation and time period (e.g., one hour, denoted by $L_{eq(1)}$, or 24 hours, denoted as $L_{eq(24)}$), conveys the same sound energy as the actual time-varying sound. The Day-Night Sound Level (DNL) refers to a 24-hour average noise level with a 10 dB penalty applied to the noise levels during the hours between 10 PM and 7 AM due to increased sensitivity to noise levels during these hours. Both L_{eq} and DNL were recommended by USEPA as the best descriptors for describing the effects of environmental noise (USEPA, 1974).

The loudest sounds that can be comfortably heard by the human ear have intensities a trillion times higher than those of sounds barely heard. As such, sound is measured in dB, which uses a logarithmic scale that doubles the noise energy every 3 dB, a barely perceptible change in noise.⁵ A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels above 120 dB begin to

⁵ While noise energy doubles every 3 dB, human perception of noise energy doubles every 10 dB (*Centers for Disease Control and Prevention, 2022*).

be perceived as uncomfortable, while sound levels between 130 and 140 dB are considered painful. The common sound levels encountered in daily life are shown in **Table 5**.

Table 5: Common Sound Levels

Sound Source	Sound Pressure Level (dBA)
Air Raid Siren at 50 feet	120
Maximum Levels at Rock Concerts (Rear Seats)	110
On Sidewalk by Passing Heavy Truck or Bus	90
On Sidewalk by Typical Highway	80
On Sidewalk by Passing Automobiles with Mufflers	70
Typical Urban Area	60-70
Typical Suburban Area	50-60
Quiet Suburban Area at Night	40-50
Typical Rural Area at Night	30-40
Isolated Broadcast Studio	20
Audiometric (Hearing Testing) Booth	10
Threshold of Hearing	0

Sources: (Cowan, 1994; Egan, 1988)

The sound environment around an air installation such as USAFA is typically described using a measure of cumulative exposure that results from all aircraft operational events. The metric used to account for this is A-weighted DNL and is the standard noise metric used by the U.S. Department of Housing and Urban Development (HUD), Federal Aviation Administration, USEPA, and DoD. Since the length and number of events (i.e., the total noise energy) and the time of day play key roles in our perception of noise, to reflect these concerns, USAF uses the DNL metric to describe the cumulative noise exposure that results from all aircraft operations.

To address the potential impacts of aircraft operations on land use, the USAF has defined certain noise zones and provided associated recommendations regarding compatible land uses in AICUZ program instructions as described in AFI 32-7070, *Air Force Noise Program*, and AFI 32-7063, *Air Installations Compatible Use Zones Program*.

In June 1980, the Federal Interagency Committee on Urban Noise (FICUN) published guidelines relating DNL to compatible land uses (FICUN, 1980). This committee was composed of representatives of DoD, the U.S. Department of Transportation, HUD, USEPA, and the Veterans Administration. Since the issuance of these guidelines, federal agencies have generally incorporated the discussion of compatibility into their comprehensive planning in analysis of noise effects. The land use compatibility guidelines that USAF uses are consistent with FICUN guidelines. In general, residential land uses are not compatible with an outdoor DNL above 65 dBA.

All components of the Proposed Action except for those located in the vicinity of Kettle Lake #3 occur in remote areas of USAFA where no sensitive receptors are present, or within the Davis Airfield, where changes to the noise environment would be negligible in the context of the active airfield. Therefore, this section focuses on noise conditions occurring in the vicinity of Kettle Lake #3.

The ROI for noise includes areas within 0.7 mile of Kettle Lake #3.

3.5.1 Affected Environment

The existing noise conditions around USAFA are contributed from aircraft operations and traffic on- and off-base. In July 2019, USAFA published an AICUZ study focusing on the flying missions at the Davis Airfield and Bullseye Auxiliary Airfield. According to the study, the off-base DNL noise levels resulting from aircraft operations at the USAFA are well below the 65 dBA incompatible land use guideline.

USAFA is located north of the City of Colorado Springs. The closest sensitive receptors with potential to be affected by the Proposed Action would be Zeb Apartment Complex, located on Telstar Drive southeast of Kettle Lake #3, Briargate Church located on Otero Avenue northeast of Kettle Lake #3, and the Classical Academy Elementary School located on Springcrest Road. All three of these closest sensitive receptor locations are approximately 0.7 mile from Kettle Lake #3. Because these receptors are located close to the highways, the vehicle traffic would be the dominant source, followed by aircraft, contributing ambient noise levels to the neighborhood. Given the urban setting near the USAFA, particularly with existing highways nearby, the ambient noise levels within the affected areas are anticipated to be in a range between 60 and 70 dBA during daytime hours.

Construction projects are subject to the maximum permissible noise levels specified in the City of Colorado Springs noise ordinance for industrial zones for the period within which construction is to be completed pursuant to an applicable construction permit issued by the local authority, or if no time limitation is imposed, then for a reasonable period of time for completion of the project. The maximum permissible noise levels are 80 dBA for daytime hours between 7 AM to 7 PM and 75 dBA for evening and nighttime hours between 7 PM and 7 AM, respectively (City of Colorado Springs, 2023).

For operational noise within residential land uses, the maximum permissible noise levels are 55 dBA for daytime hours between 7 AM and 7 PM and 50 dBA for evening and nighttime hours between 7 PM and 7 AM, respectively (City of Colorado Springs, 2023). In addition, between 7 AM and 7 PM, noise levels may not be increased by 10 dBA for longer than 15 minutes.

3.5.2 Environmental Consequences

Noise from construction equipment operation, on-road vehicles traveling to and from the project sites under both construction and operational phases, and helicopter and jet ski operations during the training exercise have the potential to affect nearby noise levels.

A noise impact would be significant if it would 1) violate applicable noise regulations, 2) cause unsafe noise conditions for nearby receptors during construction and operation, or 3) substantially affect normal operations of noise-sensitive receptors during operation of the Proposed Action. Both construction and operational activities would potentially impact noise conditions within ROI.

3.5.2.1 Alternative 1 – The Preferred Alternative

Construction activities associated with the Proposed Action would result in a short-term increase in noise levels within the vicinity of construction, related to use of equipment during excavation, backfill, material transporting, etc., such as chain saws, excavators, graders, loaders, dump trucks, and trenchers. Noise impacts would be greatest for receptors nearest the construction area, including Zeb Apartment Complex closest to the construction areas. The predicted noise levels (in L_{eq} for each equipment type) at the residence that is closest to Kettle Lake #3 are summarized in **Table 6**; these levels would be well below the

maximum permissible daytime noise level of 80 dBA applicable to construction noise per the City of Colorado Springs noise ordinance.

Table 6: Construction Equipment Noise Levels at Nearest Sensitive Receptors (dBA)

Sound Source	Maximum Sound Pressure Level @ 50 feet (L _{max} in dBA) ¹	Equivalent Time Average Sound Pressure Level @ 50 feet (L _{eq} in dBA)	Equivalent Time Average Sound Pressure Level Closest Sensitive Receptor To Kettle Lake #3 @ 3,700 feet (0.7 mi) (L _{eq} in dBA)
Chain saw	85	78	41
Excavator	85	81	44
Grader	85	81	44
Loader	80	76	39
Dump Truck	84	80	43
Trencher	85	81	44

Source: (Federal Highway Administration, 2006)

The overall construction activities would last less than one year and would be even shorter in duration within a specific work area as the project progresses. Moreover, these construction activities would occur relatively far from the residences. Therefore, the construction activities under the Preferred Alternative would result in *short-term, less-than-significant adverse noise impacts* to the overall noise environment.

Approximately 44 training events on an annual basis proposed under the Preferred Alternative would result in an increase in noise levels during training exercises primarily around the Kettle Lake #3 area. Vehicles and helicopters traveling to and from the Project Sites during the training would be the primary noise sources. The greatest potential operational noise impacts are anticipated to occur at the nearest receptors including Zeb Apartment Complex during the training events. The predicted noise levels (in L_{eq} for each source type) from each training event at the nearest residence are summarized in **Table 7**. The maximum helicopter noise, about 61 dBA, could slightly exceed the maximum permissible noise level of 55 dBA applicable to a residential area per the City of Colorado Springs noise ordinance. However, the noise would be masked by the likely greater existing ambient noise dominated by the adjacent highway traffic in the residential neighborhood in close proximity to the training area. Conservatively assuming the daytime ambient noise level around the receptor is about 60 dBA, the increase in noise resulting from the maximum helicopter operational noise at the training area would be barely perceptible or not perceptible, since a 3-dBA increase in noise above ambient level is considered barely perceptible. Therefore, the Preferred Alternative would result in *long-term, less-than-significant adverse impacts* to the overall noise environment.

3.5.2.2 Alternative 2

Under Alternative 2, the training facilities would be constructed in different locations, resulting in slightly different spreads of construction activities. The water survival training facility would be constructed on the southeastern bank of Kettle Lake #3, which is several hundred feet closer to those identified closest sensitive receptors. The emergency parachute building may also be constructed in Jacks Valley instead of Davis Airfield; Jacks Valley is in the interior of the USAFA and further removed from off-base receptors. The minor changes in locations during construction would not result in meaningful change in noise impacts particularly as the predicted construction equipment noise levels as shown in **Table 6** are well below the noise limit per the local ordinance. Operational noise from training activities under Alternative 2 would be

the same as under the Preferred Alternative. Therefore, the anticipated adverse noise impacts from Alternative 2 would be comparable to the Preferred Alternative. Both construction and operational activities under Alternative 2 would result in *less-than-significant impacts* to the overall noise environment.

Table 7: Operational Noise Levels at Nearest Sensitive Receptors (dBA)

Sound Source	Reference Sound Level (L _{eq} in dBA)	Distance Reference Sound Level Measures (feet)	Equivalent Time Average Sound Pressure Level Closest Sensitive Receptor To Kettle Lake #3 @ 3,700 feet (0.7 mi) (L _{eq} in dBA)	Anticipated Daytime Background Noise Level at Nearest Sensitive Receptor (dBA)	Total Noise Increase above Ambient (dBA)
Helicopter (UH-60) ¹	66	2,000	61	60	1
Jet Ski ²	67	50	30		0
Transport Vehicle (Truck) ³	80	50	43		0

Sources:

- 1) Maximum noise level per US Army Public Health Command, Operational Noise Consultation, 52-EN-0D55-10, 2010; (U.S. Army Public Health Command, 2010).
- 2) (Federal Highway Administration, 2006); Assumed to be equivalent to the noise from an engine generator.
- 3) (Federal Highway Administration, 2006).

3.5.2.3 No Action Alternative

Under the No Action Alternative, the CST program at USAFA would not be implemented, and there would be *no impact* on the noise environment.

3.6 EARTH RESOURCES

Earth resources include geology, topography, and soils. Geological resources consist of surface and subsurface materials and their properties. Principal geologic factors influencing the ability to support structural development are seismic properties (i.e., potential for subsurface shifting, faulting, or crustal disturbance), soil stability, and topography. Radon is not discussed in this EA as the Proposed Action does not include any below-grade inhabitable structures.

The Farmland Protection Policy Act (FPPA) (7 USC 4201 et seq.) of 1981 states that federal agencies must “minimize the extent to which federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses.” The resources protected by the FPPA include prime and unique farmland, which are categorized by the Natural Resources Conservation Service (NRCS) based on underlying soil characteristics.

Hydric soils are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Under natural conditions, these soils are able to support growth and reproduction of hydrophytic vegetation. Presence of hydric soils is one of the criteria used to identify and delineate wetlands (see **Section 3.7**).

The ROI for earth resources is the Project Sites as shown on **Figure 3, Figure 4, and Figure 5**.

3.6.1 Affected Environment

Geology: The dominant geologic influence and physiographic feature in the USAFA area is the Pikes Peak batholith, a mass of magma that pushed its way upward through existing rock approximately 1 billion years ago. The resulting rock type, reddish-pink Pikes Peak granite, is prevalent on the installation. An associated formation, the Dawson Arkose, underlies much of USAFA and is visible in multiple areas, especially along Monument Creek where it is exposed. Dawson Arkose also occurs in several picturesque geologic monuments known locally as hoodoos, including Cathedral Rock on the western end of Jacks Valley. These formations consist of sandstones that have been created by the weathering of the Pikes Peak granite (Air Force, 2021). Depth to bedrock ranges widely, from roughly 6 to 78 feet below grade (USAFA, 2021a). The U.S. Geological Survey (USGS) 2018 Seismic Hazard Map shows the site is at moderate risk of seismic hazard (i.e., hazard level 3 out of 7) (USGS, 2018).

Topography: The Project Site is located in the Piedmont province, which is characterized by a series of west-to-east trending ridges interspersed by valleys and rolling land to the east. Elevations within the Project Sites range from approximately 6,475 feet by the preferred emergency parachute training facility location in Davis Airfield to approximately 7,220 feet by the Deadmans Warehouse area. Steeper slopes are present on the banks of Kettle Lake #3, notably on the south side of the lake. Topography is generally flat in the Davis Airfield, the Contractor’s Yard, and the Jack’s Valley potential storage location. The Deadmans Warehouse Storage area is on a relatively steep slope and would require more extensive grading activities (**Figure 10** and **Figure 10**).

Soils: The soils on USAFA are susceptible to water erosion if not protected with vegetation or other cover. Most soils on the installation are considered to be moderately erodible. Most of the soils at USAFA are derived from a granitic parent material. They are generally very shallow (horizons are not defined) and have very little fine or organic material. Deeper soils with finer particles and organic matter occur as outwash deposition in the valleys. Soils in a few areas (surrounding the airfield) have a slight-to-moderate erosion potential. Most of these areas are already associated with some type of fairly intensive human use. Very thin soils found on the steeper slopes of the southern and western boundaries have an extremely high erosion potential (USAFA, 2023c).

Seven soil map units are identified on the Project Site (**Table 8**, **Figure 12**, and **Figure 12**). No on-site soils are designated as prime farmland or hydric by the NRCS.

Table 8: Select Soil Characteristics for Project Area

Map Unit Name	Location	Landform / Description
Columbine gravelly sandy loam, 0 to 3 percent slopes	Davis Airfield and surrounding Kettle Lake #3	Fans, fan terraces, flood plains; well-drained soils; slightly erodible; depth to water table and restrictive feature are more than 80 inches
Jarre-Tecolote complex, 8 to 65 percent slopes	Deadman CST Warehouse Area	Alluvial fans; well-drained soils; severely erodible; depth to water table and restrictive feature are more than 80 inches
Kettle gravelly loamy sand, 3 to 8 percent slopes	Contractor’s Yard Storage Location	Hills; somewhat excessively drained soils; moderately erodible; depth to water table and restrictive feature are more than 80 inches
Kettle gravelly loamy sand, 8 to 40 percent slopes	Surrounding Kettle Lake #3	Hills; somewhat excessively drained soils; severely erodible; depth to water table and restrictive feature are more than 80 inches

Map Unit Name	Location	Landform / Description
Pring coarse sandy loam, 3 to 8 percent slopes	Jacks Valley (Parachute Facility and Storage Location)	Hills; well-drained soils; moderately erodible; depth to water table and restrictive feature are more than 80 inches
Tomah-Crowfoot loamy sands, 3 to 8 percent slopes	Deadman CST Warehouse Area	Alluvial fans, hills; well-drained soils; moderately erodible; depth to water table and restrictive feature are more than 80 inches
Water	Kettle Lake #3	N/A

Source: (NRCS, 2023)

3.6.2 Environmental Consequences

An earth resources impact would be significant if it would 1) expose people or structures to major geological hazards; 2) substantially increase potential occurrences of erosion or sedimentation; or 3) violate the FPPA.

3.6.2.1 Alternative 1 – The Preferred Alternative

Geology: During construction, shallow excavation and soil disturbance/removal would be required; however, bedrock is not anticipated to be encountered during construction, and no geologic hazards are apparent on the Project Sites. Further, seismic events are not expected to interfere with construction, nor would construction exacerbate the local risk of a seismic event occurring. Therefore, *no impacts* to geology are anticipated under the Preferred Alternative.

Topography: As described in **Section 2.3.1.1**, grading would be necessary to accommodate the Preferred Alternative. While most of the Project Sites are generally flat and would only require minor grading, since the Deadman CST warehouse area is on a significant slope, extensive grading would be required for construction at this location. The topography at this site does not provide any unique function or aesthetic value on USAFA or relative to the surrounding landscape. Changes in topography due to grading activities would slightly but permanently alter the topography at this location. Further, all graded slopes would be designed and constructed in a manner that would minimize potential future erosion, including through revegetation, retaining walls, or other engineering solutions. Therefore, *long-term, less-than-significant adverse impacts* to topography would result from construction of the Preferred Alternative.

Soils: Construction under the Preferred Alternative would disturb up to 1.6 acres (i.e., the maximum area of potential limits of disturbance [LODs]). Disturbed soils would be susceptible to runoff and erosion. Since the Project Sites would exceed 1 acre of land disturbance, the USAFA would obtain coverage under the current USEPA stormwater Construction General Permit (CGP) and develop a project-specific Stormwater Pollution Prevention Plan (SWPPP), which would establish erosion and sediment controls to manage stormwater discharges and minimize sedimentation to the extent practicable. Construction crews would adhere to best management practices (BMPs) outlined in the SWPPP, and the erosion and sediment controls would be implemented prior to land-disturbing activities and maintained in good working order for the duration of construction. The Preferred Alternative would result in *short-term, less-than-significant adverse impacts* to soil runoff and erosion.

Construction activities would not disturb any soils designated by the NRCS as prime or unique farmland, or farmland of statewide importance. No farmland would be taken out of current or future production to facilitate the Preferred Alternative. Therefore, the Preferred Alternative would have *no impact* on prime farmland soils.

Figure 9: Topography (Preferred Alternative)

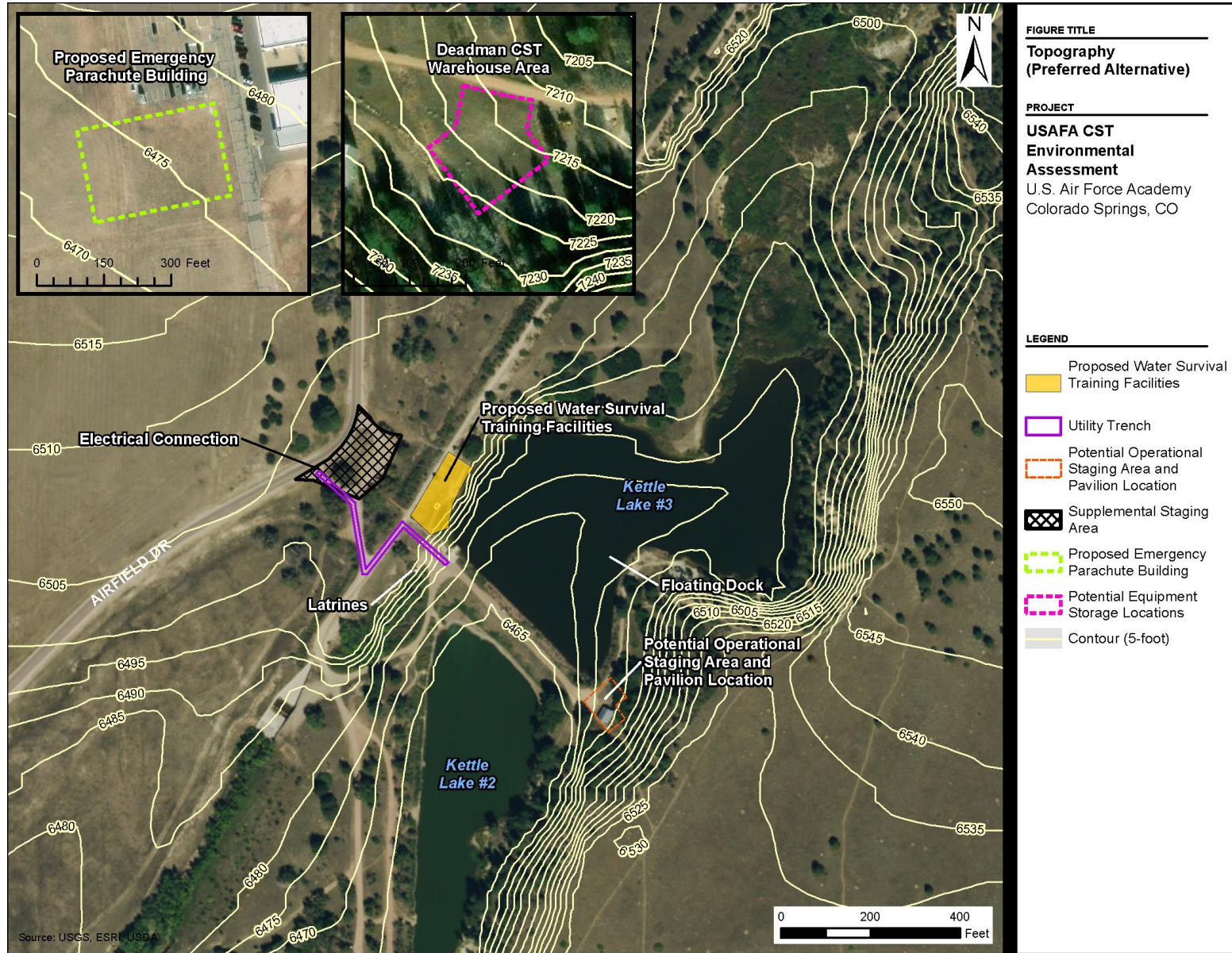


Figure 10: Topography (Alternative 2)

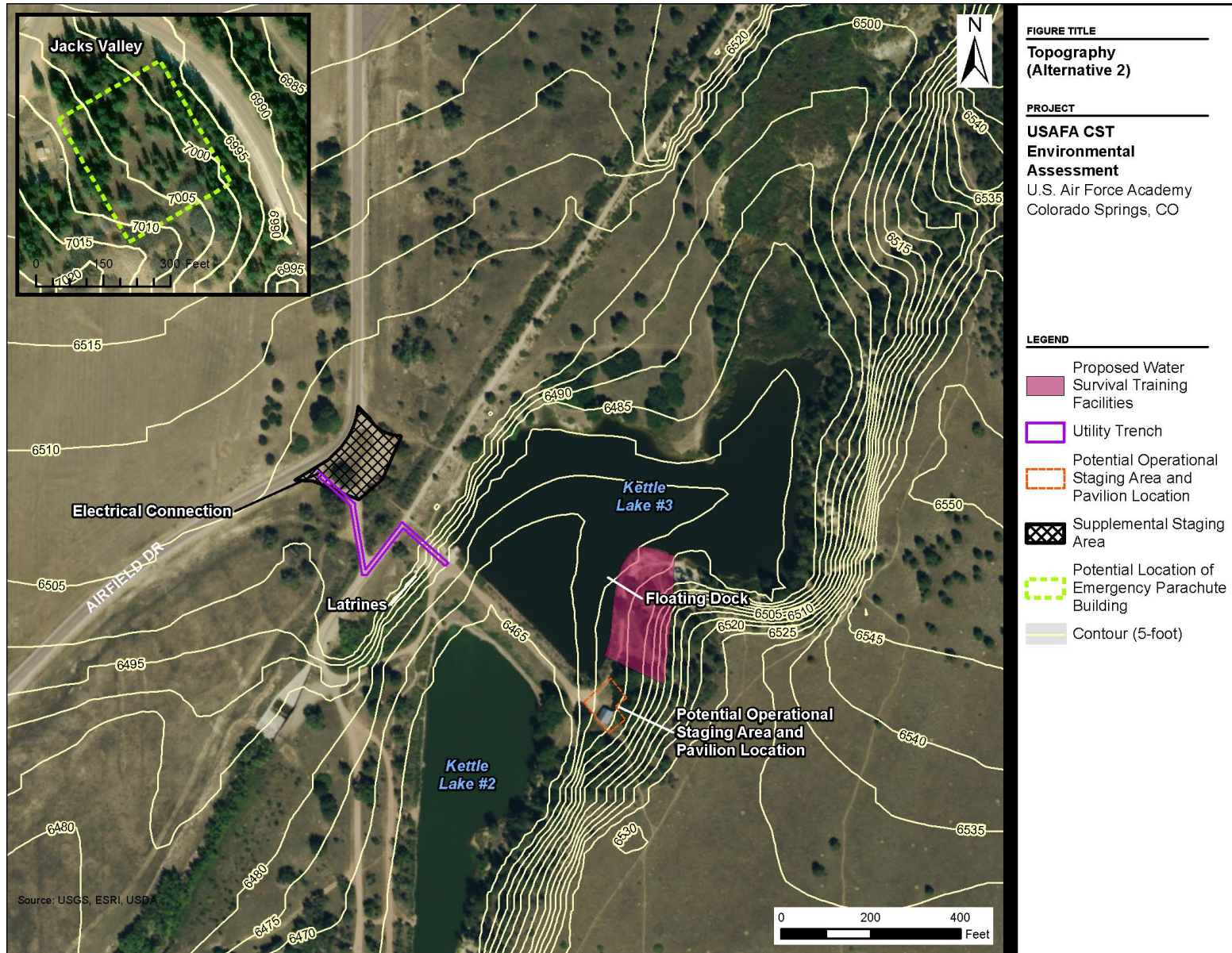


Figure 11: Soils (Preferred Alternative)

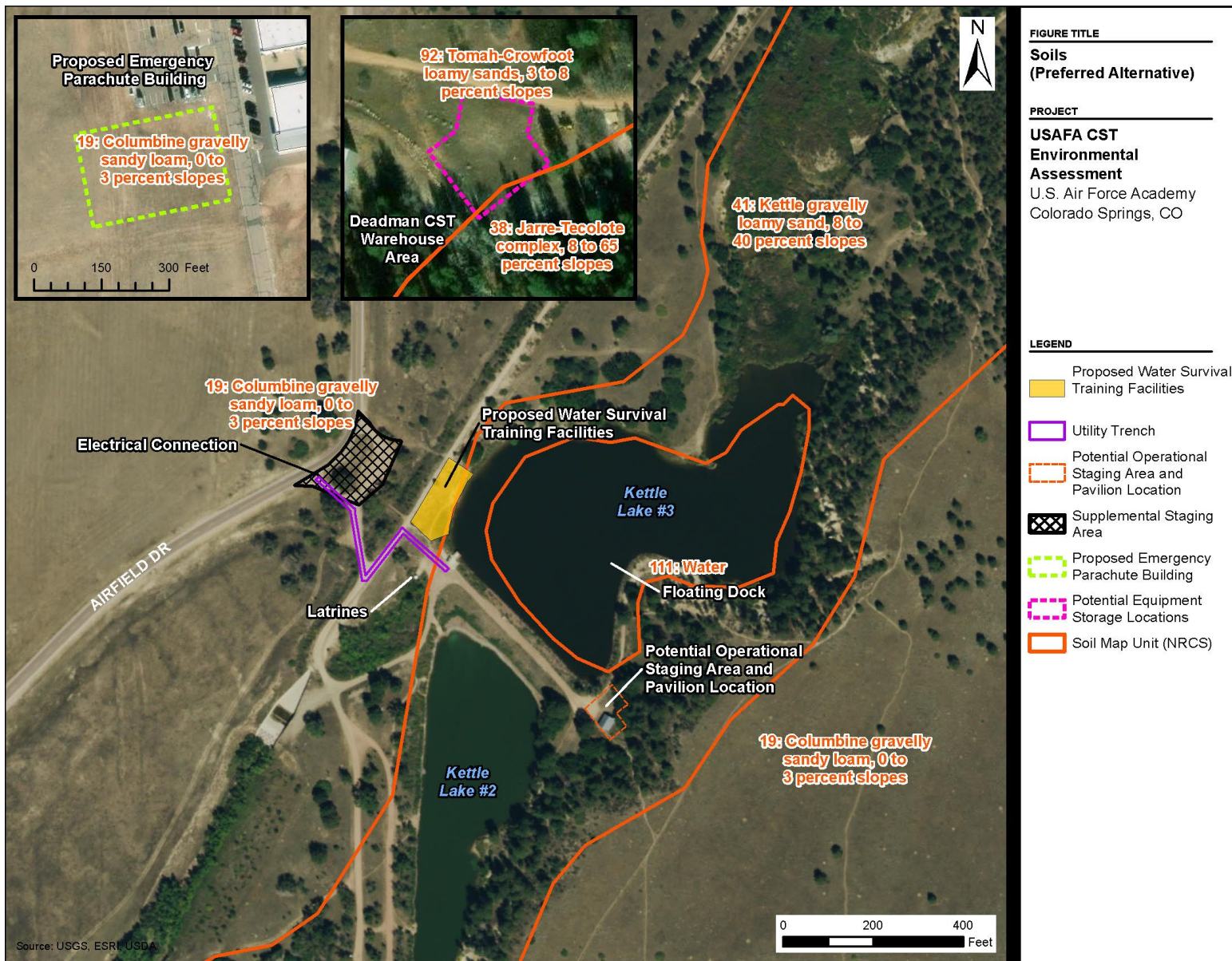
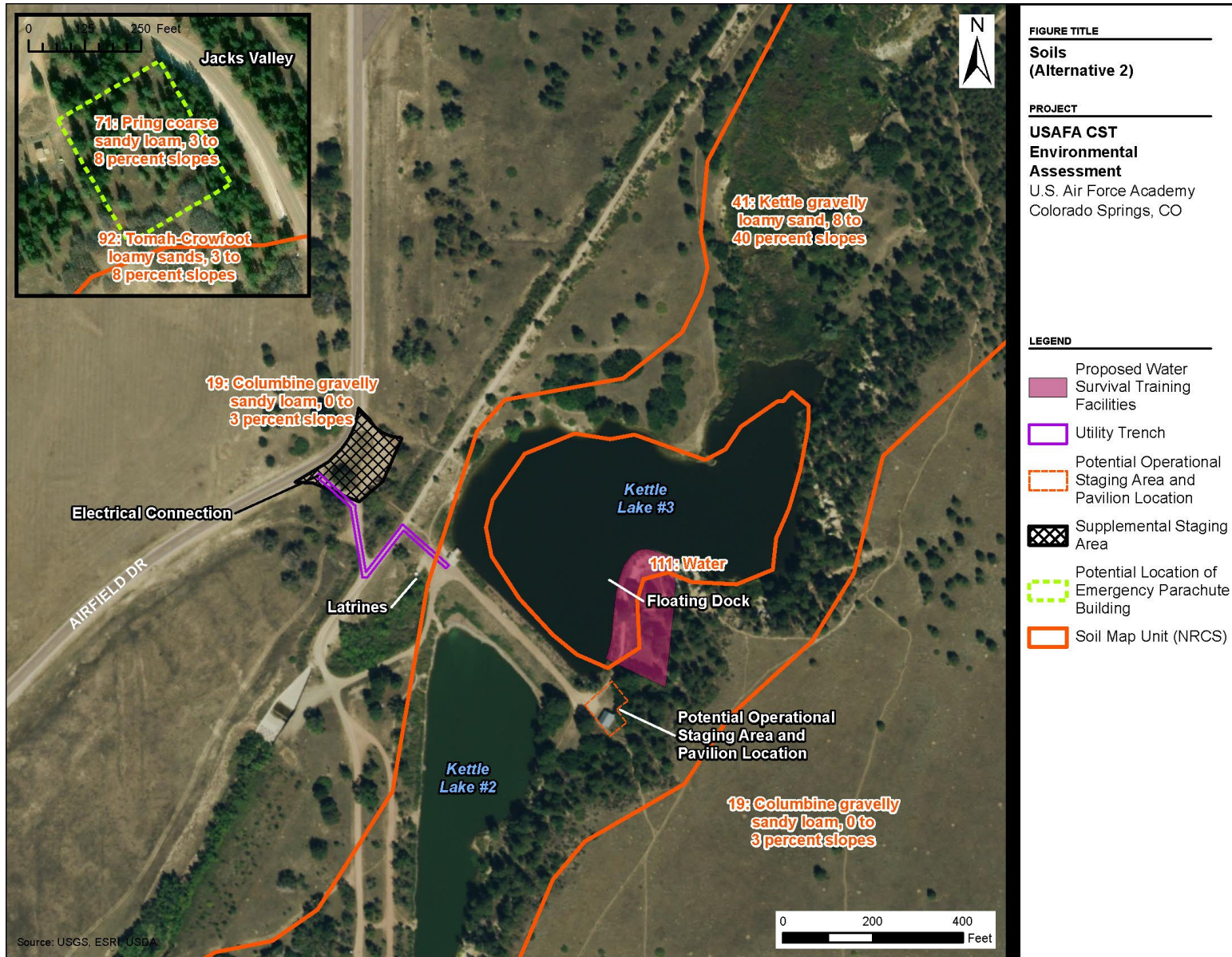


Figure 12: Soils (Alternative 2)



Finally, as part of the site design and in accordance with Section 438 of the Energy Independence and Security Act (EISA), the USAFA would ensure the pre-development hydrology of the Project Sites would be maintained to the maximum extent technically feasible. This would be accomplished through site grading, the use of low-impact development (LID) features, such as stormwater management features, and through site revegetation to prevent erosion. Implementation of these measures would manage long-term soil erosion and sedimentation during operation of these new hardened areas and would minimize the potential for long-term impacts to soils.

3.6.2.2 Alternative 2

Geology: Impacts to geology under Alternative 2 would be identical to those described under the Preferred Alternative. *No impacts* to geology are anticipated under Alternative 2.

Topography: Impacts to topography under Alternative 2 would be similar to those described under the Preferred Alternative. However, Alternative 2 has larger areas of disturbance, particularly if Jacks Valley is chosen as the emergency parachute training facility location. While the topography on the south side of Kettle Lake is slightly steeper than the northwest, substantial grading is not anticipated, as the USAFA would use the flat area near the shoreline. There would be no difference in topography impacts at the storage locations, or if Davis Airfield is chosen as the emergency parachute training facility location. Therefore, while slightly greater than the Preferred Alternative, long-term adverse impacts to topography under Alternative 2 would be *less-than-significant*.

Soils: Impacts to soils under Alternative 2 would be similar to those described under the Preferred Alternative. However, Alternative 2 has a larger area of potential disturbance (approximately 3.6 acres), particularly if Jacks Valley is chosen as the emergency parachute training facility location; increased disturbance could lead to more substantial runoff and erosion. However, as under the Preferred Alternative, USAFA would develop a project-specific SWPPP, follow BMPs, and implement erosion and sediment controls prior to starting construction. Therefore, while slightly greater than the Preferred Alternative, short-term adverse impacts to soil runoff and erosion under Alternative 2 would be *less-than-significant*.

As under the Preferred Alternative, Alternative 2 would not disturb any soils designated as prime or unique farmland, or farmland of statewide importance. Therefore, Alternative 2 would have *no impact* on prime farmland soils.

Finally, as under the Preferred Alternative, Alternative 2 would be designed in accordance with Section 438 of the EISA, managing ongoing soil erosion and sedimentation and minimizing the potential for long-term soil impacts.

3.6.2.3 No Action Alternative

Under the No Action Alternative, the CST program at USAFA would not be implemented, no construction would occur, and there would be *no impact* to earth resources.

3.7 WATER RESOURCES

Water resources analyzed in this EA include surface water (including stormwater), wetlands, floodplains, and groundwater. Surface water resources comprise lakes, rivers, and streams and are important for a variety of ecological, economic, recreational, aesthetic, and human health reasons. Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (USACE, 1987). Wetlands serve a variety of functions including flood control, groundwater

recharge, maintenance of biodiversity, wildlife habitat, recreational opportunities, and maintenance of water quality. Floodplains are belts of low, level ground on one or both sides of a stream channel and are subject to either periodic or infrequent inundation by flood water. A 100-year floodplain has a 1 percent chance of inundation in any given year. Inundation dangers associated with floodplains have prompted federal, state, and local legislation that limits development in these areas largely to recreation and preservation activities. Groundwater can be defined as subsurface water resources that are interlaid in layers of rock and soil and recharged by surface water seepage. Groundwater is important for its use as a potable water source, agricultural irrigation, and industrial applications.

The ROI for surface waters, wetlands, and floodplains includes the boundaries of the site, as well as the down-gradient waterbodies receiving stormwater runoff within 0.5 mile of the site. The ROI for groundwater includes the portion of the groundwater basin that underlies the site.

3.7.1 Affected Environment

Surface Water: The primary surface water feature on USAFA is Monument Creek, which runs from north to south on the east side of the installation. USAFA covers approximately 12 percent of the Monument Creek Watershed, but nearly 75 percent of the watershed's drainage flows through USAFA in Monument Creek before exiting the southern boundary of the installation (USAFA, 2023c).

Kettle Lake #3 is the predominant surface water feature within/adjacent to the Proposed Action components. The Kettle Lakes have small local drainage areas and are primarily fed by Kettle Creek via an outlet conduit that transfers water across I-25. Kettle Creek is an intermittent stream that eventually flows into Monument Creek, just outside of USAFA's southern border. The Kettle Lakes have historically been used by USAFA for training exercises and recreation, and USAFA currently supports an active recreational fishing program by periodically stocking the lakes with rainbow trout and channel catfish (USAFA, 2023c). These lakes are impounded by jurisdictional dam structures that have been given a low hazard classification by DWR (USAFA, 2021a). Kettle Lake #3 is approximately 6.5 acres and up to 18 feet deep and has some adjacent wetlands; a dam on the western side separates it from Kettle Lake #2.

Deadmans Creek occurs on the western edge of the proposed Deadmans CST warehouse area (**Figure 13**). This is an intermittent creek that was dry during a site visit conducted on March 15, 2023. No other receiving waterbodies occur within or adjacent to the Proposed Action components.

While Kettle Creek, both north and south of Kettle Lake #3 is not impaired, downstream Monument Creek is listed as impaired for aquatic life use (macroinvertebrates and temperature), water supply use (manganese), and recreational use (*E. coli*). A Total Maximum Daily Load (TMDL) has not been established for Monument Creek (CDPHE, 2022).

USAFA manages stormwater through a Stormwater Management Program (SWMP). Construction activities that disturb one or more acres of land are subject to the current USEPA stormwater CGP (see **Section 3.6**). This permit requires the completion of a project-specific SWPPP, which identifies erosion control and BMPs to manage stormwater discharges (USAFA, 2022).

Wetlands: Wetlands are present in the ROI, primarily occurring as fringe wetlands along the banks of Kettle Creek and the Kettle Lakes. The most recent wetland delineation of the Project Site was conducted in 2002 as part of a USAFA-wide wetland mapping project (USAFA, 2023c). No wetlands occur within the LODs of the Preferred Alternative or Alternative 2; however, wetlands may occur less than 100 feet from the Preferred Alternative to the east and south (**Figure 13**). Additionally, during site visits on March 15, 2023, and July 5, 2023, the vegetation surrounding Kettle Lake #3 consisted of upland, dry, prairie species. No other wetlands are known to occur within the areas where Proposed Action components would occur.

Floodplains: Floodplains are typically low-lying areas that are subject to inundation during significant rainfall events. While the USAFA is not mapped by the Federal Emergency Management Agency national flood hazard layers, the area surrounding the Kettle Lakes is not considered a 100-year floodplain. Kettle Lake #3 receives water primarily from a flow diversion culvert, and water height is regulated with a dam. Based on the size and hazard classification, USAFA has determined that the three Kettle Lakes require 50-year capacity spillways. Currently, only Kettle Lake #1 has a spillway. According to the Colorado State Engineer's Office, the very long embankment on Kettle Lake #2 is a mitigating factor and is the reason formal spillways have not been required on Kettle Lake #2 and #3 (USAFA, 2021a). A 100-year floodplain exists along Kettle Creek downstream of the flow diversion culvert and Kettle Lake #3 (**Figure 13**). The 500-year floodplain has not been mapped on USAFA; however, occurrence of a 500-year flood event would be anticipated to result in overtopping of the Kettle Creek Dry Dam, after which the water would sheet flow across I-25 and be captured in the historical Kettle Creek channel which includes the Kettle Lakes. Such an event would likely damage the water control infrastructure (i.e., dams, culverts, etc.) that maintain the Kettle Lakes.. No mapped floodplains exist within the other areas where Proposed Action components would occur.

Groundwater: The southern portion of USAFA is within the upper basin of the Arkansas Aquifer, where groundwater is primarily used for domestic and agricultural purposes. The Arkansas Aquifer is an alluvial aquifer, which is an unconfined aquifer associated with major river systems. These alluvial aquifers contain groundwater stored in unconsolidated sediment along river valleys, and as a result, are often referred to as "tributary aquifers" because they typically interact with the associated stream surface water and may exhibit seasonal variation in response to surface-water flow (Colorado State University, 2023). Additionally, Jacks Valley and the northern part of the USAFA are in the Denver Basin aquifer system, a confined aquifer system. Streams draining eastward into the Denver Basin are generally perennial and originate as snowmelt runoff from the Rocky Mountain Front Range. Streams that originate on the semiarid plains within the Denver Basin are generally ephemeral and intermittent, receiving water primarily from local precipitation runoff and groundwater discharge. Groundwater in alluvial and bedrock aquifers interacts with surface water as streams cross the basin, and groundwater movement occurs between the alluvial and bedrock aquifers. The Denver Basin aquifer system is administratively recognized as nonrenewable because the aquifers are primarily confined and receive little precipitation recharge (USAFA, 2021b). The USAFA does not receive potable water from groundwater sources and the Project Site is not within a sole source aquifer.

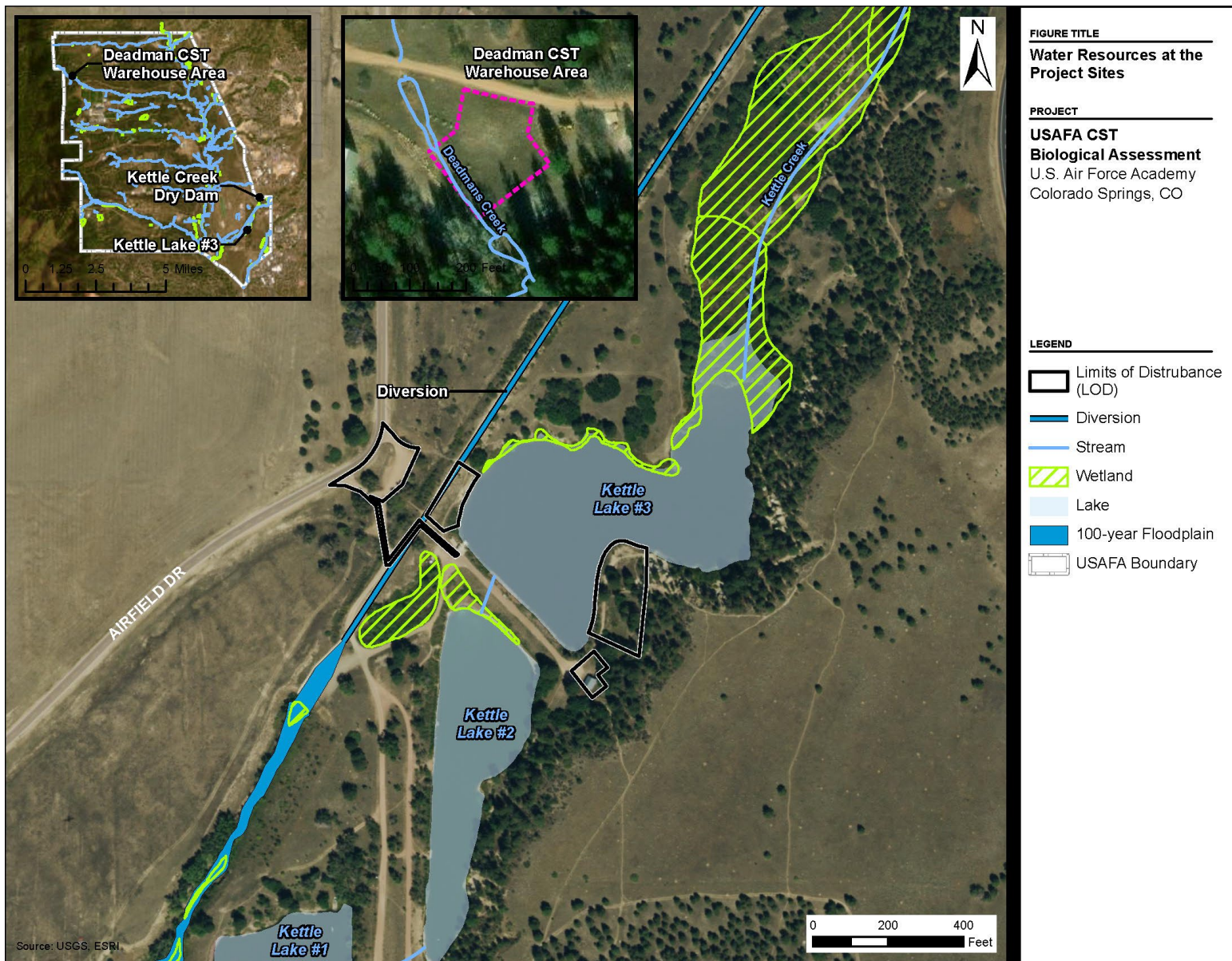
3.7.2 Environmental Consequences

A water resources impact would be significant if it would 1) substantially reduce water availability or interfere with the water supply to existing users; 2) create or contribute to the overdraft of groundwater basins or exceed decreed annual yields of water supply sources; 3) substantially adversely affect surface or groundwater quality; 4) degrade unique hydrologic characteristics; or 5) violate established water resources laws or regulations.

3.7.2.1 Alternative 1 – The Preferred Alternative

Surface Waters: Construction of the Preferred Alternative would directly disturb approximately 147 linear feet of shoreline along Kettle Lake #3. The proposed water tower and lateral drift apparatus would be constructed either on the northwest bank or in the water of Kettle Lake #3. Additionally, Deadmans Creek is within the ROI, as it occurs on the edge of the LOD identified for the Deadmans Warehouse preferred storage location. Excavation, soil stockpiling and grading activities may temporarily increase erosion and sedimentation in these surface water features. However, Deadmans Creek is an intermittent stream, and any direct impacts would be avoided in the final design stage. Therefore, the Preferred Alternative would likely only have indirect impacts to Deadman's Creek, which would be avoided and minimized through adherence to a SWPPP and BMPs.

Figure 13: Water Resources at the Project Sites



Prior to starting construction, USAFA would coordinate with the USACE and Colorado Division of Water Resources (CDWR) and would obtain all necessary permits, including a permit to install the water tower if in-water activities are proposed. The USAFA would also obtain coverage under the current USEPA stormwater CGP and develop a project-specific SWPPP, which would identify erosion controls and BMPs to manage stormwater discharges. The site would also be designed in compliance with Section 438 of the EISA to restore the pre-development hydrology of the site to the maximum extent technically feasible. Therefore, construction of the Preferred Alternative would have *short-term, less-than-significant adverse impacts* on surface waters in the ROI. Impacts would be minimized to the extent practicable through adherence to USAFA's SWMP and the SWPPP.

Since water survival training activities would occur within Kettle Lake #3, the Preferred Alternative would directly impact surface waters. However, these temporary operational training activities should not have a substantial negative impact on Kettle Lake #3, and the lake is already used by USAFA for training exercises. Therefore, the Preferred Alternative would have *long-term, less-than-significant adverse impacts* on surface waters in the ROI.

The Preferred Alternative is not anticipated to exacerbate any of the issues causing impairment to Monument Creek (macroinvertebrate health, temperature, manganese, or *E. coli*). Therefore, the Preferred Alternative would have *no effect* on impaired streams.

Wetlands: Current wetland delineations show no wetlands within the LODs of the Preferred Alternative, which was confirmed during site visits on March 15, 2023, and July 5, 2023. Since no bank-side wetlands exist within the LODs, there would be *no direct impacts* from the Preferred Alternative. However, should any wetlands within the LODs of the Preferred Alternative be identified, USAFA would coordinate with USACE and CDWR to obtain any necessary permits prior to the start of construction.

Since construction of the water survival training activities would occur directly adjacent to potential wetlands on the northwest bank of Kettle Lake #3, the Preferred Alternative could indirectly impact these wetlands by increased erosion and sedimentation during construction. However, these impacts would be temporary and would be minimized through adherence to USAFA's SWMP and the SWPPP. USAFA would obtain all necessary permits from USACE and CDWR prior to starting construction. Therefore, the Preferred Alternative would have *short-term, less-than-significant adverse impacts* on wetlands in the ROI. As no wetlands exist within the LODs of the Preferred Alternative, there would be *no operational impact*.

The USAF published an early public notice in the *Colorado Springs Gazette* and the *Colorado Springs Independent* on March 23, 2023, to disclose that the Proposed Action would take place within a wetland and a floodplain (**Appendix E**). No public comments were received. While the USAFA would avoid wetland and floodplain impacts to the extent feasible, because the Proposed Action involves training activities within Kettle Lake #3, there is no practicable alternative to working in wetlands. The USAFA prepared a FONPA in accordance with Executive Order (EO) 11990, *Protection of Wetlands*, for this Proposed Action.

Floodplains: The Preferred Alternative would not be constructed within a 100-year floodplain; therefore, it would have *no effects*. The Preferred Alternative may result in negligible impacts on the 500-year floodplain due to a small amount of fill (and associated reduction in flood capacity) within the historical Kettle Creek channel floodplain. Additionally, the proposed water survival training infrastructure may be susceptible to damage from a 500-year flood.

The USAF published an early public notice in the *Colorado Springs Gazette* and the *Colorado Springs Independent* to disclose that the Proposed Action would take place within a wetland and a floodplain (**Appendix E**). No comments were received. While the USAFA designed the Preferred Alternative to avoid floodplain impacts to the extent feasible, because the Preferred Alternative involves working within and

adjacent to a lake, for the purpose of water survival training activities, there is no practicable alternative to working in floodplains. The USAFA prepared a FONPA in accordance with EO 11988, *Floodplain Management*, for this Proposed Action.

Groundwater: Construction of the Preferred Alternative would not be anticipated to intersect groundwater (e.g., through deep excavation), involve groundwater withdrawals, or intentionally release or inject materials into groundwater resources and aquifers. Potential impacts to groundwater may still occur, however, from the accidental spill or release of petroleum products or other liquids used during construction activities. With implementation of BMPs, such as performing routine inspections of equipment, maintaining spill-containment materials on-site, and adhering to site-specific hazardous and toxic materials and waste (HTMW) plans, the potential for impacts to groundwater would be minimized, potentially resulting in *short-term, less-than-significant adverse impacts* to groundwater in the ROI. Once construction is complete, operational activities would not be anticipated to impact groundwater. Therefore, the Preferred Alternative would have *no long-term impacts* to groundwater.

3.7.2.2 Alternative 2

Surface Waters: Impacts to surface waters under Alternative 2 would be similar to those described under the Preferred Alternative. However, construction of Alternative 2 would have a slightly larger impact, directly disturbing approximately 347 linear feet of shoreline along Kettle Lake #3. Potential impacts to Deadmans Creek from Alternative 2 would be identical to those under the Preferred Alternative and would be similarly avoided and minimized. As under the Preferred Alternative, the proposed water tower and lateral drift apparatus would be constructed either on the south bank or in the water of Kettle Lake #3; excavation, soil stockpiling and grading activities may similarly increase erosion and sedimentation in these surface water features, but only temporarily. As under the Preferred Alternative, USAFA would coordinate with USACE and CDWR to obtain the necessary permits for any in-water construction activities, and impacts would be minimized to the extent practicable through adherence to USAFA's SWMP and the SWPPP. Therefore, construction of Alternative 2 would have *short-term, less-than-significant adverse impacts* on surface waters in the ROI.

Operational impacts to surface waters and impacts to impaired streams from Alternative 2 would be identical to those under the Preferred Alternative.

Wetlands: Impacts to wetlands would be similar under Alternative 2. Since no bank-side wetlands exist within the LODs, there would be *no direct impacts* from Alternative 2. However, should any wetlands within the LODs of Alternative 2 be identified, USAFA would coordinate with USACE and CDWR to obtain any necessary permits prior to the start of construction.

Additionally, as under the Preferred Alternative, other wetlands within the ROI could be indirectly impacted by increased erosion and sedimentation during construction. Wetlands are slightly further away from the LODs of Alternative 2 than the Preferred Alternative. However, as under the Preferred Alternative these impacts would be temporary and would be minimized through adherence to USAFA's SWMP and the SWPPP. USAFA would obtain all necessary permits from USACE and CDWR prior to starting construction. Therefore, Alternative 2 would have *short-term, less-than-significant adverse impacts* on wetlands in the ROI. As no wetlands exist within the LODs of Alternative 2, there would be *no operational impact*.

Floodplains: Impacts to floodplains under Alternative 2 may be slightly larger than those under the Preferred Alternative, as Alternative 2 has a larger disturbance area. However, Alternative 2 would still not contribute to any measurable loss with regard to flood control capacity at Kettle Lake #3. Therefore, Alternative 2 would have similarly *negligible impacts* to floodplains.

Groundwater: Impacts to groundwater under Alternative 2 would be identical to those described under the Preferred Alternative. Overall, Alternative 2 would result in the potential for *short-term, less-than-significant adverse impacts* and *no long-term impacts* to groundwater.

3.7.2.3 No Action Alternative

Under the No Action Alternative, the CST program at USAFA would not be implemented, and there would be *no impact* on water resources.

3.8 BIOLOGICAL RESOURCES

Biological resources addressed in this EA consist of vegetation, wildlife, and special status species. Special status species relevant to this EA are those protected under the ESA, Bald and Golden Eagle Protection Act of 1940, Migratory Bird Treaty Act of 1918, or under applicable state laws or regulations.

The USAF reviewed the potential for the Proposed Action to affect federally listed threatened or endangered species. The USAF’s documentation of its biological assessment (BA) and consultation with the USFWS is provided in **Appendix B**.

The ROI for biological resources includes vegetation present within the boundary of the areas where Proposed Action components would occur; wildlife present on-site or within 0.5 mile of the emergency parachute building or CST warehouse site boundaries (to account for construction noise), or within 0.7 mile of Kettle Lake #3 (to account for helicopter noise during training; see **Section 3.5**); and aquatic resources present on-site or downstream of the site within 0.5 mile (in accordance with the ROI for surface waters; see **Section 3.7**).

3.8.1 Affected Environment

Vegetation: Vegetation types on USAFA can be generally divided into two zones, the Montane Zone (8,000-9,000 feet elevation) along the western edge of USAFA, and the Foothill Zone (6,000 to 8,000 feet) where the areas where Proposed Action components would occur are located. The Montane Zone includes mixed conifer forests, while the Foothill Zone includes mixed woodlands, oak shrubland, and grasslands (USAFA, 2021a). Site visits were conducted at the areas where Proposed Action components would occur on March 15, 2023, and July 5, 2023. Descriptions of vegetation observed during these visits are presented in **Table 9**.

Table 9: Vegetation on the Project Sites

Alternative	Location	Vegetation Description
Alternative 1 (Preferred Alternative)	Proposed Water Survival Training Facilities	This area includes vegetated open field and boulders with a robust herbaceous layer composed of smooth brome (<i>Bromus inermis</i>), blue grama (<i>Bouteloua gracillis</i>), crested wheatgrass (<i>Agropyron cristatum</i>), western ragweed (<i>Ambrosia psilostachya</i>), and common mullein (<i>Verbascum thapsus</i>). Pockets of shrub vegetation consisting of prairie sagebrush (<i>Artemisia frigida</i>), golden currant (<i>Ribes aureum</i>), and narrowleaf willow (<i>Salix exigua</i>) are interspersed throughout the area. No trees occur in this area and the area is intersected by a walking trail devoid of vegetation.
	Proposed Emergency Parachute Building (Davis Airfield)	This area is dominated by herbaceous growth, consisting of blue grama, hairy golden aster (<i>Heterotheca villosa</i>), and sand dropseed (<i>Sporobolus cryptandrus</i>). The vegetation on site is maintained to a maximum height of 3 inches tall.

Alternative	Location	Vegetation Description
Alternative 2	Proposed Water Survival Training Facilities	Tree coverage within this area is approximately 50 percent and is comprised of ponderosa pines (<i>Pinus ponderosa</i>) and gambel oaks (<i>Quercus gambelii</i>). The shrub vegetation layer is comprised primarily of gambel oak and a few Siberian peashrub (<i>Caragana arborescens</i>). Approximately 30 percent of this area is covered by an herbaceous layer, which is dominated by little bluestem (<i>Schizachyrium scoparium</i>), blue grama, smooth brome, and alfalfa (<i>Medicago sativa</i>). Vegetation along the shoreline appears to be heavily cut back as part of the operational maintenance of Kettle Lake #3.
	Proposed Emergency Parachute Building (Davis Airfield)	See description under Alternative 1.
	Proposed Emergency Parachute Building (Jacks Valley)	This area is currently undeveloped and consists of a planted stand of ponderosa pines with an open, vegetated understory. The understory is dominated by smooth brome, with less dominant herbaceous species including hairy golden aster and prickly pear (<i>Opuntia</i> sp.). In total, approximately 95 percent of the site is covered by vegetation (15 percent trees and 80 percent herbaceous).
Storage Locations (Alternative 1 and Alternative 2)	Deadman CST Warehouse Area	This area includes a vegetated open field interspersed with boulders and predominately covered by an herbaceous layer of vegetation consisting of 80 percent smooth brome and 5 percent blue grama. Less dominant herbaceous species observed include prairie sagebrush, hoary golden aster (<i>Heterotheca canescens</i>), and yucca (<i>Yucca</i> sp.). No shrubs or trees occur on this location.
	Contractors Yard	This location consists of gravel-packed ground, impervious surfaces, a storage shed, and vehicle washout station. Herbaceous vegetation in this area includes yellow sweetclover, common mullein, big-bract verbena (<i>Verbena bracteata</i>), horseweed (<i>Coryza canadensis</i>), and diffuse knapweed. Ponderosa pine trees are scattered around the exterior, just within the boundary of the site.
	Jacks Valley	This area is dominated by a relatively bare gravel pad, surrounded by a halo of grass/weeds. This area has approximately 30 percent vegetation cover, composed primarily of herbaceous vegetation consisting of diffuse knapweed, tufted lovegrass (<i>Eragrostis ectinacean</i>), hoary aster (<i>Machaeranthera canescens</i>), hairy golden aster, big-bract verbena, sand dropseed and smooth brome (<i>Bromus inermis</i>). No trees occur in this area.

Remaining areas where Proposed Action activities would take place, including construction and operational staging areas, the latrine area, and utility corridors, are highly trafficked areas that contain no or negligible amounts of vegetation.

Noxious weeds present on the Project Sites include diffuse knapweed (*Centaurea diffusa*), creeping thistle (*Cirsium arvense*), and field blindweed (*Convolvulus arvensis*). USAFA conducts population monitoring of noxious weeds every five years, with the most recent survey being completed in 2018. USAFA resource management staff, herbicide contractors, and the CNHP regularly conduct treatment activities for noxious weeds throughout the installation. Treatment methods include a combination of herbicide application and manual removal. Riparian areas on USAFA, including the area surrounding Kettle Lake #3, are designated as Special Weed Management Areas. These areas are delineated on the installation and include natural

areas with high biodiversity. In these areas, manual removal is the preferred treatment for noxious weeds and any herbicide use is carefully monitored (CNHP, 2021).

Wildlife: The USAFA supports a high diversity of faunal species due to its topographic variation, presence of high-quality riparian habitat, location at the convergence of north-south and plains-mountains transition zones, and proximity to the undeveloped forested expanses of the Pike National Forest (USAFA, 2023c). Critical movement corridors are preserved for mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), American elk (*Cervus elaphus*), black bear (*Ursus americanus*), and mountain lion (*Felis concolor*) (USAFA, 2023c). Monument Creek and its tributaries (including Kettle Creek and Deadmans Creek) are important riparian habitats for wildlife, especially white-tailed deer, PMJM, amphibians, and avian species. The highest diversity of species on USAFA occurs in these riparian and shrub communities (USAFA, 2023c). Mature ponderosa pine stands on USAFA provide important habitat for Abert's squirrel (*Sciurus aberti*). Aquatic habitat on the Project Site is limited to Kettle Lake #3, which is known to support communities of fish (USAFA, 2023c).

Special Status Species: The USAF requested and received an Official Species List from the USFWS' Information for Planning and Consultation tool (IPaC) identifying federally threatened, endangered, and candidate species with potential to occur on the Project Site (USFWS, 2023a). The Official Species List identified three species that only need to be considered under specific circumstances. The federally endangered gray wolf (*Canis lupis*) only needs to be considered if the project includes a predator management program. The piping plover (*Charadrius melodus*) and pallid sturgeon (*Scaphirhynchus albus*) only need to be considered if the project includes water-related activities and/or use in the N. Platte, S. Platte, or Laramie River Basins which may affect listed species in Nebraska. As the Proposed Action does not include a predator management plan, nor does it occur in the river basins of interest, these species are not considered in this analysis. The remaining species are considered briefly and discussed in **Table 10**. Additionally, the CPW maintains a list of state-threatened and endangered species, as well as state species of special concern. Currently, there are 79 species on this list (CPW, 2022).

IPaC identified 16 migratory Birds of Conservation Concern (BCC)⁶ as having potential to occur on the Project Site. Riparian areas on USAFA provide important stopover and breeding habitat for migratory birds. The breeding season for these BCCs is generally March through August (USFWS, 2023b).

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) have been recorded on USAFA (USAFA, 2023c). Notably, golden eagles are periodically observed in the mountainous region near the western border of USAFA. Currently, there are no known bald eagle nests on USAFA or in the vicinity of the Project Site. The nearest recorded bald eagle nesting site is approximately 17 miles southeast of Kettle Lake #3 (CPW, 2018).

⁶ The USFWS identifies BCCs with potential to occur on the Project Site. BCCs are defined as "migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent [the USFWS's] highest conservation priorities" (USFWS, 2021).

Table 10: Federally Threatened and Endangered Species Potentially Found in the Project Area or with Potential to be Affected by the Proposed Action

Species	Discussion	Federal Status
Preble's meadow jumping mouse (PMJM; <i>Zapus hudsonius preblei</i>)	PMJM is a small nocturnal rodent native to the Rocky Mountains-Great Plains interface of eastern Colorado and southeastern Wyoming. This species occupies moist lowlands with dense vegetation with a nearby water source. Notably, PMJM hibernates underground from September to May (USFWS, 2000a). The USAFA supports a significant PMJM population and suitable habitat occurs in the vicinity of Kettle Lake #3 and in the Deadman CST Warehouse Area. Following federal listing of this species in May 1998, the USAFA entered formal consultation with the USFWS regarding the PMJM, and developed a Conservation Agreement and Conservation Plan (USFWS, 2000b; CNHP, 1999). In April 2000, the USFWS rendered a "no jeopardy" Biological Opinion (BO) for the USAFA's proposed actions in PMJM habitat so long as they are conducted in accordance with these documents (USFWS, 2000a). The BO is renewed every 5 years.	Threatened
Tricolored bat (<i>Perimyotis subflavus</i>)	Tricolored bats are found hibernating in caves and abandoned mines in the winter. In the spring, summer, and fall, this species is found foraging in forested habitats and roosting in leaf clusters of live or recently dead deciduous hardwood trees (USFWS, 2023c). Although the tricolored bat is not currently listed under the ESA, the USAF has included this species in its analysis due to its status as a "proposed endangered" species. This species has been documented in eastern Colorado; however, the Project Site is located outside (west) of this species' known range (USFWS, 2023c). Furthermore, the low number of documented occurrences in eastern Colorado suggest that occurrences of this species in Colorado are accidental (Colorado State University, 2023). Moreover, a survey for this species was conducted by the USAFA in 2022, but no individuals were observed (USAFA, 2023c).	Proposed Endangered
Eastern black rail (<i>Laterallus jamaicensis</i>)	Eastern black rails in Colorado are found in shallow emergent wetlands characterized by water depth of less than 2 inches and dense emergent vegetation dominated by cattails (<i>Typha spp.</i>), hardstem bulrush (<i>Scirpus acutus var. acutus</i>), soft-stemmed bulrush (<i>Schoenoplectus tabernaemontani</i>), and willow (<i>Salix spp.</i>) (CPW, 2016). The eastern black rail has only been documented in El Paso County once, at Fort Carson Military Reservation during a 2022 survey, over 20 miles from USAFA. This species is also known to occur in neighboring Lincoln and Pueblo counties (CPW, 2016). A survey for this species was conducted by the USAFA in 2022 and 2023, but no individuals were observed (USAFA, 2023c; B. Muhlbacher, personal communication, July 31, 2023). Therefore, the Proposed Action would have no effect on the eastern black rail.	Threatened
Mexican spotted owl (<i>Strix occidentalis lucida</i>)	The Mexican spotted owl is found in forested mountains and canyonlands throughout the southwestern United States. In Colorado, roosting and nesting primarily occur in rocky canyons with most nests being built in caves or on cliff ledges in steep-walled canyons (USFWS, 2023d). USAFA provides limited habitat for this species; although transient individuals may fly over the installation.	Threatened
Greenback cutthroat trout (<i>Oncorhynchus clarkii stomias</i>)	Greenback cutthroat trout inhabit cold water streams and lakes with adequate stream spawning habitat present in spring (USFWS, 1998). This species is only known to exist in streams isolated from other fish where, with the exception of Bear Creek, it has been reintroduced (Fendt, 2019).	Threatened
Ute ladies'-tresses (<i>Spiranthes diluvialis</i>)	The Ute ladies'-tresses occurs along riparian edges, gravel bars, old oxbows, high flow channels, and moist to wet meadows along perennial streams. It typically occurs in stable wetland and seepy areas associated with old landscape features within historical floodplains of major rivers. It also is found in wetland and seepy areas near freshwater lakes or springs (USFWS, n.d.). This species has not been documented on USAFA (USAFA, 2023c).	Threatened

Species	Discussion	Federal Status
<p>Monarch butterfly (<i>Danaus plexippus</i>)</p>	<p>Monarchs in North America undergo long-distance migration between summer and overwintering sites (USFWS, n.d.). In Colorado's Front Range, where USAFA is located, monarchs can be seen migrating between mid-June (heading north) and September (heading south) (University of Colorado Boulder, 2021). USAFA may provide limited stop-over habitat for migrating monarch butterflies.</p>	<p>Candidate</p>

3.8.2 Environmental Consequences

A biological resources impact would be significant if it would 1) substantially reduce regionally or locally important habitat; 2) substantially diminish a regionally or locally important plant or animal species; or 3) adversely affect recovery of a federally or state-protected species.

3.8.2.1 Alternative 1 – The Preferred Alternative

Vegetation: USAFA assumes all vegetation would be removed at the proposed water survival facilities location (0.3 acre), proposed emergency parachute training facility location (0.9 acre), and the Deadman CST warehouse area (0.4 acre). Vegetation removal would be conducted in accordance with USAFA's INRMP. No tree removal would occur at the Proposed Water Survival Facilities location, Proposed Emergency Parachute Training Facility location, or Deadman CST Warehouse and Jacks Valley storage locations. If the Contractor Yard is selected as the storage location site, USAFA would design the storage location to minimize impacts to mature trees to the extent practicable. Once ground disturbance is complete, temporarily disturbed areas would be revegetated in accordance with USAFA's INRMP and prescribed standards USAFA has established for revegetation, erosion control, and tree care.

Native vegetation communities and wildlife habitats could be impacted by the introduction or encroachment of noxious weeds or invasive species during construction. However, contractors would minimize the introduction or spread of invasive species by adhering to the INRMP and/or local regulations, including implementation of BMPs such as cleaning all construction equipment prior to bringing it on-site. Once construction is complete, the site would be revegetated with native species according to the revegetation plan.

Overall, the Preferred Alternative would not substantially diminish any regionally or locally important vegetation species, therefore resulting in *short and long-term, less-than-significant adverse impacts* on vegetation in the ROI.

Wildlife: During construction, common wildlife species occurring on the Preferred Alternative sites would be physically displaced, and construction noise and increased human activity may also disturb wildlife species located within 0.5 mile of construction activities. Mobile wildlife species, such as birds and mammals, would likely relocate to areas of similar habitat near the site, although less-mobile species (e.g., some reptiles and amphibians) could be inadvertently destroyed by construction activities. Although disturbance, displacement, or inadvertent wildlife mortality from construction activities would be an adverse impact, such impacts would occur at the individual level, rather than the population or species level, and would not inhibit the continued propagation of common wildlife populations and species in the ROI. Construction activities occurring in or near water could indirectly impact aquatic species by disturbing sediment, which would increase turbidity in Kettle Lake #3 and in areas downstream. However, this impact would be temporary and would cease once construction is complete. In addition, the Preferred Alternative would not create any elements that would encourage additional bird activity near the Davis Airfield, thus avoiding any Bird Air Strike Hazard (BASH) concerns. Therefore, construction of the Proposed Action would result in *short-term, less-than-significant adverse impacts* to wildlife.

Once construction is completed, water survival training activities conducted in and around Kettle Lake #3, including operation of jet skis and a helicopter, would disturb wildlife in the ROI. Disturbance would be limited to the duration of training activities, during which mobile wildlife, including aquatic wildlife, would likely relocate to other areas of the ROI away from where training is taking place. Conducting training activities under the Preferred Alternative is not anticipated to substantially reduce any regionally or locally important habitat or general wildlife species. Therefore, the Preferred Alternative would have a *long-term less-than-significant impact* to wildlife.

Special Status Species: USAF has determined that the Preferred Alternative would have *no effect* on the federally listed tricolored bat, eastern black rail, Mexican spotted owl, greenback cutthroat trout, and Ute ladies'-tresses, as these species are not expected to occur within the ROI. Additionally, the USAF has determined the Preferred Alternative would have no effect on the monarch butterfly, a federal candidate species, as migrating adult monarchs would be expected to avoid the Project Sites during construction and training activities. Should migrating monarch butterflies stop-over on the Project Site in notable numbers during construction or training activities, all activities would be paused until the USAFA Natural Resources Manager evaluates the situation and identifies an appropriate path forward.

USAF submitted a BA analyzing the Preferred Alternative's potential impact on the PMJM (**Appendix B**). The BA determined that the Proposed Action would involve activities within the PMJM Conservation Zone surrounding Kettle Lake #3 as well as in Jacks Valley near Deadmans Creek. Overall, up to 1 acre of land within the PMJM Conservation Zone, of which 0.6 acre constitutes low or medium quality PMJM habitat, would be impacted by the Proposed Action. Construction may result in unintentional injury or mortality to one or more individuals or a reduction in productivity of this species. In addition, indirect impacts in the form of increased daytime noise during construction, and during training activities at Kettle Lake #3 when a helicopter is in use, may adversely impact PMJM in the area. Therefore, USAF has determined that the Project *may affect, and is likely to adversely affect*, the PMJM. The Project would have *no effect* on designated critical habitat for PMJM. The USAFA would continue to adhere to the terms and conditions of the PMJM Conservation Agreement and Conservation Plan throughout implementation of the Preferred Alternative. The Preferred Alternative sites were selected in part to minimize impacts to PMJM habitat to the greatest extent practicable.

Potential adverse impacts to state-protected species, if present, would be similar to those described for vegetation and wildlife: habitat loss, displacement, disturbance, and/or mortality. In a letter dated July 18, 2023, CPW stated that it is familiar with the various locations where CST activities are proposed, and that it believes impacts to the surrounding natural resources and wildlife at these locations would be negligible. No concerns regarding state-listed species were identified (**Appendix A**).

Potential impacts to migratory birds could include disturbance to breeding individuals, particularly if construction occurred during the nesting season and nests are located within or adjacent to the construction site. While most birds would likely avoid the Project Sites and/or relocate to nearby habitats in the area, USAFA would survey the ROI prior to construction for nesting or breeding birds. Depending on the bird species and location of the nesting/breeding activity, a construction buffer around the nest site may be implemented. Monitoring of any nesting/breeding activity would also be conducted to determine if a construction delay or other restrictions are warranted. With these impact minimization measures, construction would have a *short-term, less-than-significant impact* on migratory birds, including BCCs. As water survival training activities would be conducted in the summer as well as during shoulder seasons when weather allows, it is likely that migratory birds would avoid nesting in the area due to increased noise and human presence. Therefore, the Preferred Alternative would have a *long-term, less-than-significant impact* on migratory birds.

The Project Site contains potential habitat for the bald eagle and the golden eagle. There are currently no known eagle nests occurring in the ROI. Should eagle nests be identified in the ROI, USAFA would comply with the CPW's Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors, which would include restricting human encroachment activities (i.e., construction) within 0.5 mile of an active nest between December 1 and July 31 for the bald eagle and between December 15 and July 15 for the golden eagle (USFWS, 2020). With adherence to these guidelines, there would be *short-term, less-than-significant adverse impacts* to eagles, if present, under the Preferred Alternative.

3.8.2.2 Alternative 2

Vegetation: Impacts to vegetation under Alternative 2 would be greater than those described under the Preferred Alternative, particularly if the Jacks Valley location is selected for the proposed emergency parachute training facility. The Jacks Valley location (1.9 acres) includes a mature stand of ponderosa pine that would be cleared to facilitate construction of the emergency parachute training facility. Additionally, the location for water survival training facilities on the south side of Kettle Lake #3 is larger than what is proposed under the Preferred Alternative and contains mature trees that may require removal. Overall, Alternative 2 would also not substantially diminish any regionally or locally important vegetation species, therefore resulting in *short and long-term, less-than-significant adverse impacts* on vegetation in the ROI.

Wildlife: Impacts to wildlife would be similar to those described for the Preferred Alternative, with the exception that habitat impacts would be greater, particularly if the Jacks Valley location is selected for the emergency parachute training facility. Overall, Alternative 2 would not substantially diminish any regionally or locally important habitat or wildlife species, therefore resulting in *short and long-term, less-than-significant adverse impacts* on wildlife in the ROI. Impacts on wildlife under Alternative 2 would be greater than those described under the Preferred Alternative.

Special Status Species: Impacts to special status species would be similar to those described for the Preferred Alternative and for general wildlife species under Alternative 2. If Alternative 2 is selected, USAF would re-initiate Section 7 consultation with the USFWS to determine impacts to federally listed species that may occur in the ROI, which would be anticipated to be about the same as under the Preferred Alternative. Construction and training activities would not commence until Section 7 consultation is complete. Overall, short-term and long-term adverse impacts to special status species are anticipated to be *less than significant*.

3.8.2.3 No Action Alternative

Under the No Action Alternative, the CST program at USAFA would not be implemented, and there would be *no impact* on biological resources.

3.9 CULTURAL RESOURCES

Cultural resources are historic properties as defined by the NHPA; cultural items as defined by the Native American Graves Protection and Repatriation Act (NAGPRA); archaeological resources as defined by the Archaeological Resources Protection Act; sacred sites as defined by EO 13007, *Indian Sacred Sites*, to which access is afforded under the American Indian Religious Freedom Act; and collections and associated records as defined by 36 CFR 79.

Historic properties covered by the NHPA include any prehistoric or historic district, site, building, structure, or object with known or potential significance with regard to pre- or post-American history, architecture, archaeology, engineering, or culture. Section 106 of the NHPA requires federal agencies to consider the effect an undertaking may have on historic properties. The Preferred Alternative is considered an undertaking and is required to comply with Section 106, including consultation with the Colorado SHPO. All Section 106 correspondence with the SHPO for the Preferred Alternative is provided in **Appendix C**.

Consistent with Section 106 of the NHPA, DoD Instruction 4710.02, AFI 90-2002, and AFMAN 32-7003, the USAF is also consulting with 34 federally recognized tribes that are historically affiliated with the USAFA regarding the potential for the Preferred Alternative to affect properties of cultural, historical, or religious significance to the tribes. The USAF initiated consultation with each tribe via letter in January 2022; a record

of this consultation, including subsequent attempts to contact the tribes, is provided in **Appendix D**. To date, tribes have identified no properties of cultural, historical, or religious significance on the Project Site.

The ROI for cultural resources is the APE as defined by the NHPA. The APE for the undertaking (36 CFR 800.16(d)) consists of (1) the Project Sites (i.e., areas to be subjected to ground disturbance by all possible construction activities), and (2) the areas within 0.5 mile of the Project Sites from which the proposed facilities may be visible. Figures depicting the APE are included in the USAF's Section 106 consultation letter to the SHPO in **Appendix C**.

3.9.1 Affected Environment

To assess the potential of the Proposed Action to impact historic properties, USAFA initially reviewed research and investigations to identify historic properties within 0.5 mile of the Project Sites for each Alternative. This research included the Colorado Inventory of Cultural Resources, internal USAF data, historic USGS Topographic Quadrangle Maps, historic aerial imagery, cultural resource reports, and archaeological site inventory forms. All of the Project Sites, and most of the areas within 0.5 mile of the Project Sites, have been surveyed for cultural resources previously; no new cultural investigations were required for this Proposed Action.

Additionally, due to the topography, vegetation, and other facilities present at USAFA, not all areas within 0.5 mile of the Project Sites would have line-of-sight to the proposed facilities. Therefore, a digital surface model was constructed using LIDAR survey data of the areas within 0.5 mile of the Alternative 1 facilities. Proposed facility dimensions were then recreated within a GIS framework and a viewshed was constructed for each of the proposed facilities. Using this information, the USAF refined the Alternative 1 APE to those areas from which the proposed facilities would be visible. Figures depicting these viewsheds are included in the USAF's Section 106 consultation letter to the SHPO in **Appendix C**.

Through this viewshed analysis, the USAF identified that the Alternative 1 APE contains eight historic resources that are either eligible for listing in the National Register of Historic Places (NRHP) or support the eligibility of another resource. Two of these resources are located within or immediately adjacent to the Project Sites. Additionally, there are three non-eligible resources located within the Project Sites. These 11 resources are listed and described in **11**.

Table 11: Cultural Resources Located Within the APE for Alternative 1

Resource	NRHP Eligibility	Resource Name/Description	Within Project Sites?	Within APE?	Effect Determination
5EP.595	Eligible	This historic resource has origins with the Colorado Department of Transportation, from their transportation role upon the eastern edge of USAFA, proposing in the late 1990s the entire USAFA installation to be recommended eligible for the NRHP. In 2004 the core area of USAFA's campus came to be listed as a National Historic Landmark (Site 5EP.4680), which coincidentally sits within 5EP.595. However, each entity has no formal reference to the other, and regardless 5EP.4680 is not within the APE.	Yes	Yes	Direct Impacts: Construction would not directly affect any individual contributing resources to the overall USAFA Campus resource. (No adverse effect) Indirect Impacts: Though the proposed facilities would be visible from the USAFA Campus (5EP.595), as a historic district, the resource contains numerous structures that do not directly contribute to the resource's eligibility. As an active military installation, continued construction of new facilities and modification of existing facilities is necessary to continue to adhere to the facility's ongoing requirements. The proposed facilities would not constitute a significant visual impact on the USAFA Campus as they would be constructed of similar materials and in a similar nature to existing structures in the surrounding environment. Given the distance between the Cadet Area NHL and intervening topography consisting of mountainous and forested terrain, any visual impacts to that resource would be negligible, if noticeable at all. (No adverse effect)
5EP.1003.1	Eligible	The historic Santa Fe Railroad Right-of-Way Segment .	No	Yes	Direct Impacts: None. Indirect Impacts: The emergency parachute building at Davis Airfield and, to a lesser extent, water survival training facilities would be visible from these two historic railroad segments. Though the Proposed Action would constitute a visual impact to the resources, several other modern components of USAFA are present in the immediate vicinity of the proposed facilities. Additionally, a water survival training tower once existed in the general location of the proposed water survival training facilities and would have also been visible from both of the resources. As such, the proposed Undertaking would not constitute an adverse visual effect on the resources. (No adverse effect)
5EP.1003.15	Supports Eligibility of 5EP.1003	The historic ATSF Railroad Segment .	No	Yes	
5EP.3422	Eligible	The Administration Building (Building 8034) is a historic structure.	No	Yes	Direct Impacts: None. Indirect Impacts: The emergency parachute building at Davis Airfield and, to a lesser extent, water survival training facilities would be visible from these four historic structures. Though the Proposed Action would constitute a visual impact to these four resources, the impact would be minimal, as the facilities constructed would be of similar character to those in their immediate surroundings. Additionally, the proposed water survival training facilities would be constructed in close proximity to where a previous water survival training tower stood from 1972 until at least 2011. As such, similar facilities have existed within the viewshed of these four historic structures for most of their use life. (No adverse effect)
5EP.3426	Eligible	The Engineering Administration Building (Building 8120) is a historic structure.	No	Yes	
5EP.3427	Eligible	The Auto Maintenance Shop (Building 8122) is a historic structure.	No	Yes	
5EP.3428	Eligible	The Auto Maintenance Administration Building (Building 8124) is a historic structure.	No	Yes	
5EP.5133	Eligible	The Great North and South Highway/State Highway 1/US Highway 85 is a historic roadway, now called Airfield Drive .	Yes	Yes	Direct Impacts: The Proposed Action includes utility trenching from an existing electric line adjacent to this resource to the proposed water survival training facilities. As such, project designs will avoid direct impacts to the resource via ground-disturbing activities. (No adverse effect) Indirect Impacts: The water survival training facilities and emergency parachute building at Davis Airfield would be visible from this resource. This resource's use has been modified from its original use as a major highway through the area. It is now used as a thoroughfare within USAFA and is not open to the public. Since its conversion to use as a military road, numerous military structures have been constructed within the area and are visible from the resource. As the Proposed Action would be constructing facilities of similar character and using similar materials to existing facilities, the Proposed Action does not constitute a significant visual impact to the viewshed from the resource. As such, the Undertaking would not constitute an adverse effect on the historic property. (No adverse effect)
5EP.7716	Not Eligible	This resource is the historic erosion control berm over the Kettle Creek culvert with a road on top.	Yes	Yes	This resource is not eligible for the NRHP. However, potential construction of facilities related to the Proposed Action in proximity to 5EP.7716 would be specifically designed to avoid impacting the resource via ground-disturbing activities.

Resource	NRHP Eligibility	Resource Name/Description	Within Project Sites?	Within APE?	Effect Determination
5EP.8081	Not Eligible	The historic Kettle Lake #3 .	Yes	Yes	This resource is not eligible for the NRHP. However, previous water survival training facilities were once present on Kettle Lake #3, having been constructed in 1972, altered in 1975, and demolished between 2011 and 2013. Potential impacts on this resource would be in keeping with the site's use as a location for water survival training for most of the last 50 years.
5EP.8082	Not Eligible	The historic Recreation Pavilion #9326 on the south side of the Kettle Lake #3 dam.	Yes	Yes	This resource is not eligible for the NRHP. However, the only planned Project component for this area is the temporary staging of operational equipment and materials during training activities, which would not impact the recreation pavilion.

Under Alternative 2, the USAF may construct the emergency parachute building in the Jacks Valley location rather than in Davis Airfield. There is one NRHP-eligible historic resource located within 0.5 mile of this Project Site: 5EP.2021, a historic domestic site located about 0.3 mile to the north. As the USAF is not conducting Section 106 consultation for Alternative 2, it has not completed a detailed viewshed analysis for this Project Site; however, this Project Site is likely not visible from 5EP.2021 due to the presence of existing USAF facilities and vegetation between the two locations. No NAGPRA cultural items or Indian Sacred Sites exist in the APE.

3.9.2 Environmental Consequences

Significant impacts to cultural resources in the context of NEPA-focused planning almost always relate to following the parallel NHPA Section 106 planning process via 36 CFR Part 800 to resolve adverse effects to specific Historic Properties (i.e. cultural resources properties listed in or potentially eligible for listing in the National Register of Historic Places).

3.9.2.1 Alternative 1 – The Preferred Alternative

Alternative 1 would have *no adverse effect* on historic properties under the NHPA (less-than-significant impacts under NEPA). The potential effect of Alternative 1 on each NRHP-eligible historic resource within the APE is provided in 11. The USAF submitted its Section 106 consultation letter with these effect determinations to the SHPO on October 16, 2023. The Colorado SHPO concurred with this determination in a letter received on October 20, 2023. All correspondence with the SHPO pursuant to Section 106 is included in **Appendix C**.

The Preferred Alternative would have *no effect* on any identified tribally significant resources on USAFA (Kelly, O'Meara, & Koestner, 2017). The federally recognized Cheyenne River Sioux Tribe, while concurring with USAFA's determination of no adverse effect, requested that a USAFA cultural resources manager be present during project construction ground disturbance, and monitor for any post-review discoveries of cultural resources (see **Appendix D**). The USAFA cultural resources manager agreed that such monitoring would be performed. Such discoveries would be addressed under provisions of 36 CFR 800.13 and any other applicable laws, regulations, and guidance.

Should unanticipated cultural resources be encountered, USAFA will follow the Standard Operating Procedures (SOPs) for Discoveries of Archaeological Resources and NAGPRA Cultural Items as published in the current Integrated Cultural Resources Management Plan (ICRMP). All work will stop and the Cultural Resources Manager, Mr. Erwin Roemer, will be contacted to begin compliance with the SOP.

3.9.2.2 Alternative 2

Potential effects to cultural resources under Alternative 2 would be similar to, but less than, those under Alternative 1. Potential impacts associated with the water survival training facilities and Deadmans CST warehouse would be the same as for Alternative 1.

The emergency parachute building, if constructed in Jacks Valley, would likely not be visible from 5EP.2021. However, if it is visible, this historic resource would still experience *no adverse effect*, as the building would be constructed using materials and methods in keeping with the adjacent built environment. Additionally, this location was previously subject to Section 106 consultation in 2022 for a proposed regional indoor firing range, during which the SHPO concurred with USAFA's findings of no adverse effect. Finally, the emergency parachute building location in Davis Airfield under the Preferred Alternative would be the most visible proposed facility for six of the historic resources (i.e., two railroad segments and four historic

structures) identified in **11**, thus constructing in the Jacks Valley location would reduce the potential visual effects on these resources relative to Alternative 1.

Alternative 2 would also have *no effect* on any identified tribally significant resources on USAFA (Kelly, O'Meara, & Koestner, 2017).

Similar to the Preferred Alternative, should unanticipated cultural resources be encountered, USAFA will follow SOPs in the ICRMP, stop all work, and contact the Cultural Resources Manager, Mr. Erwin Roemer.

3.9.2.3 No Action Alternative

Under the No Action Alternative, the CST program at USAFA would not be implemented, and there would be *no impact* on cultural resources.

3.10 LAND USE AND RECREATION

Land use describes the way the natural landscape has been modified or managed to provide for human needs. In developed and urbanized areas, land uses typically include residential, commercial, industrial, utilities and transportation, recreation, open space, and mixes of these basic types. Other uses such as mining, agriculture, forestry, and specially protected areas (e.g., monuments, parks, and preserves) are usually found on the fringes of or outside of urbanized areas. Plans and policies guide how land resources are allocated and managed to best serve multiple needs and interests. Ordinances and regulations define specific limitations on uses.

The attributes of land use addressed in this analysis include federal land use patterns within and surrounding the Project Sites and the land use regulatory setting. The regulatory setting is the framework for managing land use and approving new development. It pertains to federal, state, and local statutes, regulations, plans, programs, and ordinances.

For any proposed development within the vicinity of the Davis Airfield, 14 CFR Part 77 requires that the FAA review the development for safety of air navigation.

For the purposes of this land use analysis, the ROI for the Proposed Action includes the LODs at the Project Sites and the surrounding regions in a 0.5-mile radius.

3.10.1 Affected Environment

The USAFA was comprehensively master planned before any construction began. In order to maximize open space and protect scenic quality, planners clustered buildings into functional planning areas, and allocated nearly 70 percent of the installation to open space. The master plan considered open space as integral to the overall design concept of the USAFA, with uses intended to preserve views, restrict development in environmentally unsuitable areas, separate and buffer sub-areas and functions, and provide recreation. Currently, land use planning, development, and use decisions at USAFA are guided by the 2018 USAFA Installation Development Plan (IDP), the 2020 Jacks Valley Development Plan (JVDP), the INRMP, and the 2018 Colorado Springs Regional Joint Land Use Study (USAFA, 2023c; PPOCG, 2018).

The Project Sites at Kettle Lake #3 are located in an area designated as general open space. General open space is classified as land that surrounds and buffers existing roads, parking, and buildings. It can be used for new development or expansion of existing facilities provided the development location is thoroughly studied and open space remains free of scattered structures. The preferred emergency parachute building

location is in the Davis Airfield, on land designated as airfield operation maintenance (USAFA, 2023c). The potential emergency parachute building location in Jacks Valley, as well as the potential storage locations are all towards the northern part of USAFA. Jacks Valley lands are predominately designated for field training, with some restricted open space and industrial land. The JVDP consolidates similar land uses to optimize training and operational efficiency across the district (USAFA, 2021b). The Jacks Valley parachute facility and potential storage locations are in locations designated as land for field training. The Deadmans Warehouse storage location is designated for field training, and the contractor's yard storage location is land designated as industrial (USAFA, 2023c). Lands surrounding USAFA, outside the installation boundaries, are predominantly park, agricultural, residential, and USDA Forest Service forest (USAFA, 2021b).

The USAFA supports an active recreational fishing program at the Kettle Lakes and Deadmans Lake. A fishing program is also maintained at the Farish Recreation Area (Grace Lake, Leo Lake, and Sapphire Lake). The lakes are stocked with rainbow trout and channel catfish from approximately March through October (USAFA, 2023c). Additionally, the area near Kettle Lake #3 is open to the general public for hiking and dog walking.

3.10.2 Environmental Consequences

In general, the USAF considers a land use impact to be significant if it would 1) be inconsistent or non-compliant with applicable land use plans or policies; 2) preclude an existing land use of concern from continuing to exist; or 3) be incompatible with adjacent or vicinity land use to the extent that public health or safety is endangered.

3.10.2.1 Alternative 1 – The Preferred Alternative

The primary land use concern is with the preferred emergency parachute building in the Davis Airfield, which is discussed in **Section 3.3**. Additionally, as the Kettle Lakes are within Davis Airfield's air space, personnel would coordinate with air traffic control during all helicopter operations. All other construction and operation activities associated with the Preferred Alternative would be consistent with applicable land uses on USAFA, as they are located in areas designated as industrial, open space, or field training. None of the activities associated with construction or operation of the Preferred Alternative would be incompatible with land use in the vicinity of the Project Sites such that public health or safety would be threatened. Therefore, the Preferred Alternative would have *no impact* on land use in the ROI.

Since the Preferred Alternative would increase use of Kettle Lake #3 for training activities, there would be less availability for fishing; therefore, USAFA may reduce stocking in the future. In addition, the Preferred Alternative would also reduce the availability of this area for hiking and dog walking as access to Kettle Lakes would be restricted during training activities. However, other lakes and recreational areas are available in the vicinity, both on- and off-base (e.g., Deadmans Lake and Farish Recreation Area). Additionally, the USAFA has used Kettle Lake #3 for training purposes in the past. Therefore, the Preferred Alternative would have *long-term, less-than-significant adverse impacts* on recreation in the ROI.

3.10.2.2 Alternative 2

If the Davis Airfield is chosen as the location of the emergency parachute training facility, impacts from that portion of the Proposed Action would be identical to those under the Preferred Alternative. If the emergency parachute facility is constructed in Jacks Valley, construction at this location would be consistent with designated land uses. Impacts from the water training facilities would be the same as under the Preferred Alternative, despite being located on the south side of the lake. As under the Preferred Alternative, all construction and operation activities associated with Alternative 2 would be consistent with applicable land

uses on USAFA, and none of the activities associated with construction or operation of Alternative 2 would be incompatible with land use in the vicinity of the Project Sites such that public health or safety would be threatened. Therefore, Alternative 2 would have *no impact* on land use in the ROI.

Impacts to recreation under Alternative 2 would be identical to those described under the Preferred Alternative.

3.10.2.3 No Action Alternative

Under the No Action Alternative, the CST program at USAFA would not be implemented, and there would be *no impact* on land use or recreation.

3.11 UTILITIES

Utilities include water storage facilities, treatment plants, and delivery systems; supplemental power generation, transmission, and distribution facilities, including, but not limited to, wind turbines, generators, substations, and power lines; natural gas transmission and distribution facilities; sewage collection systems and treatment plants; and communication systems.

The ROI for utilities includes all areas and end users within USAFA that may be impacted from temporary utility disruptions or an increased demand on utilities. No off-base utility changes are anticipated.

3.11.1 Affected Environment

Electrical power for USAFA is purchased from Colorado Springs Utilities (CSU) (USAFA, 2021b). Electrical distribution lines primarily follow roadway ROWs within USAFA. Within the vicinity of the Kettle Lakes and Davis Airfield, electrical lines and communications lines are underground. Electrical lines closest to the Kettle Lakes are buried within the Airfield Drive ROW.

Potable water is supplied to USASA by CSU from the Pine Valley Treatment Plant and the J.A. McCullough Treatment Plant. Most of the water supply for Colorado Springs and USAFA comes from the Rampart Reservoir (USAFA, 2021b). Water service lines are also primarily located within roadway ROWs, however, there are no water service lines located within the Airfield Drive ROW. Water service lines for Davis Airfield cross under the southern portion of the airfield from South Gate Boulevard. Sanitary sewer lines also cross under the airfield rather than following the Airfield Drive ROW. A wastewater treatment plant (WWTP) is located in the southeastern portion of USAFA to process sanitary sewage generated on the installation.

Stormwater infrastructure on the installation includes five stormwater ponds and dry basins that collect and diffuse it via infiltration or slowing its flow into streams that drain out of the installation. Currently all solid waste is hauled out of USAFA. Recycling is also collected on the installation and hauled away.

3.11.2 Environmental Consequences

A utilities impact would be significant if it would result in prolonged or permanent service disruptions to other utility end users, substantially increase utility demand so as to burden utility providers or reduce local utility supply to the surrounding communities.

3.11.2.1 Alternative 1 – The Preferred Alternative

Implementation of the Preferred Alternative would require the construction of electrical utility connections that are not currently in place. An electrical connection would be made at Airfield Drive near the Kettle Lakes. No connections for water, sewer, or telecommunications are anticipated under the Preferred

Alternative. Interruptions to electrical connections could be experienced by end users on USAFA when new connections are installed, although no interruptions would be expected for public users off-installation. Work on this system would be temporary and all area users would be notified prior to the start of construction activities. No new utility extensions would be required to reach the location of the emergency parachute training building in Davis Airfield. The Deadmans Warehouse storage area would not require new utilities to be installed.

There would be no net change to pre-development hydrology during construction or operation of the Preferred Alternative. USAFA would comply with Section 438 of the EISA to manage stormwater runoff by incorporating LID features into the design of all stormwater infrastructure. Construction would also result in a temporary, marginal increase in solid waste generated. The contractor would dispose of non-recyclable demolition debris at an offsite permitted landfill facility. Overall, the construction of the Preferred Alternative would result in *short-term, less-than-significant impacts* to utilities.

Operation under the Preferred Alternative would increase overall utility usage at USAFA; however, the increase would be marginal compared to existing utility usage at USAFA and would only occur during training activities. A generator may also be used at the proposed water survival training facilities, which would reduce requirements for additional electric supply. There would be no impact to the level of service provided elsewhere at USAFA or in surrounding areas. Overall, the operation of the Preferred Alternative would have a *long-term, less-than significant impact* to utilities.

3.11.2.2 Alternative 2

Utility impacts associated with Alternative 2 would be similar to those described above for the Preferred Alternative. Extension of electric utilities to Kettle Lake #3 would be the same as under the Preferred Alternative, and no new utility extensions would be required to reach the location of the emergency parachute training building if it is implemented at the Jacks Valley location as utility connections would be made to existing utility lines within the roadway ROW. The contractor's yard storage location would not require new utilities to be installed. However, the Jacks Valley equipment storage area would require electric utilities be extended from existing electric lines along Jacks Valley Road. The utility extension would be approximately 570 feet long and installed via underground trenching approximately 4 feet wide and 2 feet deep. Therefore, the construction of Alternative 2 would result in *short-term, less-than-significant impacts* to utilities.

Operation under Alternative 2 would involve the same increase in utility usage as described for the Preferred Alternative. There would be no impact on the level of service provided elsewhere at USAFA or in surrounding areas. Therefore, the operation of Alternative 2 would have a *long-term, less-than-significant impact* to utilities.

3.11.2.3 No Action Alternative

Under the No Action Alternative, the CST program at USAFA would not be implemented, and there would be *no impact* on utilities.

3.12 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Socioeconomics refer to the attributes of the human environment, and include demographic and economic characteristics such as age, race, income, and employment. Additionally, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* directs federal agencies to consider the potential adverse impacts of their activities on children. Environmental Justice (EJ) is the consideration of low-income and minority populations. EO 12898, *Federal Actions to Address Environmental Justice in Minority*

Populations and Low-Income Populations directs federal agencies to consider the potential adverse impacts of their activities on EJ communities and requires that impacts that may disproportionately affect these communities be addressed. The CEQ has established criteria for identifying EJ communities of concern with respect to race and income: minority populations exist where the percentage of minorities exceeds 50 percent or is meaningfully greater than in the general population of the larger surrounding area, and low-income populations exist where there is a substantial discrepancy between a community and surrounding communities with regard to income and poverty status (CEQ, 1997). Information used to aid in the identification of EJ communities can be obtained from the US Census Bureau or via the USEPA's Environmental Justice Screening and Mapping Tool.

The ROI for socioeconomics and EJ includes census tracts 38.01 and 38.02 from the 2020 decennial census, the 2010 decennial census, and the 2021 American Community Survey 5-year estimates. These communities would be most likely to experience impacts from the Proposed Action, both with regard to changes in socioeconomic characteristics and potential disproportionate impacts.

3.12.1 Affected Environment

Socioeconomic and EJ data for the ROI, El Paso County, and the state of Colorado are presented in **Table 12**.

Table 12: Socioeconomic and EJ Data

Demographic Indicators	ROI ¹	El Paso County	State of Colorado
Socioeconomic Indicators			
Total Population	6,615	730,395	5,773,714
Population Change (2010-2020; %)	-1.0	17.4	14.8
Median Household Income	\$72,813	\$75,909	\$80,184
Unemployment Rate (%)	16.4	6.1	4.6
Population Under 18 Years (%)	41.7	24.0	22.1
EJ Indicators			
Population Below Poverty Level (%)	13.4	6.4	6.1
Minority Population (%)	28.6	29.2	29.3

¹ For census tract 38.02, some estimates could not be computed, because there were an insufficient number of sample observations. Therefore, the values shown for median household income, unemployment rate, population under 18 years, and population below poverty level reflect only census tract 38.01.

Sources: (U.S. Census Bureau, 2019; U.S. Census Bureau, 2010)

The state of Colorado had a population increase of 14.8 percent from 2010 to 2020, double the 7.4 percent increase in the U.S. population over the same period (U.S. Census Bureau, 2010). El Paso County grew at an even faster rate than Colorado from 2010 to 2020, while the ROI experienced a population decrease during that same period. The ROI has a higher unemployment rate than both El Paso County and Colorado, due in part to the higher percentage of college students (cadets) living in the area. Median household income in the ROI is similar to that of El Paso County. In 2019 the top five industries in El Paso County were: (1) educational, health, and social services (23.1 percent); (2) professional, scientific, management, administrative, and waste management services (14 percent); (3) retail (11 percent); (4) arts, entertainment, and recreation, and accommodation and food services (10.4 percent); and (5) construction (7.3 percent).

The percentage of the population under age 18 is higher in the ROI than in the county and state. However, no individuals, including children, currently live on or occupy the Project Sites. The closest single-family homes to the Project Sites are located across I-25 from Kettle Lakes; however, these properties are more than 0.5 mile from the Project Site. Four educational/childcare facilities are located within 1 mile of the Project Site: The Classical Academy (0.8 mile), Preschool Partners (0.9 mile), Ascend College Prep (1 mile), and Air Academy High School (1 mile). All are located east of I-25, while the Project Site is west of I-25. Thus, the occurrence of children in the vicinity would not be a frequent or regular presence.

As the Proposed Action would not result in any change to personnel at USAFA, there would be no potential for it to affect local housing conditions. Additionally, there are no retail shops or services or public recreational sites in the immediate vicinity of the Project Sites. Therefore, these socioeconomic components are dismissed from analysis.

The minority population is both lower than 50 percent and lower than the county and state. The poverty level in the ROI (13.4 percent) is slightly higher than the county (6.4 percent) and state (6.1 percent). However, as with the relatively higher unemployment rate in the ROI, this is likely due to the higher percentage of college students living in the area. Therefore, the ROI is not considered an EJ community of concern. The USAF confirmed these results using the USEPA's Environmental Justice Screening and Mapping Tool (USEPA, 2022).

3.12.2 Environmental Consequences

A socioeconomic impact would be significant if it would 1) substantially alter the location and distribution of the local population or 2) change current economic conditions in the ROI in a way that would be notable and harmful for surrounding communities and residents.

As no EJ communities of concern with respect to race or income are present surrounding the Project Sites, there is no potential for the Proposed Action to disproportionately impact EJ communities. Therefore, this resource is dismissed from further analysis.

The total population under 18 years of age in the ROI does substantially exceed that in the County and State. However, areas where the Proposed Action would occur would be restricted from access by the public. While children are present at schools, daycares, and similar facilities near USAFA off-base, they would not be affected by on-base activities. Any children on-base would be supervised and not permitted near an active construction site; the sites would be secured to prevent unauthorized or accidental access. Additionally, the children present at Air Academy High School and other areas on-base are already subject to USAFA training activities. Therefore, with site monitoring and access controls in place, and standard air quality controls in place, the Proposed Action would not have the potential to disproportionately impact children. Therefore, protection of children does not warrant special consideration under EO 13045 for the Proposed Action, and this resource is dismissed from further analysis.

3.12.2.1 Alternative 1 – The Preferred Alternative

Implementation of the Preferred Alternative would not displace nearby residents or adversely affect economic conditions in the ROI. Due to the large available labor force in Colorado Springs and nearby counties, proposed construction activities would likely be completed by local contractors, negligibly increasing employment opportunities, personal incomes, and materials purchases within the community. Tax revenues associated with direct and indirect construction expenditures would also benefit economic conditions. Therefore, the Preferred Alternative would be anticipated to have a *short-term, negligible beneficial impact* on the surrounding communities during construction.

Once construction is complete, operations would include training for 19 AF airmen, which could also have direct economic benefits associated with increased travel to the area; therefore, there would also be *long-term, negligible beneficial impacts* to socioeconomic conditions in the ROI.

3.12.2.2 Alternative 2

Impacts to socioeconomic conditions under Alternative 2 would be essentially the same as those described under the Preferred Alternative as the same types of facilities would be constructed and the same training activities would occur.

3.12.2.3 No Action Alternative

Under the No Action Alternative, the CST program at USAFA would not be implemented, and there would be *no impact* on socioeconomic and environmental justice.

3.13 SAFETY AND OCCUPATIONAL HEALTH

This section considers activities or operations that have the potential to affect the safety, well-being, or health of members of the USAF and the public. The primary goal is to identify and prevent potential accidents or impacts on the general public. Health and safety addresses construction safety, as well as safety during training activities, including the potential for aircraft mishaps and hazards.

USAF regulations that deal with various aspects of safety include DAFI 91-202, *U.S. Air Force Mishap Prevention Program*, and Department of Defense Instruction (DODI) 6055.07, *Mishap Notification, Investigation, Reporting, and Record Keeping*. Workplace safety regulations are generally addressed under the 29 CFR series, Occupational Safety and Health Administration (OSHA) standards. Applicable OSHA standards are reflected in AFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*. Any explosives safety related aspects (e.g., unexploded ordnances, sited locations, etc.) are addressed in Defense Explosives Safety Regulation 6055.09 AFMAN 91-201, *Explosives Safety Standards*.

The ROI for Health and Safety includes the Project Sites, as well as the airspace over USAFA.

3.13.1 Affected Environment

Currently, all ground operations within the ROI are performed in accordance with applicable USAF safety regulations, technical guidance, and standards stipulated in the previously identified Air Force Occupational Safety and Health requirements and regulations. The USAFA operates four Fire & Emergency Services Stations that provide emergency services throughout the installation, three located within the main installation and one located at the Bullseye Auxiliary Airfield in rural El Paso County (5280 Fire, 2023). The USAFA maintains mutual aid agreements with Ellicott and El Paso County and can request additional aid if an emergency exceeds capacity of the onsite response services (USAFA, 2021c). Health services are provided by the 10th Medical Group, which operates a hospital with ambulatory service on the installation (USAFA, 2023d).

Aircraft operations are performed in accordance with applicable USAF safety regulations to minimize the potential for aircraft mishaps to occur. This includes identifying areas where past analysis indicates aircraft accidents are likely to occur. These areas include clear zones (CZs) and accident potential zones (APZ). A CZ is designated at both ends of all active USAF runways. The CZ extends for 3,000 feet and as the area where the highest incidence of accidents occurs, this area is incompatible with most types of development. APZ zones are divided into two zones, APZ I, which extends 2,500 feet past the end of the CZ, and APZ II, which extends an additional 2,500 feet past APZ I. A variety of land uses are permitted in the APZs, however

higher density uses (e.g., schools, apartment buildings) are restricted due to greater safety risk in these areas (USAFA, 2019).

In addition, bird-aircraft strikes constitute a safety concern because they can result in damage to aircraft, injury to aircrews, and potentially result in aircraft crashes. Bird-aircraft strikes primarily occur below 500 feet above ground level when aircraft are taking off or landing at an airfield. USAFA implements a BASH program to minimize risks from bird strikes (USAFA, 2023c).

3.13.2 Environmental Consequences

A Safety and Occupational Health impact would be considered significant if it would 1) violate any USAF safety regulations, including aircraft flight operations; 2) create unsafe airfield operations; or 3) potentially result in an emergency that would exceed existing emergency response systems (USAFA, 2021c).

3.13.2.1 Alternative 1 – The Preferred Alternative

Construction and CST activities carried out under the Preferred Alternative would involve unavoidable inherent risks to health and safety. Potential hazards include operation of heavy construction equipment, training activities in a water environment, and operation of jet skis and a helicopter. Construction activities associated with the Preferred Alternative would be conducted in accordance with applicable federal, state, USAF, and local worker safety and regulatory requirements and guidelines, including those established by OSHA. Adherence to these requirements would substantially minimize the potential for worker injuries during construction. No components of the Preferred Alternative or potential CST storage locations are located within the CZ or APZs associated with the Davis Airfield and therefore no safety concerns associated with the airfield are anticipated. Similarly, training activities would comply with all applicable USAF safety requirements and guidelines to ensure the safety of USAF Cadets and Airmen. Helicopter use would be coordinated with the Davis Airfield to ensure the lowest possible potential for aircraft mishaps. In the event of an emergency, USAFA's existing ambulatory and fire services would be dispatched, if needed. Additionally, neither construction of training facilities nor CST activities would create elements that would encourage additional bird activity near the Davis Airfield, thus avoiding BASH concerns. Finally, the USAF would secure the Kettle Lake #3 area during water survival training activities by visually confirming no members of the general public are present, and temporarily closing roads and trails that provide public access to the lake while training activities are occurring. Therefore, the Preferred Alternative would result in *short- and long-term, less-than-significant adverse impacts* to health and occupational safety.

3.13.2.2 Alternative 2

Impacts to health and occupational safety under Alternative 2 would be identical to those described under the Preferred Alternative as the same types of facilities would be constructed and the same training activities would occur.

3.13.2.3 No Action Alternative

Under the No Action Alternative, the CST program at USAFA would not be implemented, and there would be *no impact* on safety and occupational health.

3.14 HAZARDOUS AND TOXIC MATERIALS AND WASTE

This section describes the use and presence of hazardous materials and the generation of hazardous waste at the Project Sites. HTMW are generally defined as materials or substances that pose a risk (through either physical or chemical reactions) to human health or the environment. Regulated hazardous substances are

identified through a number of federal laws and regulations. The most comprehensive list is contained in 40 CFR Part 302, and identifies quantities of these substances that, when released to the environment, require notification to a federal government agency. Hazardous wastes, defined in 40 CFR 261.3, are considered hazardous substances. Generally, hazardous wastes are discarded materials (solids or liquids) not otherwise excluded by 40 CFR 261.4 that exhibit a hazardous characteristic (i.e., ignitable, corrosive, reactive, or toxic), or are specifically identified within 40 CFR Part 261. Petroleum products are specifically exempted from 40 CFR Part 302, but some are also generally considered hazardous substances due to their physical characteristics (especially fuel products), and their ability to impair natural resources.

The DoD Environmental Restoration Program (ERP) was established to provide for the cleanup of environmental contamination at DoD installations. Eligible ERP sites include those contaminated by past defense activities that require cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and certain corrective actions required by the Resource Conservation and Recovery Act. Non-ERP sites are remediated under the Compliance-Related Cleanup Program. The ROI for HTMW is the Project Sites.

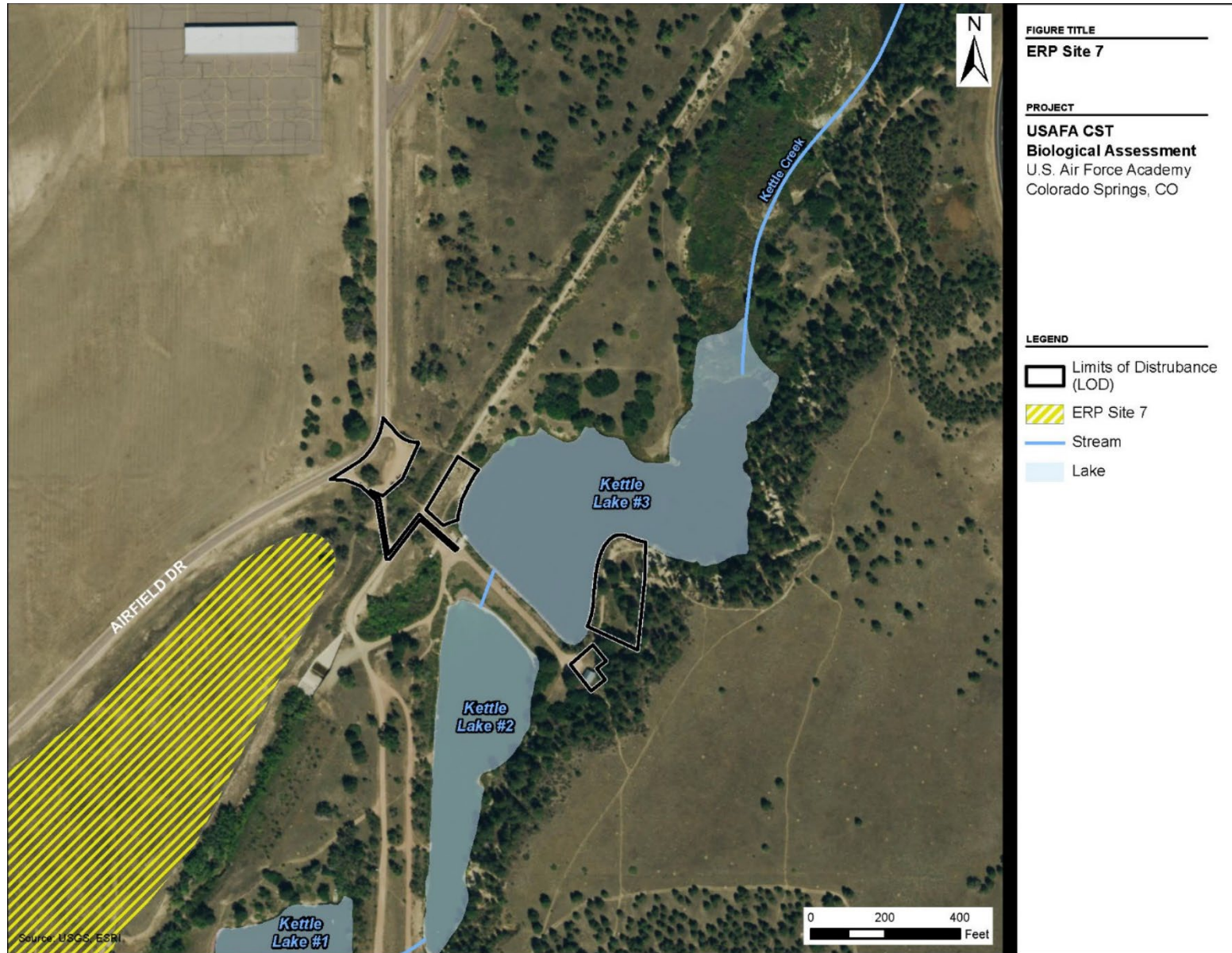
3.14.1 Affected Environment

Hazardous materials at USAFA are used, handled, stored, and managed in accordance with AFMAN 32-7002, *Environmental Compliance and Pollution Prevention, Hazardous Material Management, Chapters 3 and 5*. USAFA maintains a Hazardous Waste Management Plan (HWMP), which contains procedures for managing hazardous wastes in accordance with applicable DoD, federal, and state regulations and requirements, including the proper accumulation, collection, transportation, and disposal of hazardous wastes. It is designed to ensure that hazardous wastes are disposed of in a legal and timely manner (USAF, 2020). USAFA also maintains a Spill Prevention, Control and Countermeasure (SPCC) Plan, which is implemented in conjunction with the HWMP to address incident response and emergency responsibilities resulting from spills or discharges of HTMW (USAFA, 2020). The SPCC Plan describes preventive actions that are designed to lower the potential for hazardous material spills and prevent hazardous materials from entering the environment. It also provides required notification procedures and details responses to releases that might occur.

The activity at USAFA that poses the greatest potential threat to the local environment is the transfer and storage of petroleum, oils, and lubricants. The Academy is a small quantity generator (SQG) of hazardous waste, generating greater than 100 kilograms (kg), but less than 1,000 kg of hazardous waste each calendar month and accumulating no more than 6,000 kg at any one time (USAF, 2020). The USAFA has several environmental programs (e.g., spill control, hazardous waste management, and stormwater pollution prevention) that have been successful in controlling hazardous materials and waste releases to the environment (USAFA, 2023c).

There is no history of HTMW use, storage, generation, or disposal at the Project Sites. There is also no record of contamination on-site. The USAFA has two ERP sites, known as Site 6 and Site 7, both of which were historically operated as municipal landfill sites. Site 6 is located north of the Davis airfield, approximately 1.5 miles north of the preferred location for the emergency parachute building, and 2 miles south of the contractor's yard storage alternative. Site 7 is located to the south of the Davis airfield, immediately adjacent to Kettle Lakes and the water training facilities under the Preferred Alternative (**Figure 14**). USAFA has conducted closure and long-term monitoring of these sites under CERCLA and with oversight from the Colorado Department of Public Health and Environment (CDPHE) and the USEPA (USAFA, 2023c).

Figure 14: ERP Site 7



3.14.2 Environmental Consequences

An HTMW impact would be significant if it would 1) interrupt, delay, or impede ongoing cleanup efforts; or 2) create new or substantial human or environmental health risks (e.g., soil or groundwater contamination).

3.14.2.1 Alternative 1 – The Preferred Alternative

Operation of construction equipment and vehicles under the Preferred Alternative would create the potential for discharge, spills, and contamination from commonly used products, such as diesel fuel, gasoline, oil, antifreeze, and lubricants, at the Project Sites. However, all HTMW discovered, generated, or used during construction would be handled, containerized, and disposed of in accordance with USAFA's HWMP, SPCC Plan, and applicable local, state, and federal regulations. Additionally, while there is a potential for fuel spills during operation of jet skis and the helicopter for water survival training, USAFA would follow the SPCC plan, as well as all relevant laws and regulations.

Implementation of the Preferred Alternative at the USAFA is not anticipated to add any new hazardous materials that exceed the installation's current hazardous waste management capacity. USAFA would continue to be classified as an SQG and generate hazardous wastes during various operation and maintenance activities. Existing procedures for the centralized management of the procurement, handling, storage, and issuance of hazardous materials are adequate to accommodate the Preferred Alternative. Finally, USAFA has conducted closure of both ERP sites under CERCLA, and the CDPHE and the USEPA assist the USAFA with long-term monitoring. Through adherence to the SWPPP, erosion and sediment controls, and the implementation of other BMPs (marking the site on design drawings to ensure avoidance during construction activities), the Preferred Alternative would have no potential to interfere with either of USAFA's ERP sites. Therefore, the Preferred Alternative would have the potential for *short-term, less-than-significant adverse impacts* from HTMW during construction. There would be *long-term, less-than-significant adverse impacts* from HTMW during operation of the Preferred Alternative.

3.14.2.2 Alternative 2

HTMW concerns for the construction and operation of Alternative 2 are the same as under the Preferred Alternative. As under the Preferred Alternative, during both construction and operation of Alternative 2, USAFA would follow their HWMP, SPCC plan, as well as all relevant laws and regulations. Therefore, Alternative 2 would have the potential for *short-term, less-than-significant adverse impacts* from HTMW during construction. There would be *long-term, less-than-significant adverse impacts* from HTMW during operation of Alternative 2.

3.14.2.3 No Action Alternative

Under the No Action Alternative, a CST program would not be implemented at the USAFA, and there would be *no impacts* related to HTMW.

4.0 CUMULATIVE EFFECTS

4.1 INTRODUCTION

The USAF identified and reviewed reasonably foreseeable actions planned to occur in the near-term future within the Proposed Action's ROI, including the USAFA and surrounding Colorado Springs area (**Table 13** and **Figure 15**). The USAF analyzed the potential causal relationships of the Proposed Action with these other reasonably foreseeable actions and existing environmental trends in the ROI. Baseline conditions in the ROI generally include trending development, with a focus on additional housing and expansion or upgrades of outdated facilities and infrastructure. Environmental trends indicate improved infrastructure from drainage and transportation updates, temporary and permanent employment opportunities from construction projects and commercial developments and improved residential and commercial services.

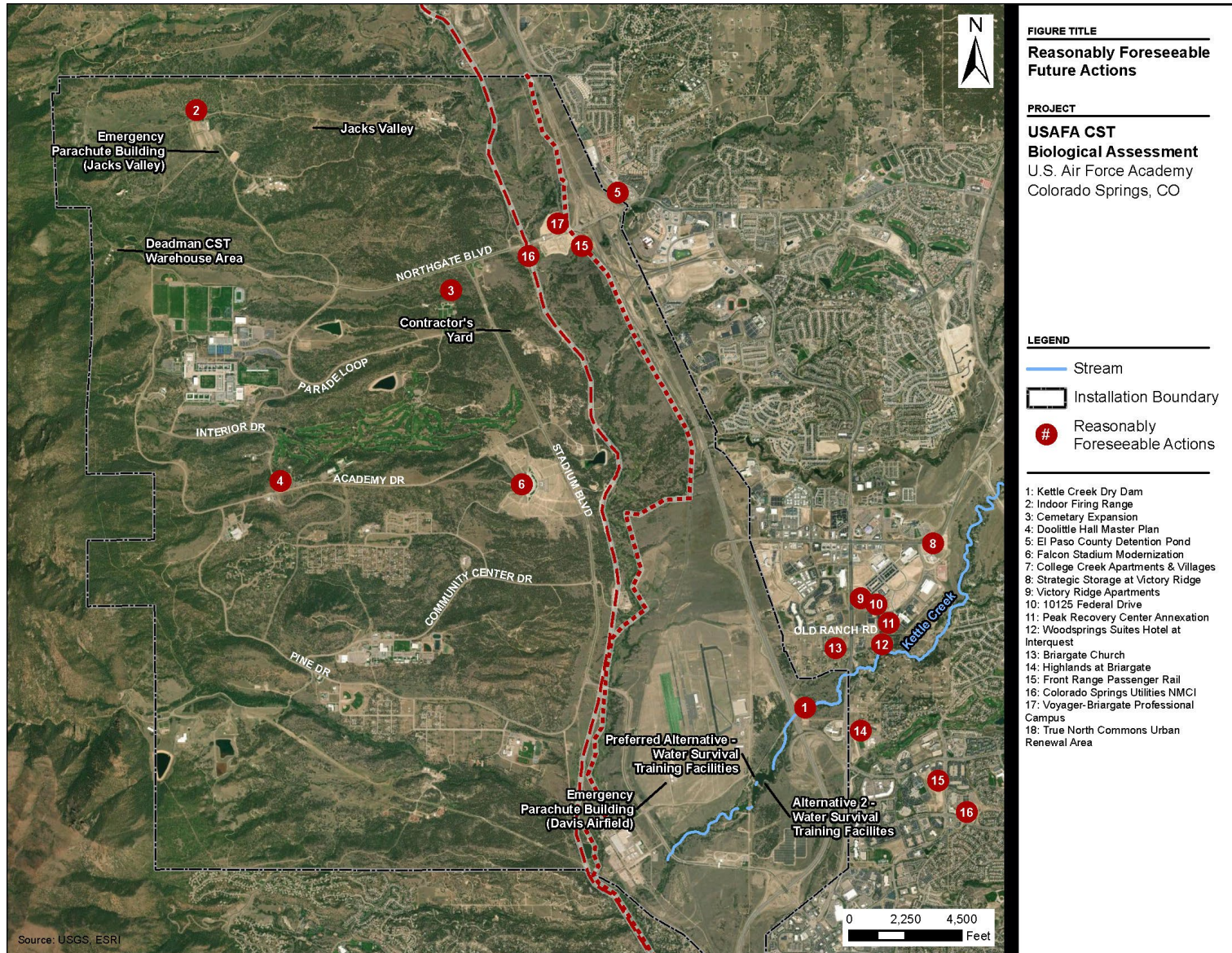
Table 13: Reasonably Foreseeable Actions with Close Causal Relationships to the Proposed Action

Project Name	Location	Project Type	Description
1. Kettle Creek Dry Dam	Colorado Springs, CO	Infrastructure	Kettle Creek Dry Dam is being repaired to bring it into compliance with CDWR regulations. The project includes three primary components: dam modifications, including removing the dam embankment; upstream channel reach improvements to restore Kettle Creek; and Kettle Lakes diversion structure upgrades to improve functionality and reduce sedimentation of the riparian area and lakes.
2. Indoor Firing Range	USAFA	Infrastructure	A 30,625-square foot indoor firing range would be constructed at a previously undeveloped location in Jacks Valley. The building would be used for weapons qualifications for USAFA cadets and for weapons training conducted by other local installations.
3. Cemetery Expansion	USAFA	Institutional	This project would provide additional burial plots at USAFA in order to meet an increase in demand and sustain the ability to conduct future burials. The expansion would include the construction of new cemetery streets, parking for cemetery visitors, and construction of 1,200 new burial plots. Existing forested land will be cleared for new burial sites.
4. Doolittle Hall Master Plan	USAFA	Institutional; Recreational	The Master Plan includes renovation of Doolittle Hall, construction of a new administration building, and expansion of the Heritage Trail.
5. El Paso County Detention Pond	USAFA	Infrastructure	El Paso County plans to construct a sub-regional drainage system and water quality full spectrum extended detention basin on USAFA property, where an easement has been granted to CDOT for the I-25 and North Gate Boulevard interchange. A sub-regional drainage system is one that serves an area of 130 acres or less.

Project Name	Location	Project Type	Description
6. Falcon Stadium Modernization	USAFA	Recreation	Falcon Stadium is under construction for modernization updates. The facility upgrades will include a dramatic new stadium entrance, an updated event space, a heritage plaza, improved seating, concessions areas, restrooms, and merchandise space. Construction and renovation are occurring in phases to maintain use of Falcon Stadium during the football season. The improvements will increase safety for spectators, improve crowd circulation throughout the stadium, and provide additional ingress and egress for added security. Construction began in early 2023 and is expected to be complete in the summer of 2024.
7. College Creek Apartments & Villages	Colorado Springs, CO	Residential	Located in the Elkhorn Basin and Kettle Creek Drainage Basin, the proposed development would allow for 240 affordable apartment units in ten three-story buildings, with a mix of 30 one-bedroom, 90 two-bedroom, 108 three-bedroom, and 12 four-bedroom units.
8. Strategic Storage at Victory Ridge	Colorado Springs, CO	Commercial	The project would develop 20,130-square feet of self-storage buildings, 14 exterior storage pods, and parking and landscaping improvements within the Elkhorn Drainage Basin.
9. Victory Ridge Apartments	Colorado Springs, CO	Residential	Victory Ridge Apartments is part of the 152-acre Victory Ridge development. The 16.97-acre project will be developed in two phases: Phase 1 will consist of 280 units in five buildings, and Phase 2 will consist of 194 units in four buildings.
10. 10125 Federal Drive	Colorado Springs, CO	Transportation	The project would add 169 parking spaces in the first phase of construction, and an additional 35 parking spaces in the second phase adjacent to the existing parking lot for a total of 699 parking spaces. The site is located in the southeastern portion of the Elkhorn Major Drainage Basin, also known as Fairlane Technology Park.
11. Peaks Recovery Center Annexation	Colorado Springs, CO	Institutional	The Peaks Recovery Center was approved for expansion to build a 15,000-square foot, two-story building that would accommodate additional clients, as well as an 8,000-square foot therapy building. The expansion would sit on approximately 10 acres.
12. Woodsprings Suites Hotel at Interquest	Colorado Springs, CO	Commercial	The proposed 2.46-acre, four-story hotel would be located within the Elkhorn Major Drainage Basin and includes 122 units within a 48,660-square foot building.
13. Briargate Church	Colorado Springs, CO	Institutional	A two-story, 4,280-square foot addition is proposed for the church.
14. Highlands at Briargate	Colorado Springs, CO	Commercial; Mixed-Use	The 11.3-acre property would comprise two new retail buildings as well as an office building.

Project Name	Location	Project Type	Description
15. Front Range Passenger Rail	USAFA and surrounding areas	Transportation	The 173-mile proposed rail line would link Pueblo, Colorado Springs, and Fort Collins to Denver. A portion of the rail would occur on USAFA property.
16. Colorado Springs Utilities North Monument Creek Interceptor (NMCI)	USAFA	Infrastructure	This project includes the construction of a 30-inch- and 36-inch-diameter new sanitary sewer pipeline. Approximately 8 miles of the 11-mile pipeline would be installed on USAFA, likely along the Santa Fe Trail, from the northern boundary to the southern boundary.
17. Voyager-Briargate Professional Campus	Colorado Springs, CO	Commercial; Mixed-Use	The proposed development would establish two new multi-tenant commercial buildings for office and medical office use.
18. True North Commons Urban Renewal Area	USAFA	Commercial	This project would be an area of commercial development located within USAFA property, but outside the USAFA secured perimeter. Development would include a mix of complimentary, non-residential uses such as commercial, hotel, office, and retail, as well as a new Visitor Center.

Figure 15: Reasonably Foreseeable Future Actions



4.2 EVALUATION OF CLOSE CAUSAL RELATIONSHIPS

4.2.1 Visual Resources

Short-term, less-than-significant adverse impacts to aesthetics may occur during construction of the Proposed Action and reasonably foreseeable actions. Construction sites would disrupt visual landscapes throughout the ROI. The temporary nature of construction, however, would render these impacts inconsequential. In the long-term, no adverse impacts on visual resources are expected to occur, as the new commercial and residential developments are consistent with existing landscapes, and the Proposed Action would not significantly adversely change the aesthetic of the existing environment surrounding USAFA.

4.2.2 Air Quality and Climate

Construction of the Proposed Action and reasonably foreseeable actions would generate air emissions from the use of construction equipment and vehicles, but these construction emissions would be temporary. The Proposed Action may also have long-term emissions due to the potential use of a generator at the water survival training facilities. However, all emissions from the Proposed Action and other reasonably foreseeable actions would not exceed regulatory thresholds or threaten the attainment status of the region. Additionally, project-specific compliance with state and federal permitting requirements and implementation of BMPs would further minimize air emissions. Therefore, the Proposed Action would have *short- and long-term, less-than-significant impacts* on air quality and climate, when taken in consideration with reasonably foreseeable future actions.

4.2.3 Noise

Construction of the Proposed Action and reasonably foreseeable actions would increase noise levels in the ROI. Construction noise is typically considered a minor annoyance, due to its temporary nature. In addition, noise impacts from construction equipment are generally limited to a 0.25-mile buffer as noise attenuates quickly in the ambient environment. While an increase in temporary noise would be experienced by those on- and off-base, collective noise would not substantially contribute to the existing soundscape already dominated by airfield activity and heavy traffic noise on I-25 and other nearby major roadways. Through project-specific BMPs, the USAF would ensure the Proposed Action's causal impact on noise, when considered with other reasonably foreseeable actions, is minimized to the greatest extent practicable. Cumulative noise impacts would be *short-term and less-than-significant*.

4.2.4 Earth Resources

The Proposed Action and reasonably foreseeable actions would not appreciably alter geological or topographical conditions in the ROI. While the Proposed Action would include some excavation and grading during construction activities, it would not contribute to overall topographical impacts in the ROI when considered with other reasonably foreseeable actions. Other projects would not require substantial grading or changes to topography, as construction activities would primarily occur within previously disturbed areas. Construction activities would require clearing and ground-disturbing activities that would cause soil disturbance and erosion. However, the Proposed Action would only impact up to 3.6 acres of soils, which would not contribute to significant degradation of soils in the ROI as a whole, when taken into consideration with reasonably foreseeable actions. With implementation of project-specific BMPs, the resulting causal impact on soils would be further minimized.

4.2.5 Water Resources

The causal relationship between the Proposed Action and reasonably foreseeable actions on water resources would result in *short-term, negligible adverse impacts* on downstream waters from increased erosion and sedimentation during construction activities from soil disturbance and stormwater runoff. Further, with implementation of stormwater management BMPs and compliance with Section 438 of the EISA, individual and collective effects would be maintained at acceptable levels. Kettle Creek Dry Dam improvements and new drainage systems, such as the El Paso County Detention Pond and Colorado Springs Utilities NMCI, would provide additional infrastructure to also ensure adequate surface water flow and drainage in the ROI.

4.2.6 Biological Resources

The Proposed Action and reasonably foreseeable actions would result in *short- and long-term, less-than-significant adverse impacts* on biological resources. While vegetation would be permanently removed, no sensitive vegetation species or high-quality habitat would be affected. Wildlife would be impacted by construction noise and human activity both during construction and when training activities occur. However, the Proposed Action and reasonably foreseeable actions are not anticipated to substantially reduce any regionally or locally important habitat or general wildlife species. Further, the areas in which reasonably foreseeable actions would occur are already disturbed or in previously developed areas surrounded by urban and suburban development.

Activities conducted within suitable PMJM habitat, along with development upstream of Kettle Creek would result in adverse impacts to the federally threatened PMJM. However, ongoing conservation activities conducted by USAFA through the conservation agreement, including habitat preservation and improvement, would ensure the lasting survival and conservation within USAFA-owned lands. In addition, no BASH concerns would arise as the reasonably foreseeable actions near the airfield would not create standing pools of water, new habitat, or other areas that birds would find attractive.

4.2.7 Cultural Resources

The ROI for cumulative effects involves potential projects (see **Table 13**) all occurring beyond the APE pertinent to the NHPA Section 106 compliance for this EA. Regardless, implementation of the Proposed Action and reasonably foreseeable actions would not have the potential to bring adverse effects to the historic properties addressed by the Section 106 APE defined for all action alternatives. As an active military installation, the USAFA must construct new facilities and modify existing facilities as necessary to continue to adhere to the installation's ongoing requirements. The facilities under the Proposed Action would not constitute a significant impact on the USAFA visual landscape, as they would be constructed of similar materials and in a similar nature to existing structures in the surrounding environment. Should unanticipated cultural resources be encountered, the USAFA would cease work immediately and notify the appropriate authorities, minimizing the potential for significant adverse impacts on previously unknown cultural resources.

4.2.8 Land Use and Recreation

The Proposed Action and reasonably foreseeable actions would have *no impact* on land use within the ROI. All construction and operation activities associated with the Proposed Action would be consistent with applicable land uses on USAFA, and all future projects are expected to be compliant with land uses outlined by USAFA and El Paso County. None of the activities associated with construction or operation of these projects would be incompatible with land use in the ROI such that public health or safety would be threatened.

Since the Proposed Action would increase use of Kettle Lake #3 for training activities, there would be less availability for fishing; therefore, USAFA may reduce stocking in the future. However, authorized personnel are able to use other lakes and recreational areas both on- and off-base. Additionally, none of the reasonably foreseeable future actions are expected to impact recreation within El Paso County. Therefore, the Proposed Action would have *long-term, less-than-significant cumulative adverse impacts* on recreation in the ROI.

4.2.9 Utilities

Short- and long-term, less-than-significant adverse impacts to utilities may occur during construction and operation of the Proposed Action and reasonably foreseeable actions. Implementation of the Proposed Action would not increase overall utility usage at the USAFA. Temporary service disruptions to utilities would occur during the installation of any new utility connections. However, these interruptions would be temporary and would only occur on the USAFA installation; all area users would be notified prior to the start of construction activities and any potential interruptions. Additional buildings requiring new utilities, in combination with the Proposed Action, would also increase the utility demand on the USAFA, although it would not substantially burden local utility providers or supply.

4.2.10 Socioeconomics and Environmental Justice

In the long term, the Proposed Action, when taken in consideration with reasonably foreseeable actions, would result in *beneficial impacts* on the local economy. Collective expenditures by temporary and permanent workforces would benefit local accommodation, food, and retail industries, as well as local fiscal benefits from associated sales tax revenues. There would be no change in population growth rate or housing as the Proposed Action would not require new personnel.

As no EJ communities of concern with respect to race or income are present within the ROI, there is no potential for the Proposed Action and reasonably foreseeable actions to disproportionately impact EJ communities.

4.2.11 Safety and Occupational Health

Implementation of the Proposed Action in consideration with reasonably foreseeable future actions could lead to *short- and long-term, less-than-significant adverse impacts* to safety and occupational health. Potential hazards associated with the construction of the Proposed Action would be minimal, as construction activities would be conducted in accordance with applicable federal, state, USAF, and local worker safety and regulatory requirements and guidelines, including those established by OSHA. Adherence to these requirements would substantially minimize the potential for worker injuries during construction of the Proposed Action and other projects. Potential safety concerns associated with training activities would also be minimized through compliance with all applicable USAF safety requirements and guidelines to ensure the safety of USAF Cadets and Airmen. Helicopter use would be coordinated with the Davis Airfield to ensure prevention of aircraft mishaps. No components of the Proposed Action, potential CST storage locations, or reasonably foreseeable future actions are located within the CZ or APZs associated with the Davis Airfield; therefore, no safety concerns associated with the airfield are anticipated.

4.2.12 Hazardous and Toxic Materials and Waste

Short-term, less-than-significant adverse impacts on HTMW would occur during construction of the Proposed Action and reasonably foreseeable future actions. Construction activities could result in potential discharge, spills, and contamination, as well as encounters with unexpected hazardous materials. Any construction activities requiring ground disturbance could expose previously unknown sources of

hazardous materials. Solid waste generation would also increase temporarily during construction activities. Proper permitting and compliance would be in place to prevent exposure and the spread of any identified contamination. While HTMW spills could potentially occur during operational training activities, USAFA would continue to follow the HWMP, SPCC Plan, and applicable local, state, and federal regulations, such that the resulting long-term causal impact from the Proposed Action would be *negligible*.

5.0 LIST OF PREPARERS

5.1 AIR FORCE PREPARERS

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Erwin Roemer	Cultural Resources Manager
Bernard Schriever	Cultural Resources Planner
Jennifer McCorkle	Environmental Planner

5.2 AECOM PREPARERS

Name	Role	Degree	Years of Experience
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Michael Busam	Deputy Project Manager, EA preparation	B.S. in Environmental Science and Policy	8
Benjamin Obenland	Preparation of EA sections	B.S. in Environmental Science and Policy	4
Tara Boyd	Preparation of EA sections	B.A. in Environmental Science and Global Sustainability	2
Allison Carr	Preparation of maps and figures; GIS; and Socioeconomics and Environmental Justice and Transportation sections	Master of City Planning B.A. in Geography	4
Fang Yang	Preparation of Air Quality and Noise sections	M.S. Atmospheric Science B.S. Physics	33
Caitlin Shaw	Preparation of Air Quality and Noise sections	M.S. Geosciences B.S. Meteorology	10

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APPENDIX A:
CONSULTATION WITH FEDERAL, STATE, AND LOCAL AGENCIES

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SAMPLE

From: [RYAN, BRENDAN J CTR USAF USAFA 10 CES/CENPP](#)
To: robert.frei@state.co.us
Cc: [SCHATZ, BARRY A CIV USAF USAFA 10 CES/CEIE](#)
Bcc: [RYAN, BRENDAN J CTR USAF USAFA 10 CES/CENPP](#)
Subject: USAFA - EA for Combat Survival Training - Agency Coordination
Date: Wednesday, July 5, 2023 11:26:00 AM
Attachments: [CST EA IICEP DOT RF.pdf](#)

Dear Mr. Frei

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) to evaluate the potential environmental impacts resulting from the implementation of a Combat Survival Training (CST) program, including construction and operation of supporting facilities, at United States Air Force Academy (USAFA) in El Paso County, Colorado (Proposed Action). The CST program includes land survival, water survival, and emergency parachute training that would satisfy the survival and evasion requirements of survival, evasion, resistance, and escape (SERE) training. The USAFA already trains Cadets in land survival training; therefore, the Proposed Action only includes construction and operation activities associated with implementing water survival and emergency parachute training.

The current USAFA SERE program does not meet required training demands, resulting in a backlog of personnel waiting to complete accredited SERE training. USAFA Cadets have been traveling to Fairchild Air Force Base (AFB) in Washington State to complete CST (a graduation requirement). Despite temporary implementation of CST at USAFA in the summer of 2022, there remains a backlog of USAFA Cadets and active duty Airmen waiting to complete the CST required to graduate and become fully operational. The requirements for SERE have also recently changed, including the addition of emergency parachute training, which was not covered in previous SERE training at USAFA. The Joint Training Standards (JTS) are currently being revised by the Joint Personnel Recovery Agency (JPRA) to reflect the new training requirements and incorporate these changes into training courses. Subsequently, the 19th AF Commander at Fairchild AFB and USAFA Superintendent have issued a directive to bring back portions of accredited SERE training to USAFA by implementing a CST program.

Therefore, the purpose of the Proposed Action is to follow the leadership directive to offer CST at USAFA, meet the new standards for SERE set by the JPRA, and increase the overall SERE training capacity of the USAF. The Proposed Action is needed because the training capacity at Fairchild AFB does not meet the current and projected demand for SERE training (including CST) and there is a backlog of USAFA Cadets and Airmen who require this training.

The EA will analyze the potential range of environmental impacts associated with three alternatives for this Proposed Action: Alternative 1 (Consolidated Training Area on North Side of Kettle Lake #3), Alternative 2 (Dispersed Training Facilities), and the No Action Alternative. Alternatives 1 and 2 differ in their construction requirements and locations but would implement the same operational training activities. Under the No Action Alternative, the USAF would not implement a CST program at USAFA, and the USAF's SERE training program would continue to impact Cadet training.

Construction

Under Alternative 1, the USAF would construct facilities for water survival and emergency parachute training at a consolidated training area on the north side of Kettle Lake #3 at the USAFA (**Figure 1**). Under Alternative 2, the USAF would construct water survival and emergency parachute training facilities at dispersed locations within USAFA rather than one consolidated training area. Water survival training would take place on the south side of Kettle Lake #3, while emergency parachute training would occur at a separate new facility, constructed either adjacent to USAFA's existing Parachuting Ground Training Facility (Building 9204) or in Jacks Valley, where portions of land survival training currently occur (**Figure 2**).

Alternatives 1 and 2 would include the construction of a Conex tower and lateral drift apparatus structure near the lake, an indoor emergency parachute training facility, and a permanent storage facility to hold CST equipment (**Figure 3**). During construction, Alternatives 1 and 2 may utilize a supplemental staging area in an existing parking lot off Airfield Drive. Utilities, including water, sanitary sewer, electric, and telecom would be extended to the selected site from USAFA's existing utility infrastructure (**Figure 1** and **Figure 2**).

Operation

Once operational, outdoor water-based training would occur in Kettle Lake #3 which will include Cadets and active duty airman utilizing the lateral drift apparatus to simulate parachute landings in water. Jet skis would be deployed in Kettle Lake #3 to simulate parachute drags across the lake and a helicopter would hover over Kettle Lake #3 for several hours per training day to create choppy water to simulate a rough open ocean environment. The remaining portions of emergency parachute training would occur indoors at the newly constructed emergency parachute training building. The CST program would include three, 21-day sessions in the summer of each year, accommodating approximately 400 Cadets each session (1,200 Cadets per summer). In addition, up to 1,000 additional Airmen could be trained in the remaining seasons when weather conditions allow. Training would occur Monday through Sunday during daytime hours.

The EA will be prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321, et seq.), the Council on Environmental Quality NEPA Implementing Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508, effective May 20, 2022), and the Air Force Environmental Impact Analysis Process (32 CFR 989).

As part of this EA, we request your assistance in identifying any potential areas of environmental impact in this analysis. If you have any specific items of interest about this proposal, please contact Mr. Barry Schatz, Environmental Element Chief, by email to: barry.schatz.2@us.af.mil; or by mail to: Barry Schatz, 8120 Edgerton Drive, USAFA, CO 80840 within 30 days of receipt of this letter.

Emailed on behalf of Barry Schatz.

//SIGN//

Brendan Ryan,

Environmental Planner
10 CES/CENPP
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Consultation with Federal, State, and Local Agencies

Federal Agencies

U.S. Army Corps of Engineers

Pueblo Office
200 South Santa Fe Avenue, Suite 301
Pueblo, Colorado 81003
Email: CESPA-RD-CO@usace.army.mil

U.S. Fish & Wildlife Service

Colorado Ecological Services Field Office
134 Union Boulevard, Suite 650
Lakewood, CO 80228
POC: Liisa Niva, Colorado Ecological Services
Email: coloradoes@fws.gov,
MountainPrairie@fws.gov

State Agencies

Colorado Department of Public Health and Environment, Federal Facilities, HMWM 2800

4300 Cherry Creek Drive, South
Denver, CO 80246
Email: comments.hmwm@state.co.us

Colorado Department of Public Health and Environment, Air Pollution Control Division, APCD-TS-B2

4300 Cherry Creek Drive, South
Denver, CO 80246
Email: cdphe.commentsapcd@state.co.us

Colorado Department of Transportation

Environmental Branch
1480 Quail Lake Loop, #A
Colorado Springs, CO 80906
POC: Mr. Rob Frei
Email: robert.frei@state.co.us

Colorado Natural Heritage Program

Colorado State University
1475 Campus Delivery
Fort Collins, CO 80523
Email: CNHP@colostate.edu

Colorado Parks and Wildlife

4255 Sinton Road
Colorado Springs, CO 80907
POC: Cody Wigner, Area Wildlife Manager –
Colorado Springs
Email: cody.wigner@state.co.us

Colorado State Historic Preservation Office

History Colorado
1200 N. Broadway
Denver, CO 80203-2137
POC: Ms. Dawn DiPrince, AIA
Email: hc_oahp@state.co.us

Local/Regional Agencies

City of Colorado Springs

P.O. Box 1575, Mail Code 155
Colorado Springs, CO 80903
POC: Mr. Daniel Sexton, Senior Planner
Email: Daniel.sexton@coloradosprings.gov

El Paso County Community Services Department, Environmental Division

3255 Akers Drive
Colorado Springs, CO 80922
POC: Nancy Prieve, Natural Resources
Specialist
Email: nancyprieve@elpasoco.com

El Paso County Planning and Community Development

2880 International Circle, Suite N060
Colorado Springs, CO 80910
POC: Ms. Kari Parsons, Planner
Email: kariparsons@elpasoco.com

Pikes Peak Area Council of Governments

15 South 7th Street
Colorado Springs, CO 80905
POC: Andrew Gunning, Executive Director
Email: agunning@ppacg.org



COLORADO

Parks and Wildlife

Department of Natural Resources

Area 14- Southeast Region
4255 Sinton Road
Colorado Springs, CO 80907
P 719.227.5200 | F 719.227.5264

July 18, 2023

Mr. Barry Schatz
Environmental Element Chief
10th Civil Engineer Squadron
8120 Edgerton Dr.
USAF Academy, Co 80840

Re: Environmental Assessment for Combat Survival Training

Dear Mr. Schatz,

Colorado Parks and Wildlife (CPW) has reviewed the information about the upcoming environmental assessment that will be done for a proposed Combat Survival Training (CST) program at the United States Air Force Academy (USAF). CPW is familiar with the various locations where impacts of the new CST may occur. CPW is also familiar with the area surrounding these locations.

From CPW's knowledge of the locations proposed for CST impact and from the actions being proposed at these locations, CPW believes that impacts to the surrounding natural resources and wildlife will be negligible. We appreciate being given the opportunity to comment. Please feel free to contact District Wildlife Manager Corey Adler at 719-439-9637 or corey.adler@state.co.us should you have any questions or require additional information.

Sincerely,

Tim Kroening
Area 14 Wildlife Manager

Cc: Corey Adler, DWM
Area 14 File



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APPENDIX B:
ENDANGERED SPECIES ACT SECTION 7 CONSULTATION

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BIOLOGICAL ASSESSMENT

FOR

**United States Air Force Academy (USAFA)
Combat Survival Training (CST)**

Final



U.S. AIR FORCE

PREPARED BY:

U.S. Air Force

December 2023

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Appendix A: Official Species List

Appendix B: Photographic Log

ABBREVIATIONS AND ACRONYMS

BA	Biological Assessment	PMJM	Preble's Meadow Jumping Mouse
BMP	Best Management Practice	SERE	Survival, Evasion, Resistance, and Escape
BO	Biological Opinion	U.S.	United States
CST	Combat Survival Training	U.S.C	United States Code
EA	Environmental Assessment	USACE	U.S. Army Corps of Engineers
ESA	Endangered Species Act	USAF	U.S. Air Force
INRMP	Integrated Natural Resources Management Plan	USAFA	U.S. Air Force Academy
IPMP	Integrated Pest Management Plan	USFWS	U.S. Fish and Wildlife Service

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1.0 INTRODUCTION

The United States (U.S.) Air Force (USAF) proposes to construct training support facilities and implement a combat survival training (CST) program at the U.S. Air Force Academy (USAFA) in El Paso County, Colorado (Proposed Action). The CST program includes land survival, water survival, and emergency parachute training that would satisfy the survival and evasion requirements of survival, evasion, resistance, and escape (SERE) training. The locations of proposed CST activities within the USAFA are indicated on **Figure 1**.

An Environmental Assessment (EA) is being prepared for the Proposed Action to evaluate environmental impacts resulting from the implementation of a CST program, including construction and operation of supporting facilities at the USAFA. As part of this EA, consultation with the U.S. Fish and Wildlife Service (USFWS) is required under Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 United States Code (U.S.C) 1531 et seq.), to address impacts to threatened and endangered species and their habitat.

1.1 FEDERALLY THREATENED, ENDANGERED, AND CANDIDATE SPECIES POTENTIALLY AFFECTED BY THE PROPOSED ACTION

The USAF's consultant requested and received an Official Species List from the USFWS identifying federally threatened, endangered, and candidate species with potential to occur on the Project Site (**Appendix A**). The Official Species List identified three species that only need to be considered under specific circumstances. The federally endangered gray wolf (*Canis lupis*) only needs to be considered if the project includes a predator management program. The piping plover (*Charadrius melodus*) and pallid sturgeon (*Scaphirhynchus albus*) only need to be considered if the project includes water-related activities and/or use in the N. Platte, S. Platte, or Laramie River Basins which may affect listed species in Nebraska. As the Proposed Action does not include a predator management plan, nor does it occur in the river basins of interest, these species are not considered in this analysis. The remaining species along with their preferred habitat, status, and effect determinations are presented below and summarized in **Table 1**.

1.2 SPECIES DISMISSED FROM FURTHER ANALYSIS

1.2.1 Tricolored Bat (*Perimyotis Subflavus*)

Although the tricolored bat is not currently listed under the ESA, the USAF has included this species in its analysis due to its status as a "proposed endangered" species. This species has been documented in eastern Colorado; however, the Project Site is located outside (west) of this species' known range (USFWS, 2023a). Furthermore, the low number of documented occurrences in eastern Colorado suggest that occurrences of this species in Colorado are accidental (Colorado Bat Working Group, 2023). Moreover, a survey for this species was conducted by the USAFA in 2022, but no individuals were observed (USAFA, 2023). The tricolored bat is not likely to occur in the vicinity of the Project Site. Therefore, the Proposed Action would have **no effect** on the tricolored bat. This species is dismissed from further analysis.

Figure 1: CST Locations within the USAFA

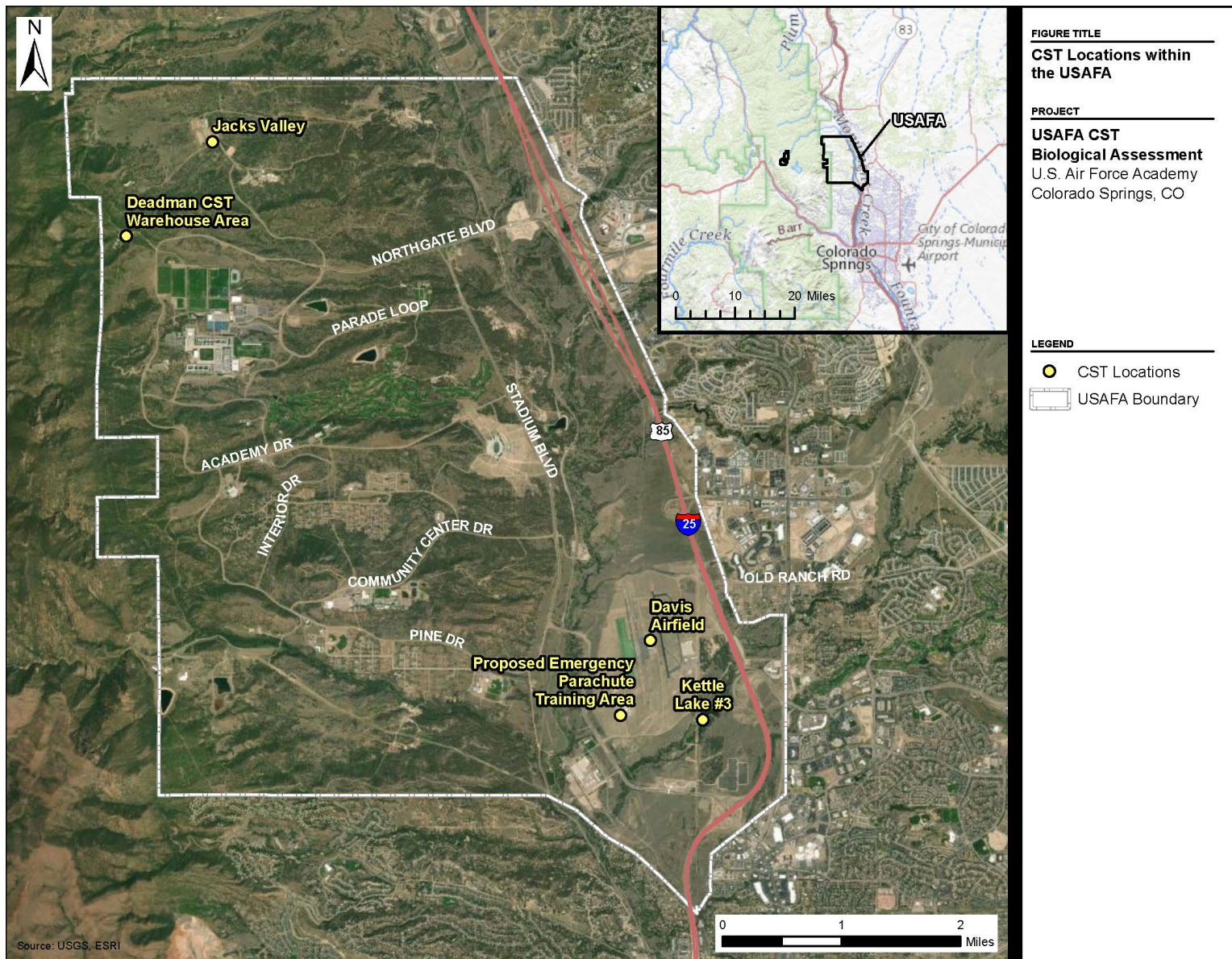


Table 1: Federally Threatened and Endangered Species Potentially Found in the Project Area or with Potential to be Affected by the Proposed Action

Species	Preferred Habitat	Status	Determination
Preble's meadow jumping mouse (PMJM; <i>Zapus hudsonius preblei</i>)	PMJM is a small nocturnal rodent native to the Rocky Mountains-Great Plains interface of eastern Colorado and southeastern Wyoming. This species occupies moist lowlands with dense vegetation with a nearby water source. Notably, PMJM hibernates underground from September to May (USFWS, 2000a).	Threatened	May affect, is likely to adversely affect
Tricolored bat (<i>Perimyotis subflavus</i>)	Tricolored bats are found hibernating in caves and abandoned mines in the winter. In the spring, summer, and fall, this species is found foraging in forested habitats and roosting in leaf clusters of live or recently dead deciduous hardwood trees (USFWS, 2023a).	Proposed Threatened	No effect. No known populations in vicinity.
Eastern black rail (<i>Laterallus jamaicensis</i>)	Eastern black rails are found in densely vegetated emergent marshes dominated by cattails (<i>Typha sp.</i>) (Colorado Parks and Wildlife, 2016)	Threatened	No effect. No known populations in the vicinity.
Mexican spotted owl (<i>Strix occidentalis lucida</i>)	The Mexican spotted owl is found in forested mountains and canyonlands throughout the southwestern United States. In Colorado, roosting and nesting primarily occur in rocky canyons with most nests being built in caves or on cliff ledges in steep-walled canyons (USFWS, 2023b).	Threatened	No effect. No suitable habitat.
Greenback cutthroat trout (<i>Oncorhynchus clarkii stomias</i>)	Greenback cutthroat trout inhabit cold water streams and lakes with adequate stream spawning habitat present in spring (USFWS, 1998). This species is only known to exist in streams isolated from other fish where, with the exception of Bear Creek, it has been reintroduced (Fendt, 2019).	Threatened	No effect. No suitable habitat.
Ute ladies'-tresses (<i>Spiranthes diluvialis</i>)	The Ute ladies'-tresses occurs along riparian edges, gravel bars, old oxbows, high flow channels, and moist to wet meadows along perennial streams. It typically occurs in stable wetland and seepy areas associated with old landscape features within historical floodplains of major rivers. It also is found in wetland and seepy areas near freshwater lakes or springs (USFWS, n.d.).	Threatened	No effect. No suitable habitat.
Monarch butterfly (<i>Danaus plexippus</i>)	Monarchs in North America undergo long-distance migration between summer and overwintering sites (USFWS, n.d.). In Colorado's Front Range, where USAFA is located, monarchs can be seen migrating between mid-June (heading north) and September (heading south) (University of Colorado Boulder, 2021).	Candidate	No effect. No suitable habitat.

1.2.2 Eastern Black Rail (*Laterallus jamaicensis*)

Eastern black rails in Colorado are found in shallow emergent wetlands characterized by water depth of less than 2 inches and dense emergent vegetation dominated by cattails (*Typha spp.*), hardstem bulrush (*Scirpus acutus var. acutus*), soft-stemmed bulrush (*Schoenoplectus tabernaemontani*), and willow (*Salix spp.*) (USFWS, 2023c; Colorado Parks and Wildlife, 2016). The eastern black rail has only been documented in El Paso County once at Fort Carson Military Reservation during a 2022 survey, over 15 miles from where the project is located; this species is also known to occur in neighboring Lincoln and Pueblo counties (Colorado Parks and Wildlife, 2016). A survey for this species was conducted by the USAFA in 2022 and 2023, but no individuals were observed (USAFA, 2023; B. Mihlbachler, personal communication, July 31, 2023). Therefore, the Proposed Action would have **no effect** on the eastern black rail. This species is dismissed from further analysis.

1.2.3 Mexican Spotted Owl (*Strix occidentalis lucida*)

Mexican spotted owls occur in isolated mountain ranges and canyon systems throughout the southwest United States. In Colorado, this species primarily utilizes rocky canyon areas for roosting and nesting. This species has not been documented on USAFA. While transient Mexican spotted owls may fly through USAFA, this species is nocturnal and is not likely to be active during construction and operation of the Proposed Action. The Project Site does not contain suitable roosting or nesting habitat for the Mexican spotted owl, nor has this species been documented on USAFA; therefore, the Proposed Action would have **no effect** on the Mexican spotted owl. This species is dismissed from further analysis.

1.2.4 Greenback Cutthroat Trout (*Oncorhynchus clarkii stomias*)

The greenback cutthroat trout has been extirpated from Monument Creek and its tributaries, where the Project Site is located (USAFA, 2023). Furthermore, the water features within and near the Project Site, Kettle Lake #3 and Kettle Creek, are a manmade impoundment and intermittent stream, respectively, and do not provide suitable habitat for this species. Therefore, the Proposed Action would have **no effect** on the greenback cutthroat trout. This species is dismissed from further analysis.

1.2.5 Ute Ladies'-tresses (*Spiranthes diluvialis*)

The Project Site does not include habitat features that would be suitable for this species, such as moist to wet meadows and stable seepy wetland areas. Additionally, this species has not been documented on USAFA. The site visit on March 15, 2023, found no suitable habitat for this species surrounding Kettle Lake #3. Therefore, the Proposed Action would have **no effect** on the Ute ladies'-tresses. This species is dismissed from further analysis.

1.2.6 Monarch Butterfly (*Danaus plexippus*)

The Project Site may provide limited stop-over habitat for the monarch during migration; however, the likelihood of mortality is low, as migrating adult monarchs would be expected to avoid the Project Site during construction and operation. Should migrating monarch butterflies stop-over on the Project Site in notable numbers during construction or operation, all activities would be paused until the USAFA Natural Resources Manager evaluates the situation and identifies an appropriate path forward. Therefore, the Proposed Action would have **no effect** on the monarch butterfly. Additionally, monarch butterflies are a candidate species and have no Section 7 requirement at the time this Biological Assessment (BA) was submitted. This species is dismissed from further analysis.

1.3 SPECIES RETAINED FOR FURTHER EVALUATION

Based on best available information, Preble's meadow jumping mouse (PMJM) is the only federally listed species that may be affected by the Proposed Action. The USAFA supports a significant PMJM population and suitable habitat occurs on and within the vicinity of the Project Site. Following federal listing of this species in May 1998, the USAFA entered formal consultation with the USFWS regarding the PMJM. In April 2000, the USFWS rendered a "no jeopardy" Biological Opinion (BO) for the USAFA's proposed actions in PMJM habitat conducted in accordance with the USAFA's Conservation Agreement and Conservation Plan (USFWS, 2000a; USFWS, 2000b; Colorado Natural Heritage Program, 1999). The remainder of this BA is focused on determining potential effects of the Proposed Action on PMJM.

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2.0 PROJECT DESCRIPTION

2.1 PROPOSED ACTION

The Proposed Action entails implementation of a CST program, including construction and operation of supporting facilities, at the USAFA. The CST program would include three, 21-day training sessions in the summer of each year, accommodating approximately 400 Cadets each session (1,200 Cadets per summer). In addition, up to 1,000 additional Airmen could be trained in the remaining seasons when weather conditions allow. CST would include three primary components: land survival training; water survival training; and emergency parachute training. Training would occur Monday-Sunday during daytime hours.

2.1.1 Construction

The Proposed Action would involve constructing a tower and lateral drift apparatus (i.e., a zipline), indoor emergency parachute training facility, and a storage location for CST equipment. The tower and lateral drift apparatus would be constructed on a 0.3-acre parcel along the northwest bank of Kettle Lake #3 (**Figure 2**). The structure would either be a steel or Conex container (three wide by three high) structure with an overhang rooftop and a lateral drift apparatus anchored to the second level of the tower. The tower and lateral drift apparatus would be prefabricated off-site and installed either in-water or on the adjacent bank of Kettle Lake #3. The tower and lateral drift apparatus would be approximately 40 feet high with a reinforced deck and rooftop (USAF, 2022). No exterior lighting is anticipated. If constructed on the bank, rock removal and installation of a concrete retaining wall may be required. Access to this proposed water survival training facilities site would occur via Airfield Drive and existing dirt roads. In addition, a supplemental construction staging area would be available in the existing parking lot off of Airfield Drive (**Figure 2**). Latrines in the form of portable bathrooms would be seasonally installed on the north end of the dam that separates Kettle Lake #3 from Kettle Lake #2. No vegetation clearance or ground disturbance would occur to facilitate latrine installation. Electrical utilities are present within the supplemental construction staging area and would be extended 530 linear feet along the rights-of-way of existing roadways.

The emergency parachute training building would be constructed within the Davis Airfield, approximately 0.7 mile west of Kettle Lake #3 (**Figure 2**). This building would be about 40 feet long, 25 feet wide, and 30 feet tall and located within an approximately 0.9-acre site designed to comply with the imaginary surfaces associated with the Davis Airfield. Construction access would occur via Airfield Drive and Talon Drive.

Equipment for CST, such as transportation trailers, utility terrain vehicles, communication devices, etc., would be stored at the Deadman CST warehouse area, where a new, permanent storage warehouse would be constructed (**Figure 2**). This location is on a significant slope and extensive grading would be required for construction of this storage facility. In addition, two outdoor security lights would be installed on the front and rear of the warehouse. The USAF identified the Deadman CST warehouse area as the preferred location for a permanent storage facility due to its location adjacent to existing CST storage facilities. Photos of the Project Site are included in **Appendix B**.

2.1.2 Operation

Operation of the Proposed Action would involve Cadets utilizing the lateral drift apparatus to simulate parachute landings in water. Jet skis would be deployed in Kettle Lake #3 to simulate parachute drags across the lake. One helicopter would hover over Kettle Lake #3 for several hours per training day to create choppy water to simulate a rough open ocean environment. Helicopter use would be coordinated with the Davis Airfield (0.4-mile northwest of Kettle Lake #3) prior to conducting water survival training. Other in-water training would include techniques to escape from beneath a parachute and life raft operations. Loud

music would sometimes be played during this training to simulate a noisy environment. During in-water training, a floating dock would be deployed into Kettle Lake #3 and would be pulled ashore when not in use. A generator may be used to power the proposed water survival training facilities. A pavilion is located across the dam, on the southwest side of the lake; the pavilion and the surrounding area would potentially be used as a staging area for equipment during training activities (**Figure 2**). No vegetation clearing or ground disturbance would occur in the pavilion and surrounding area. Water survival training instances would last approximately 4 to 6 hours each instance and occur eight times per each of the three, 21-day sessions.

The remaining portions of emergency parachute training would occur indoors at a newly constructed emergency parachute training building. Once constructed, the training area would be managed in accordance with USAFA's 2022 Environmental Standards, Integrated Natural Resources Management Plan (INRMP), and Integrated Pest Management Plan (IPMP) (USAFA, 2023).

2.2 ACTION AREA

The Action Area is defined by 50 Code of Federal Regulations (CFR) 402.02 as “all areas to be affected directly or indirectly by the federal Proposed Action and not merely the immediate area involved in the action.” The Action Area includes a 0.5-mile buffer around both the emergency parachute training facility and Deadman CST warehouse to account for noise impacts during the short-term construction period. The Action Area also includes a larger, 0.7-mile buffer around Kettle Lake #3, to account for noise created by the helicopter during training. The Action Area for the Proposed Action is shown in **Figure 3**.

Construction and training activities occurring in, and surrounding, Kettle Lake #3 are anticipated to be the primary source of environmental impacts associated with the Proposed Action. The proposed water survival training facilities site has been drawn to represent the maximum amount of disturbance that would occur near Kettle Lake #3, although the final site layout may be smaller than the area depicted on **Figure 2** and would be designed to minimize impacts to sensitive species. Kettle Lake #3 is an approximately 6.5-acre manmade impoundment with depths up to 18 feet. Kettle Lake #3 is located at 38.96484455381717, -104.81041569434015; Section 32, Township 12 south, Range 66W of the 6th Principal Meridian.

Figure 2: Proposed Action

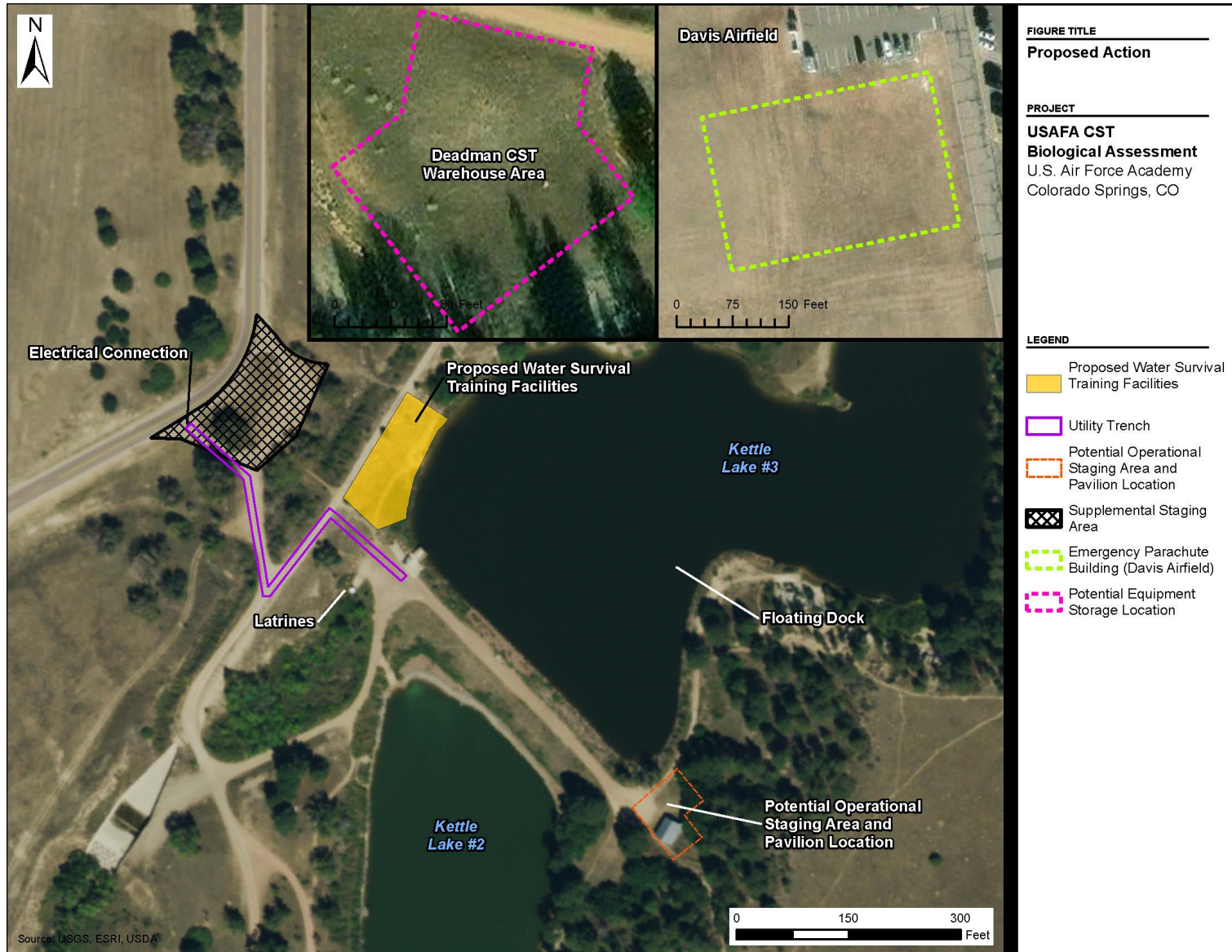
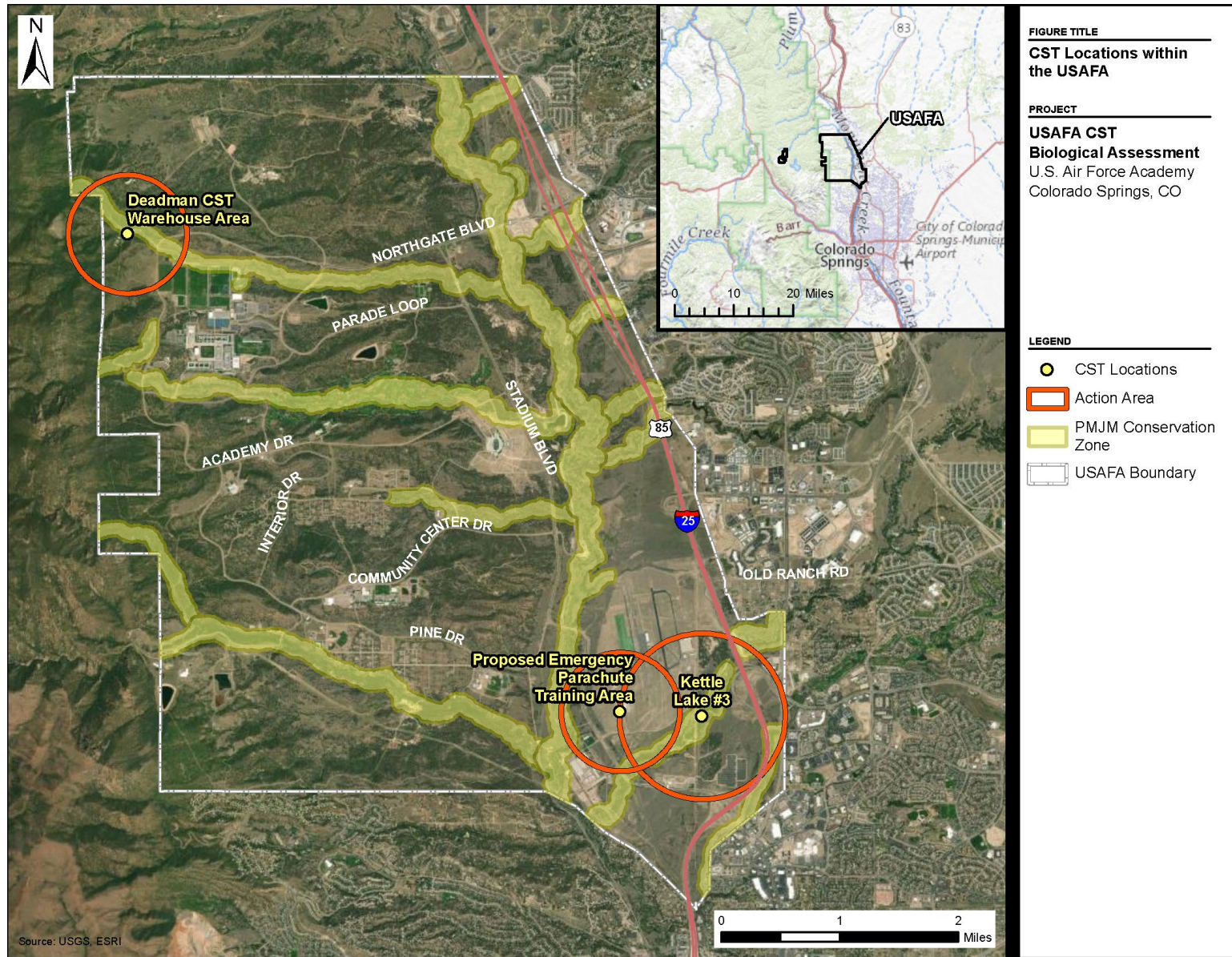


Figure 3: Action Area



3.0 CONSULTATION HISTORY

Submittal of this BA is part of formal ESA Section 7 consultation between USFWS and USAFA. This has included virtual, in-person, phone, and email correspondence with USFWS regarding the threatened and endangered species that may be present on the Project Site or may be affected by the Proposed Action.

- May 1998. Federal Listing
 - Following federal listing of this species, the USAFA entered formal consultation with the USFWS regarding the PMJM. This consultation resulted in a Conservation Agreement and Conservation Plan for the PMJM. The Conservation Agreement and Conservation Plan state that while USFWS has not designated any critical habitat on USAFA, USAFA will ensure the lasting survival and conservation of PMJM and its habitat within USAFA-owned lands (USFWS, 2000a; USFWS, 2000b; Colorado Natural Heritage Program, 1999).
- April 2000. “No Jeopardy” Biological Opinion
 - USFWS rendered a “no jeopardy” Biological Opinion (BO) for the USAFA’s proposed actions in PMJM habitat conducted in accordance with the USAFA’s Conservation Agreement and Conservation Plan. USAFA begins including management measures and designated conservation zones for PMJM within their INRMP (USAFA, 2023).
- September 2023. Draft BA for USAFA CST Submitted to USFWS
 - USAFA submitted the Draft BA for USAFA CST to USFWS for review on September 22, 2023. The Draft BA contained a description of USAFA’s Proposed Action and potential impacts to the PMJM, as well as USAFA’s determination that while the Proposed Action may affect and is likely to adversely affect the PMJM, there would be no effect on designated critical habitat for the PMJM, and the Proposed Action would have no effect on any other threatened or endangered species.
- December 2023. USFWS Comments on Draft BA
 - The USAFA received comments from USFWS on the Draft BA on December 7, 2023. Comments included increasing the Action Area to include a buffer to account for noise impacts during construction and operation, as well as providing more detail on revegetation plans and habitat quality definitions for the PMJM. The USAFA has incorporated these comments into this Final BA.

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4.0 PREBLE'S MEADOW JUMPING MOUSE

PMJM is the only listed species with potential to be affected by the Proposed Action. PMJM is known to occur along Kettle Lake #3 and former positive live trapping efforts at Kettle Lake #3, as well as upstream and downstream in Kettle Creek, demonstrate confirmed PMJM occupied habitat within the Project Site. The remaining sections of this document discuss background information on PMJM, describe baseline conditions on the Project Site, and evaluate the effects of the Proposed Action on this species.

4.1 DESCRIPTION OF SPECIES

PMJM is a small, brown rodent with a long tail and large hind feet. Mature PMJM are 7 to 10 inches long, with the tail accounting for two thirds of the mouse's length. The hind legs are three times larger than mice of similar body size (USFWS, 2023d). PMJM is mostly nocturnal and a true hibernator, entering hibernation in September or October and emerging in May (Colorado Parks and Wildlife, 2016). This species consumes a seasonal diet consisting of insects and fungi in the spring, and fungi, moss, seeds, and pollen in mid-summer (USFWS, 2023d). PMJM can jump up to three feet high to evade predators (USFWS, 2023e). PMJM have two litters per year, with an average of five offspring per litter. PMJM can live up to three years, although annual survival rates are low (USFWS, 2023d).

4.2 RANGE

PMJM currently only occupies the North Platte, South Platte, and Arkansas river watersheds in southeastern Wyoming and in Colorado's Front Range from the Wyoming border through El Paso County (Colorado Parks & Wildlife, 2020; USAFA, 2023). The Denver metropolitan area is thought to represent a barrier between the northern and southern extent of this species' range. The USAFA supports the greatest extent of contiguous suitable habitat for the PMJM in the Arkansas River Basin (USAFA, 2023).

4.3 HABITAT

PMJM occur in riparian areas with adjacent, relatively undisturbed grasslands and a nearby water source (USFWS, 2023d). Preferred riparian habitat must have a well-developed shrub layer and thick herbaceous layer. Typically, shrub cover consists of willow (*Salix spp.*) species; however, habitat suitability is driven by density of riparian vegetation rather than diversity of plant species (USFWS, 2023d).

PMJM hibernate in underground burrows adjacent to nearby waterways and under cover of thick vegetation. Recorded distances from water range from 7 meters to 31 meters, with the majority of hibernacula being observed within the 100-year floodplain (Colorado Natural Heritage Program, 1999).

4.4 THREATS TO SPECIES

PMJM is primarily threatened by alteration, degradation, loss, and fragmentation of suitable habitat resulting from urban development, flood control, water development, and other human land uses (USFWS, 2023d). Locally, development within the watershed has resulted in accelerated stream erosion in PMJM habitat due to increased stormwater volume and frequency.

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5.0 ENVIRONMENTAL BASELINE

The Project Site is located outside of USFWS-designated critical habitat; however, the areas of the Project Site surrounding Kettle Lake #3 and the Deadman CST warehouse area occur within the USAFA PMJM Conservation Zone (**Figure 3**). **Section 5.1** and **Section 5.2** provide environmental baseline conditions at these two areas. Photographs of these areas as observed during site visits on March 15, 2023, and July 5, 2023, are included in **Appendix B**. Although the utility corridors, supplemental staging area, operational staging area, and latrine locations would occur within the PMJM Conservation Zone, these areas are highly trafficked and devoid of vegetation and therefore do not represent suitable habitat for the PMJM. The proposed emergency parachute facility location occurs at the Davis Airfield, 0.7 mile west of Kettle Lake #3 and entirely outside the PMJM Conservation Zone. Therefore, the proposed emergency parachute facility location does not contain suitable habitat for the PMJM and is not discussed further in this BA.

Dr. Mihlbachler, the Natural Resources Manager at USAFA, reviewed the Project Sites to characterize the quality of PMJM present. The USAFA uses the following general definitions to describe PMJM habitat:

- **High-quality habitat** includes wetland vegetation and areas adjacent to surface water with at least 50 percent cover of woody vegetation such as sandbar willows, plains cottonwood trees, and peachleaf willow trees. The percent cover of herbaceous vegetation varies between 40 and 80 percent, including both native and nonnative species.
- **Medium-quality habitat** includes dry terraces and floodplain areas adjacent to surface water, but is several feet above the waterway, and has less than 50 percent cover of woody vegetation. Woody vegetation consists mostly of sandbar willows with a sparse to moderate herbaceous cover (20 to 70 percent) in the understory that includes both native and nonnative species.
- **Low-quality habitat** includes disturbed uplands that have mostly nonnative plant cover and no canopy cover except for a few scattered mature cottonwood and ponderosa pine trees. Dense stands of smooth brome are dominant, along with small to moderate sized populations of noxious weeds.
- **Nonhabitat** includes disturbed upland areas that have little herbaceous vegetation cover dominated by nonnative species, and previously disturbed areas with no vegetation such as pedestrian trails and dirt access roads.

5.1 VICINITY OF KETTLE LAKE #3

The proposed water survival training facilities area includes vegetated open field and boulders. This area has a robust herbaceous layer composed of smooth brome (*Bromus inermis*), blue grama (*Bouteloua gracilis*), crested wheatgrass, western ragweed (*Ambrosia psilostachya*), and common mullein (*Verbascum thapsus*). Pockets of shrub vegetation consisting of prairie sagebrush (*Artemisia frigida*), golden currant (*Ribes aureum*), and narrowleaf willow (*Salix exigua*) are interspersed throughout the site. Notably, a walking trail devoid of vegetation transects this area. Photographs of the site are provided in **Appendix B**.

With respect to PMJM habitat, Dr. Mihlbachler, the Natural Resources Manager at USAFA, has determined that this area consists of a small patch of medium quality riparian habitat limited to the lake margin and low-quality upland habitat (**Figure 3**). Although limited in extent, the multilayered vegetation provides aerial cover and habitat connectivity that PMJM may use to traverse around the lake. PMJM individuals have been observed during survey events within the vicinity of Kettle Lake #3, although no individuals have been recorded within the proposed water survival training facilities site.

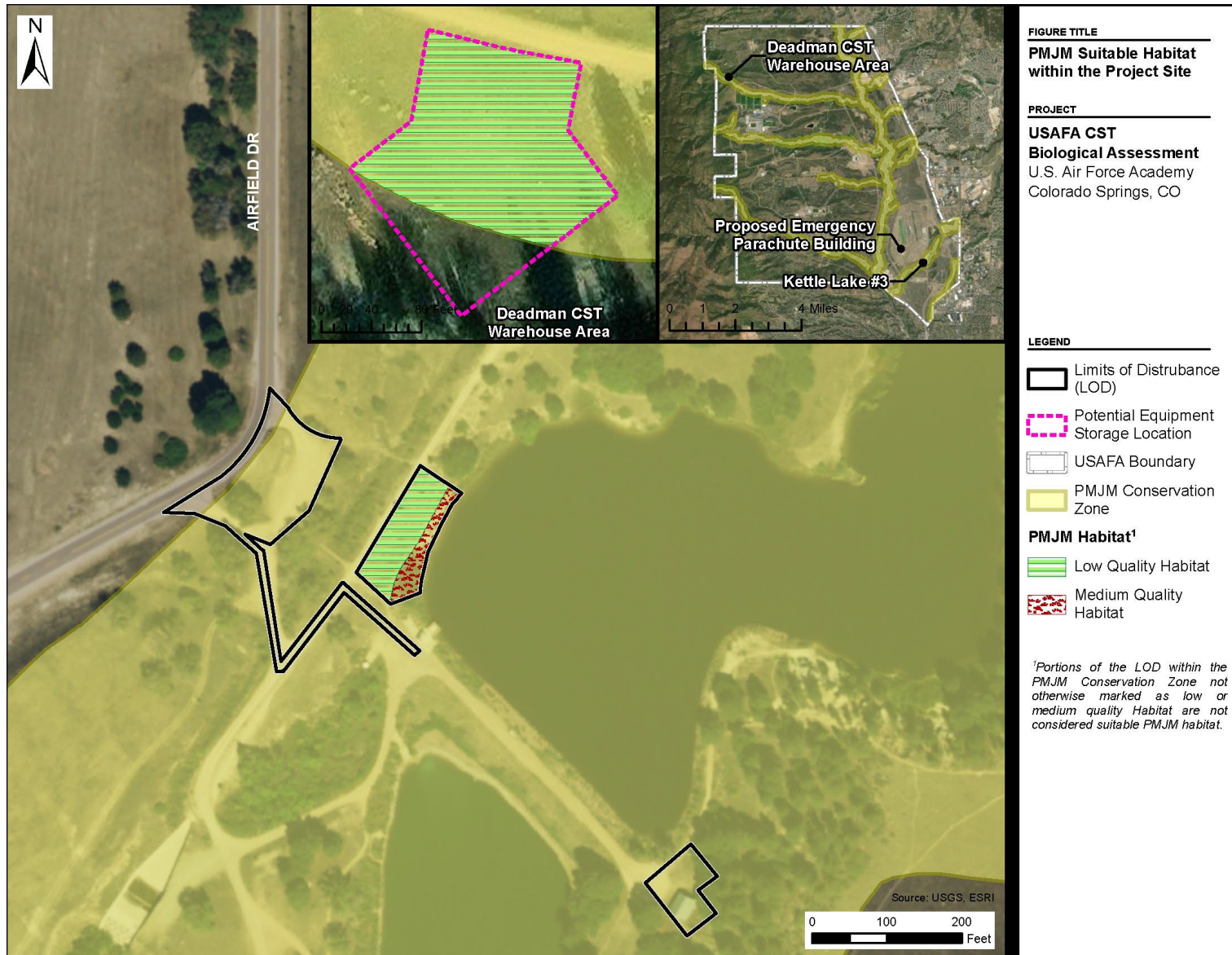
The proposed utility trenches, staging areas, and latrine locations around Kettle Lake #3 are sited on existing dirt paths and other cleared areas and therefore do not represent suitable habitat for the PMJM.

5.2 DEADMAN CST WAREHOUSE AREA

This area includes a vegetated open field interspersed with boulders and predominately covered by an herbaceous layer of vegetation consisting of 80 percent smooth brome and 5 percent blue grama. Less dominant herbaceous species observed include prairie sagebrush, hoary golden aster (*Heterotheca canescens*), and yucca (*Yucca* sp.). No shrubs or trees were observed on-site. The forest to the south and east of the Deadman CST warehouse area is comprised of ponderosa pine and gambel oak.

Approximately 80 percent of this area falls within the PMJM Conservation Zone, but would qualify as low quality habitat (**Figure 4**). The vegetation within this area is not dense enough to support this species due to the lack of a shrub layer. No water features were observed on-site. Approximately 20 meters north of this area, on the other side of the access road, is a riparian area comprised of narrowleaf cottonwood (*Populus angustifolia*), peachleaf willow (*Salix amygdaloides*), and a large stand of Siberian peashrub that would qualify as potential habitat. This riparian area has supported the PMJM historically, as confirmed by surveys for this species.

Figure 4: PMJM Suitable Habitat within the Project Site



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6.0 EFFECTS OF THE PROPOSED ACTION

Direct and indirect effects to PMJM are likely to occur as part of the Project. The following subsections describe potential effects.

6.1 DIRECT EFFECTS

The Proposed Action has the potential to adversely affect the PMJM due to habitat disturbance during construction and reduced habitat availability during training activities. Construction activities, including operation of heavy equipment, ground disturbance, and vegetation clearing may injure or kill individuals unable to avoid being destroyed by equipment or buried by earthwork. Additionally, because USAFA does not currently have more refined site designs that differentiate between permanently and temporarily disturbed areas, all habitat impacts are considered permanent for this analysis. Permanent disturbance within the PMJM Conservation Zone would further reduce habitat availability for this species, resulting in a slight reduction in total carrying capacity for the Kettle Creek drainage basin and reduced habitat connectivity. **Table 2** shows the maximum anticipated impacts associated with the Proposed Action components.

Table 2: Potential Direct Impacts within the PMJM Conservation Zone

Proposed Action Components	Low Quality Habitat	Medium Quality Habitat	Not suitable habitat but within the PMJM Conservation Zone ¹
Vicinity of Kettle Lake #3	0.2 (Upland)	0.1 (Riparian)	0.4 (Upland)
Deadman CST Warehouse Area	0.3 acre (Upland)	0.0	0.0

¹Additional areas within the PMJM Conservation Zone include the utility corridor, staging areas, and latrine location. Although these areas are devoid of vegetation and therefore not suitable PMJM habitat, they are quantified here due to their location within the PMJM Conservation Zone.

Overall, the Proposed Action would impact up to 0.6 acre of suitable habitat (0.5 acre of low-quality upland habitat and 0.1 acre of medium quality riparian habitat). In addition, approximately 0.4 acre of non-habitat (areas devoid of vegetation) within the PMJM Conservation Zone would be disturbed for utility installation, equipment staging, and latrines during construction or operation of the Proposed Action. No high quality PMJM habitat would be impacted by the Proposed Action.

While 0.6 acre of suitable habitat, as noted above, is proposed for permanent impact for the purposes of this BA, the actual permanent impact is anticipated to be slightly less, since some areas would only be temporarily disturbed during construction. As discussed further in **Section 7.0**, USAFA would seek to restore temporarily disturbed areas on-site following construction to the extent feasible.

6.2 INDIRECT EFFECTS

Ground disturbance at the Project Site during construction may create conditions suitable for the introduction or encroachment of noxious weeds or invasive species during construction. Proliferation of nonnative or noxious species is not considered a significant threat to PMJM habitat, but may reduce the amount of desirable forage, restricting population sizes and productivity. Ground disturbance would also result in temporary fugitive dust emissions. Fugitive dust may extend off-site (and would likely attenuate closer than 0.5 mile), but would only occur during the day when the mice are anticipated to be in their burrows. Thus, the PMJM would generally be insulated from minor fugitive dust emissions and any indirect effects would be discountable. Downstream effects are not anticipated as standard best management

practices (BMPs) would minimize sedimentation and erosion. Construction would also result in increased noise and vibration within the Action Area, which is discussed further below. Indirect impacts from construction activities would be temporary and would cease once construction is complete.

During operation, indirect impacts on the PMJM within the Action Area surrounding Kettle Lake #3 would occur in the form of increased noise from the operation of training equipment (e.g., jet skis, helicopter) and the playing of loud music. No exterior lighting would be installed at the proposed water survival training facilities location. The two security lights that would be installed on the front and rear of the Deadman CST warehouse would only illuminate the direct vicinity of the warehouse, which would face a road to the front and low-quality habitat at the edge of the PMJM Conservation Zone to the rear. Therefore, adverse impacts on PMJM resulting from artificial security lighting at the Deadman CST warehouse are anticipated to be negligible. The potential impact of artificial noise on the PMJM has not been studied; however, numerous studies conducted on other species of nocturnal rodents can be used to indicate how PMJM may respond to changes in the noise environment. A study targeting pinyon mice (*Peromyscus truei*) within the Rattlesnake Canyon Habitat Management Area in northwestern New Mexico found that noise levels had no effect on trap success, an indicator of activity levels; however, this study did find a decline in body condition as noise levels increased (Willems et al., 2021). Additionally, a study conducted on wild deer mice (*Peromyscus maniculatus*) and woodland jumping mice (*Napaeozapus insignis*) found that mice exposed to broadcast of anthropogenic noise spent less time foraging compared to when no anthropogenic noise was present (Petric & Kalcounis-Rueppell, 2023). However, it is important to note that these studies investigated scenarios where noise levels were increased either 24 hours per day or only at nighttime, while CST, including construction and operational activities, would only alter noise levels for several hours per day, and during daytime hours when this species is less active. Therefore, while PMJM may be adversely affected by increased noise levels during their inactive period, no changes to the nighttime noise environment, when the PMJM is active and foraging, would occur under the Proposed Action.

6.3 CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur near the Project Site. The analysis of cumulative effects requires identification of past actions that have influenced the environment and reasonably foreseeable future actions that, if implemented would also contribute to cumulative effects.

Future federal actions that are unrelated to the Proposed Action are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA. Examples of future federal actions include issuance of individual permits by the US Army Corps of Engineers (USACE) elsewhere in the Monument Creek Watershed, changes in management of federal or state lands, and federal road and highway projects across PMJM habitat.

Future residential, commercial, and institutional projects are planned east of the USAFA across I-25 and upstream of Kettle Lake #3. These projects are briefly described in **Table 3**.

Development within the Kettle Creek watershed is anticipated to increase stormwater flow within Kettle Creek and downstream in the Kettle Lakes. The USAFA is currently planning repairs on the Kettle Creek Dry Dam, which is located approximately 0.5-mile northeast of Kettle Lake #3.¹ Repairs on the Kettle Creek Dry Dam would mitigate erosion and sedimentation upstream of the Project Site from development projects. Additionally, the Proposed Action would have no impact on flood conveyance capacity within Kettle Lake #3.

¹ The USAF conducted Section 7 consultation for the Kettle Creek Dry Dam Repair project and determined that effects to the PMJM would be consistent with the existing BO. The USAFA provided its effect determination to USFWS on 16 December 2021; no response was received.

Table 3: Proposed Developments Upstream of Kettle Lake #3

Project Name	Location	Project Type	Description
College Creek Apartments & Villages	Colorado Springs, CO	Residential	Located in the Elkhorn Basin and Kettle Creek Drainage Basin, the proposed development would allow for 240 affordable apartment units in ten three-story buildings, with a mix of 30 one-bedroom, 90 two-bedroom, 108 three-bedroom, and 12 four-bedroom units.
Strategic Storage at Victory Ridge	Colorado Springs, CO	Commercial	The project would develop 20,130-square feet of self-storage buildings, 14 exterior storage pods, and parking and landscaping improvements within the Elkhorn Drainage Basin.
Victory Ridge Apartments	Colorado Springs, CO	Residential	Victory Ridge Apartments is part of the 152-acre Victory Ridge development. The 16.97-acre project will be developed in two phases: Phase 1 will consist of 280 units in five buildings, and Phase 2 will consist of 194 units in four buildings.
10125 Federal Drive	Colorado Springs, CO	Transportation	The project would add 169 parking spaces in the first phase of construction, and an additional 35 parking spaces in the second phase, adjacent to the existing parking lot for a total of 699 parking spaces. The site is located in the southeastern portion of the Elkhorn Major Drainage Basin, also known as Fairlane Technology Park.
Peaks Recovery Center Annexation	Colorado Springs, CO	Institutional	The Peaks Recovery Center was approved for expansion to build a 15,000-square foot, two-story building that would accommodate additional clients, as well as an 8,000-square foot therapy building. The expansion would sit on approximately 10 acres.
Woodsprings Suites Hotel at Interquest	Colorado Springs, CO	Commercial	The proposed 2.46-acre four-story hotel would be located within the Elkhorn Major Drainage Basin and includes 122 units within a 48,660-square foot building.
Briargate Church	Colorado Springs, CO	Institutional	A two-story 4,280-square foot addition is proposed for the church.
Highlands at Briargate	Colorado Springs, CO	Commercial; Mixed-Use	The 11.3-acre property would comprise two new retail buildings as well as an office building.
Front Range Passenger Rail	USAFA and surrounding areas	Transportation	The 173-mile proposed rail line would link Pueblo, Colorado Springs, and Fort Collins to Denver. A portion of the rail would occur on USAFA property.
Voyager-Briargate Professional Campus	Colorado Springs, CO	Commercial; Mixed-Use	The proposed development would establish two new multi-tenant commercial buildings for office and medical office use.

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7.0 CONSERVATION MEASURES

Conservation measures will be implemented to avoid, minimize, and mitigate adverse effects to suitable habitat and to further the recovery of PMJM. Avoidance of all suitable PMJM habitat is not feasible on this Project due to the Proposed Action's dependency on open water and the requirement that the Proposed Action occur on a site owned or managed by the USAF. However, the selected Project Site avoids high quality PMJM habitat. Notably, the USAF previously considered a 3.3-acre site on the north bank of Kettle Lake, approximately 500 feet east of the proposed water survival training facilities location shown on **Figure 2**. Following an initial evaluation, the USAF determined potential adverse impacts on the PMJM from utilizing this location would be too extensive and subsequently eliminated this location from consideration. Conservation measures that would be implemented include impact minimization during final design planning, construction phase access limitations, seasonal constraints, limited nighttime work, and use of BMPs during construction and operation.

Through the PMJM Conservation Agreement, the USAF has committed to maintaining and enhancing PMJM populations on USAFA by maximizing the extent, quality, and connectivity of PMJM habitat within the USAFA (USFWS, 2000b). USAFA would perform the following conservation measures to avoid and minimize impacts to PMJM habitat from the Proposed Action:

- To the extent practicable, permanently impacted areas within the PMJM Conservation Zone will be mowed or cut to a height of 4 to 6 inches above ground during the PMJM active season (May-August), while PMJM are mobile and can vacate the area. This would create less desirable habitat for hibernation, which usually starts by late September.
- Noxious weeds will be monitored and controlled in accordance with USAFA's INRMP and IPMP.
- Areas of exposed soil would be limited to the maximum extent practicable. Areas where temporary impacts occur would be promptly revegetated.
- Erosion and sediment would be controlled using silt fencing, erosion logs, and soil retention blankets or other acceptable industry BMPs to minimize surface runoff.
- Construction access in PMJM habitat will be confined to areas identified as impact areas.
- PMJM habitat adjacent to construction areas will be clearly marked to prevent accidental disturbance of those areas.
- A qualified ecologist or landscape architect shall provide a briefing to the contractor prior to ground disturbance to discuss the Project and ensure understanding of avoidance and minimization measures.

As discussed in **Section 6.1**, USAFA does not currently have more refined site designs that differentiate between permanently and temporarily disturbed areas; therefore, all habitat impacts are considered permanent for this analysis. However, while 0.6 acre of suitable habitat is proposed for permanent impact for the purposes of this BA, the actual permanent impact is anticipated to be slightly less, since some areas would only be temporarily disturbed during construction. After construction is completed, USAFA would seek to restore temporarily disturbed areas on-site to the extent feasible, utilizing native seed mixes and vegetation, per the USAFA Erosion Control Revegetation and Tree Care Standards.

USAFA staff would monitor these areas for successful vegetation reestablishment. USAFA has identified criteria to assess the success of mitigation efforts. These minimum standards must be met at the end of two growing seasons for revegetation to be considered successful:

- For upland areas, the combined canopy cover of grasses, forbs, and shrubs will be at least 70 percent of the preexisting cover. At least 50 percent of the canopy cover will consist of native perennial grasses and forbs.

- State-listed noxious weeds will be controlled following the USAFA's Integrated Noxious Weed Management Plan (Colorado Natural Heritage Program, 2015) to prevent competition with the planted vegetation. Noxious weeds will not exceed 5 percent canopy cover in the revegetated areas.
- Upland sites will be adequately stabilized to prevent gullyng, severe rill erosion, and stream sedimentation. Areas of soil instability will be promptly treated (e.g., riprap, silt fence, erosion matting, and hay bales) to prevent further site degradation beyond that found preconstruction.

8.0 CONCLUSIONS AND EFFECTS DETERMINATION

The Proposed Action would construct training support facilities and implement a CST program at various locations throughout the USAFA. The Proposed Action would involve activities within the PMJM Conservation Zone surrounding Kettle Lake #3 as well as in Jacks Valley near Deadmans Creek. Overall, up to 1 acre of land within the PMJM Conservation Zone, of which 0.6 acre constitutes low or medium quality PMJM habitat, would be impacted by the Proposed Action. Construction may result in unintentional injury or mortality to one or more individuals or a reduction in productivity of this species. In addition, indirect impacts in the form of increased daytime noise may adversely impact PMJM in the area. Therefore, USAF has determined that the Project **may affect, and is likely to adversely affect**, the PMJM. The Project would have **no effect** on designated critical habitat for PMJM.

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9.0 REFERENCES

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- USFWS. (2000a). *Biological Opinion for the U.S. Air Force Academy*.
- USFWS. (2000b). *Conservation Agreement for Preble's Meadow Jumping Mouse (Zapus hudsonius preblei)*.
- USFWS. (2023a). *Tricolored bat (Perimyotis subflavus)*. Retrieved February 27, 2023, from Environmental Conservation Online System: <https://ecos.fws.gov/ecp/species/10515>

- USFWS. (2023b). *Mexican Spotted Owl*. Retrieved March 7, 2023, from <https://www.fws.gov/species/mexican-spotted-owl-strix-occidentalis-lucida>
- USFWS. (2023c). *Eastern Black Rail Species Profile*. Retrieved April 11, 2023, from <https://www.fws.gov/species/eastern-black-rail-laterallus-jamaicensis-jamaicensis>
- USFWS. (2023d). *Preble's Meadow Jumping Mouse Species Profile*. Retrieved March 17, 2023, from <https://www.fws.gov/species/prebles-meadow-jumping-mouse-zapus-hudsonius-preblei>
- USFWS. (2023e). *Preble's Meadow Jumping Mouse*. Retrieved March 20, 2023, from Environmental Conservation Online System: <https://ecos.fws.gov/ecp/species/4090>
- USFWS. (n.d.). *Environmental Conservation Online System*. Retrieved from monarch butterfly (*Danaus plexippus*): <https://ecos.fws.gov/ecp/species/9743#candidate>

APPENDIX A:
Official Species List

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United States Department of the Interior



FISH AND WILDLIFE SERVICE
Colorado Ecological Services Field Office
Denver Federal Center
P.O. Box 25486
Denver, CO 80225-0486
Phone: (303) 236-4773 Fax: (303) 236-4005

In Reply Refer To:

December 19, 2023

Project Code: 2023-0037742

Project Name: USAFA Combat Survival Training (CST) Biological Assessment (BA) and Environmental Assessment (EA)

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: <https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see [Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service \(fws.gov\)](#).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of

this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Colorado Ecological Services Field Office

Denver Federal Center

P.O. Box 25486

Denver, CO 80225-0486

(303) 236-4773

PROJECT SUMMARY

Project Code: 2023-0037742

Project Name: USAFA Combat Survival Training (CST) Biological Assessment (BA) and Environmental Assessment (EA)

Project Type: New Constr - Above Ground

Project Description: The U.S. Air Force (USAF) is proposing to implement a CST program at USAFA that trains Cadets in long-term survival and evasion, through land survival, water survival, and emergency parachute training. The USAF is preparing a BA and EA to evaluate impacts from the Proposed Action.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@38.965416149999996,-104.82476870501299,14z>



Counties: El Paso County, Colorado

ENDANGERED SPECIES ACT SPECIES

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 3 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
<p>Gray Wolf <i>Canis lupus</i></p> <p>Population: U.S.A.: All of AL, AR, CA, CO, CT, DE, FL, GA, IA, IN, IL, KS, KY, LA, MA, MD, ME, MI, MO, MS, NC, ND, NE, NH, NJ, NV, NY, OH, OK, PA, RI, SC, SD, TN, TX, VA, VT, WI, and WV; and portions of AZ, NM, OR, UT, and WA. Mexico.</p> <p>There is final critical habitat for this species.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> ▪ Lone, dispersing gray wolves may be present throughout the state of Colorado. If your activity includes a predator management program, please consider this species in your environmental review. <p>Species profile: https://ecos.fws.gov/ecp/species/4488</p>	Endangered
<p>Preble's Meadow Jumping Mouse <i>Zapus hudsonius preblei</i></p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/4090</p> <p>General project design guidelines: https://ipac.ecosphere.fws.gov/project/NGLR3HLCFRCQDGURDDJYTZGYHM/documents/generated/6861.pdf</p>	Threatened

BIRDS

NAME	STATUS
Eastern Black Rail <i>Laterallus jamaicensis ssp. jamaicensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Threatened
Mexican Spotted Owl <i>Strix occidentalis lucida</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8196	Threatened
Piping Plover <i>Charadrius melodus</i> Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is final critical habitat for this species. Your location does not overlap the critical habitat. This species only needs to be considered under the following conditions: <ul style="list-style-type: none"> ▪ Project includes water-related activities and/or use in the N. Platte, S. Platte, and Laramie River Basins which may affect listed species in Nebraska. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened

FISHES

NAME	STATUS
Greenback Cutthroat Trout <i>Oncorhynchus clarkii stomias</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2775	Threatened
Pallid Sturgeon <i>Scaphirhynchus albus</i> No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: <ul style="list-style-type: none"> ▪ Project includes water-related activities and/or use in the N. Platte, S. Platte, and Laramie River Basins which may affect listed species in Nebraska. Species profile: https://ecos.fws.gov/ecp/species/7162	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

FLOWERING PLANTS

NAME	STATUS
Ute Ladies'-tresses <i>Spiranthes diluvialis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2159	Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: AECOM
Name: Tara Boyd
Address: 4840 Cox Rd
City: Glen Allen
State: VA
Zip: 23060
Email: tara.boyd@aecom.com
Phone: 2036853220

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Air Force

APPENDIX B:
Photographic Log

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Site Name:
USAFA Combat Survival Training

Site Location:
El Paso County, Colorado

Photo No.
1

Date:
07/05/2023

Direction Photo Taken:

North

Description:

Proposed Water Survival
Training Facilities Location



Photo No.
2

Date:
07/05/2023

Direction Photo Taken:

North

Description:

Proposed Water Survival
Training Facilities Location



Site Name:
USAFA Combat Survival Training

Site Location:
El Paso County, Colorado

Photo No.
3

Date:
07/05/2023

Direction Photo Taken:

North

Description:

Proposed Water Survival
Training Facilities Location



Photo No.
4

Date:
07/05/2023

Direction Photo Taken:

South

Description:

Proposed Water Survival
Training Facilities Location



Site Name:
USAFA Combat Survival Training

Site Location:
El Paso County, Colorado

Photo No.
5

Date:
03/15/2023

Direction Photo Taken:

South

Description:

Potential Operational Staging Area and Pavilion Location.



Photo No.
6

Date:
03/15/2023

Direction Photo Taken:

Southeast

Description:

Deadman CST Warehouse Area. From southwest boundary of site looking southeast.



Site Name: USAFA Combat Survival Training	Site Location: El Paso County, Colorado	
---	---	--

Photo No. 7	Date: 03/15/2023	
Direction Photo Taken: Northwest		
Description: Deadman CST Warehouse Area. From southwest boundary of site looking northwest.		

Photo No. 8	Date: 03/15/2023	
Direction Photo Taken: North/Northeast		
Description: Deadman CST Warehouse Area. From southeast boundary of site looking north/northeast.		

Site Name: USAFA Combat Survival Training	Site Location: El Paso County, Colorado	
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Photo No. 9	Date: 03/15/2023	
Direction Photo Taken: West		
Description: Deadman CST Warehouse Area. From eastern corner of site looking west.		

Photo No. 10	Date: 03/15/2023	
Direction Photo Taken: Northwest		
Description: Deadman CST Warehouse Area. From eastern corner of site looking northwest.		

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**APPENDIX C:
NATIONAL HISTORIC PRESERVATION ACT SECTION 106
CONSULTATION**

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DEPARTMENT OF THE AIR FORCE
10TH CIVIL ENGINEER SQUADRON
USAF ACADEMY COLORADO

Ms. Erin M. Manning
Deputy Director
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy CO 80840-2400

Ms. Dawn DiPrince
State Historic Preservation Officer
History Colorado, the Colorado Historical Society
1200 N. Broadway
Denver, CO 80203-2137

Dear Ms. DiPrince

The United States Air Force Academy (USAFA) proposes to construct training support facilities in support of its Combat Survival Training (CST) program. The project is an undertaking subject to review under the National Historic Preservation Act (NHPA) Section 106 process (54 USC § 306108). Based on the information and rationale presented by Attachment 1 to this letter, we request your concurrence on the proposed Area of Potential Effects (APE) and a proposed determination of “no adverse effect” as described in 36 CFR § 800.5(a)(1). A National Environmental Policy Act (NEPA) environmental assessment also is being developed, though from communications with your office staff on other USAFA planning efforts, we understand that your agency does not participate in consultation under NEPA.

Attachment 1 provides details of the proposed undertaking, discussion of the APE, and results of identification and assessment of the potential of the undertaking to affect adversely Historic Properties. Two different potential construction alternatives are covered by the APE although USAFA leadership eventually will select only one of the alternatives for actual construction. Careful examination of information from previous inventories for Historic Properties was sufficient for purposes of planning, i.e., no new fieldwork was necessary. The small number of Historic Properties within the APE clearly are not eligible for listing in the National Register of Historic Places. There will be no adverse effects to proposed USAFA Campus District 5EP.595 or the remnant portion of the Great North South Highway / State Highway 1 / US Highway 85 (5EP.5133).

Due to the nature and scope of this undertaking, in accordance with 36 CFR 800.2(c), USAFA is sending duplicate information to American Indian tribal stakeholders to USAFA (Attachment 2). We will address any comments or concerns therefrom.

Please contact Mr. Erwin Roemer, 10 CES/CENP, USAFA Cultural Resources Manager, at erwin.roemer@us.af.mil, or at (646) 673-4642, if you have any questions. Thank you for review and assistance on this and the numerous other USAFA undertakings consulted with you.

Very Respectfully

MANNING.ERI
N.MARIE.1047
632192
ERIN M. MANNING, GS-14, USAF

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2 Attachments:

1. USAFA Cultural Resources Section 106 Project Review
2. Consulting/Interested Parties

Attachment 1 contains sensitive cultural resources data. A redacted version of Attachment 1 is available upon request.

Attachment 2
USAFA
Consulting Parties

Apache Tribe of Oklahoma
Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation
Cheyenne and Arapaho Tribes of Oklahoma
Cheyenne River Sioux Tribe
Comanche Nation of Oklahoma
Crow Nation
Eastern Shoshone Tribe of the Wind River Reservation
Flandreau Santee Sioux Tribe of South Dakota
Fort Belknap Indian Community
Fort Sill Apache Tribe
Jicarilla Apache Tribe
Kiowa Tribe of Oklahoma
Lower Brule Sioux Tribe of the Lower Brule Reservation
Mescalero Apache Tribe
Navajo Nation
Northern Arapaho Tribe
Northern Cheyenne Tribe
Oglala Sioux Tribe
Pawnee Nation of Oklahoma
Pueblo de Cochiti
Pueblo of Picuris
Pueblo of Santa Ana (only for new ground disturbance or pre-contact sites or materials)
Pueblo of Santa Clara
Pueblo of Taos
Pueblo of Zuni
Rosebud Sioux Tribe
San Ildefonso Pueblo (Only for NAGPA type consultations)
Santee Sioux Nation
Southern Ute Indian Tribe
Spirit Lake Nation
Standing Rock Sioux Tribe
Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation
Ute Indian Tribe of the Uintah and Ouray Reservation
Ute Mountain Ute Tribe
Yankton Sioux Tribe

Colorado SHPO

From: [Busam, Michael](#)
To: [Busam, Michael](#)
Subject: FW: Meeting to discuss way forward on CST given SHPO response below
Date: Monday, August 28, 2023 10:03:37 AM

-----Original Message-----

From: Marques - HC, Matthew <matthew.marques@state.co.us>
Sent: Tuesday, August 1, 2023 8:07 AM
To: ROEMER, ERWIN JR CIV USAF USAFA 10 CES/CENP <erwin.roemer@us.af.mil>;
SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP
<bernard.schriever.ctr@us.af.mil>; Mitchell Schaefer - HC <mitchell.schaefer@state.co.us>
Subject: [URL Verdict: Neutral][Non-DoD Source] HC# 83274 USAFA Combat Survival
Training Facilities

Hi Erwin and Beau,

After reviewing the provided documentation for the above referenced undertaking, we require additional information to comprehensively assess potential visual effects caused by the proposed new construction. Please provide our office with current color photographs of all proposed construction sites from various different vantage points. We also request renderings, photosimulations, project plans, schematic drawings, architectural plans, or some other accurate visual representation(s) that we can use to assess the size of the new infrastructure in comparison to already extant buildings and structures located in the respective project areas. We also request additional details in writings describing the exact location, size, dimensions, and design of all proposed new construction components for this undertaking.

We specifically need to know how large the new resources will stand in comparison to the other extant structures nearby. For example, if APE 7 is selected, how tall will the new building(s) stand in relation to those already in the area? If APE 1 were selected, would the new building rise above the tree line in that area? We request similar information for every possible APE/construction area.

Please let us know if you would like to discuss this over the phone.

Thank you,

--

Matthew Marques

Section 106 Compliance Manager

History Colorado | State Historic Preservation Office

303.866.4678 | matthew.marques@state.co.us <<mailto:matthew.marques@state.co.us>>

1200 Broadway | Denver, Colorado 80203 | HistoryColorado.org

<[https://urldefense.com/v3/https://www.historycolorado.org/!!ETWISUBM!05H-5AUh4KDOplu2hH_BSORFiu4fICApkmikivZeScskshid11rPEtM1ScmnCjDn1JnBOUyP3PrMgP_m1SQRtBe6EF10v7OZ\\$](https://urldefense.com/v3/https://www.historycolorado.org/!!ETWISUBM!05H-5AUh4KDOplu2hH_BSORFiu4fICApkmikivZeScskshid11rPEtM1ScmnCjDn1JnBOUyP3PrMgP_m1SQRtBe6EF10v7OZ$)>

Under the Colorado Open Records Act (CORA), all messages sent by or to me on this state-owned email account may be subject to public disclosure



DEPARTMENT OF THE AIR FORCE
10TH CIVIL ENGINEER SQUADRON
USAF ACADEMY COLORADO

Ms. Erin M. Manning
Deputy Director
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy CO 80840-2400

Ms. Dawn DiPrince
State Historic Preservation Officer
History Colorado, the Colorado Historical Society
1200 N. Broadway
Denver, CO 80203-2137

Dear Ms. DiPrince

The United States Air Force Academy (USAFA) proposes to construct training support facilities in support of its Combat Survival Training (CST) program. We initiated Section 106 consultation with you by a letter dated July 21, 2023, in which we proposed an Area of Potential Effects (APE) along a description of inventory leading to our proposed determination of “no adverse effect.” Your staff responded by email August 1, 2023 (Attachment 1) with assignment of tracking number HC#83274, and a request for more information.

Attachment 2 to this letter is a substantially revised version of the information package previously submitted in July, and it provides explanations pertinent to your email communication of August. We continue to propose that careful examination of information from existing inventories for Historic Properties was sufficient for purposes of this project’s planning, i.e., no new fieldwork is necessary. The small number of Historic Properties within the APE clearly is not eligible for listing in the National Register of Historic Places. Adverse effects are not anticipated for the proposed USAFA Campus District 5EP.595 and the remnant portion of the Great North South Highway / State Highway 1 / US Highway 85 (5EP.5133).

We again ask for your concurrence on the proposed APE, sufficiency of its historic properties inventory, and a finding of “no adverse effect.” The same stakeholders identified in the previous communication of July are being provided a copy of this letter and attachments.

As necessary please contact Mr. Erwin Roemer, 10 CES/CENP, USAFA Cultural Resources Manager, at erwin.roemer@us.af.mil, or at (719) 333-7341. Thank you for review and assistance on this and the numerous other USAFA undertakings consulted with your agency.

Very Respectfully

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MANNING.ERIN.MARIE.104
7632192
Date: 2023.10.12 15:13:45
-06'00'

ERIN M. MANNING, GS-14, USAF

Attachments:

1. SHPO email dated August 1, 2023
2. USAFA Cultural Resources Section 106 Project Review (revised),
 - Appendix A. Figures
 - Appendix B. Photographs
 - Appendix C. Engineering Plans and Schematic Drawings

From: [Marques - HC, Matthew](#)
To: [ROEMER, ERWIN JR CIV USAF USAFA 10 CES/CENP](#); [SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP](#); [Mitchell Schaefer - HC](#)
Subject: [URL Verdict: Neutral][Non-DoD Source] HC# 83274 USAFA Combat Survival Training Facilities
Date: Tuesday, August 1, 2023 8:09:48 AM

Hi Erwin and Beau,

After reviewing the provided documentation for the above referenced undertaking, we require additional information to comprehensively assess potential visual effects caused by the proposed new construction. Please provide our office with current color photographs of all proposed construction sites from various different vantage points. We also request renderings, photosimulations, project plans, schematic drawings, architectural plans, or some other accurate visual representation(s) that we can use to assess the size of the new infrastructure in comparison to already extant buildings and structures located in the respective project areas. We also request additional details in writings describing the exact location, size, dimensions, and design of all proposed new construction components for this undertaking.

We specifically need to know how large the new resources will stand in comparison to the other extant structures nearby. For example, if APE 7 is selected, how tall will the new building(s) stand in relation to those already in the area? If APE 1 were selected, would the new building rise above the tree line in that area? We request similar information for every possible APE/construction area.

Please let us know if you would like to discuss this over the phone.

Thank you,

--

Matthew Marques

Section 106 Compliance Manager

History Colorado | State Historic Preservation Office

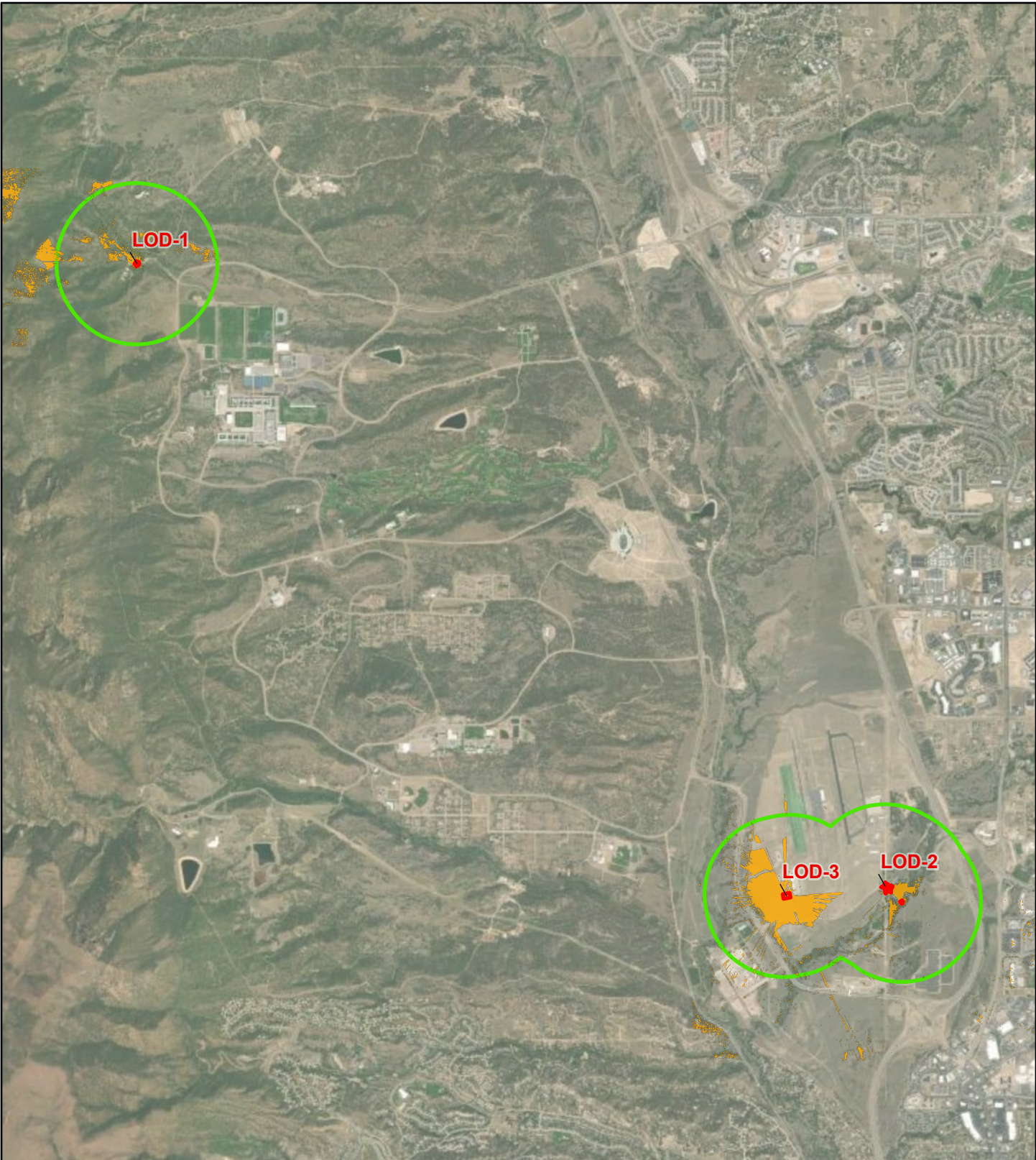
303.866.4678 | matthew.marques@state.co.us <<mailto:matthew.marques@state.co.us>>

1200 Broadway | Denver, Colorado 80203 | [HistoryColorado.org](https://www.historycolorado.org) <<https://www.historycolorado.org/>>

Under the Colorado Open Records Act (CORA), all messages sent by or to me on this state-owned email account may be subject to public disclosure

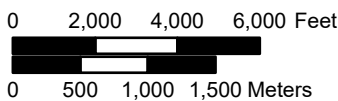
Attachment 2 contains sensitive cultural resources data. A redacted version of Attachment 2 is available upon request.

The following pages contain select figures, photographs, and schematics included in Attachment 2.



Legend

- LOD Visibility
- Project LOD
- Study Area

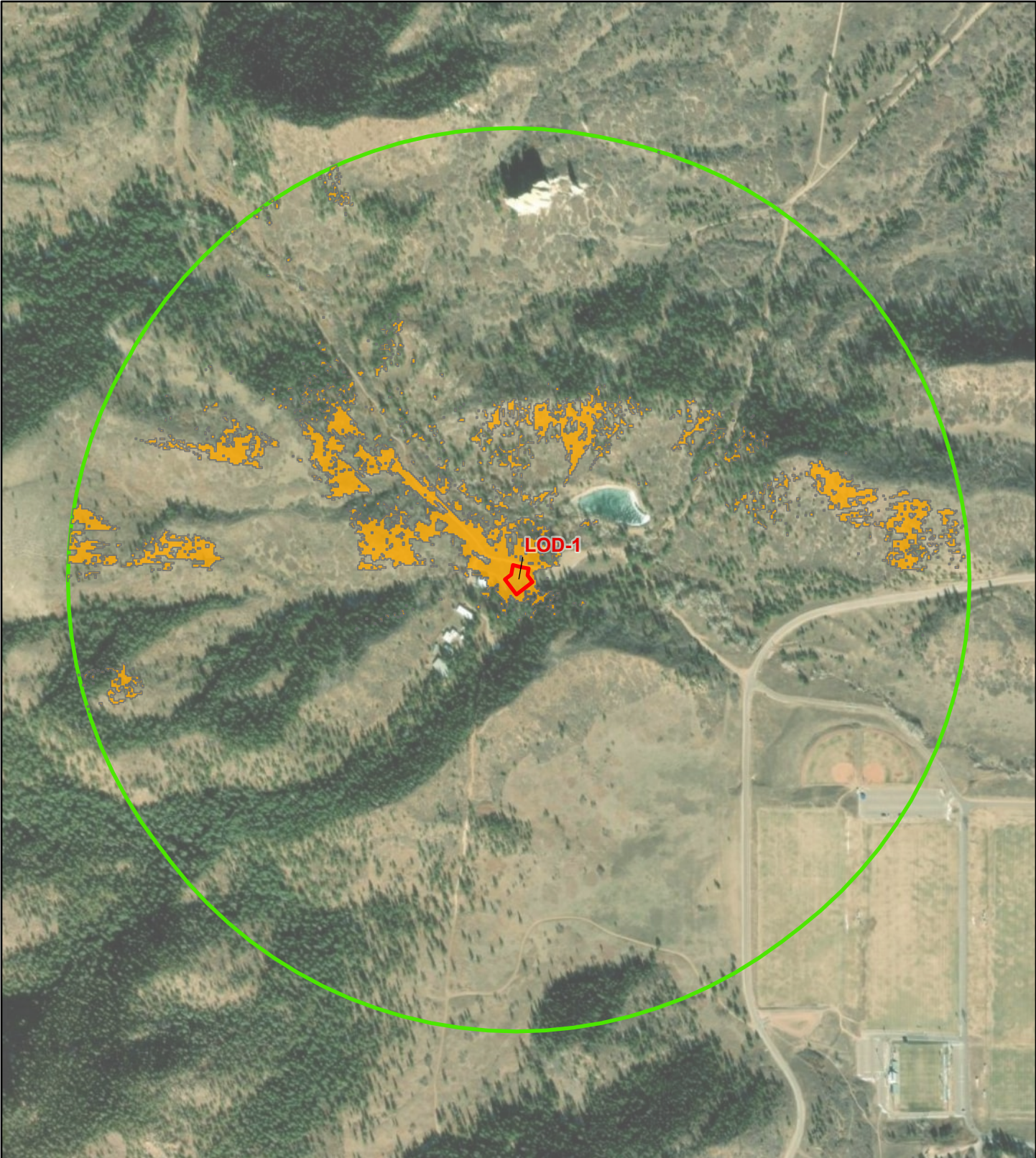


AECOM 12420 Milestone Center Dr.
Germantown, MD 20876

USAFA Combat Survival Training
Viewshed Analysis Overview

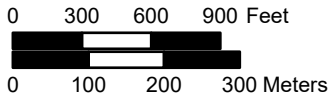
Source: Earthstar Geographics

Project No. 60693612	Prepared by JTS	Date 9/12/2023	Figure 15
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Legend

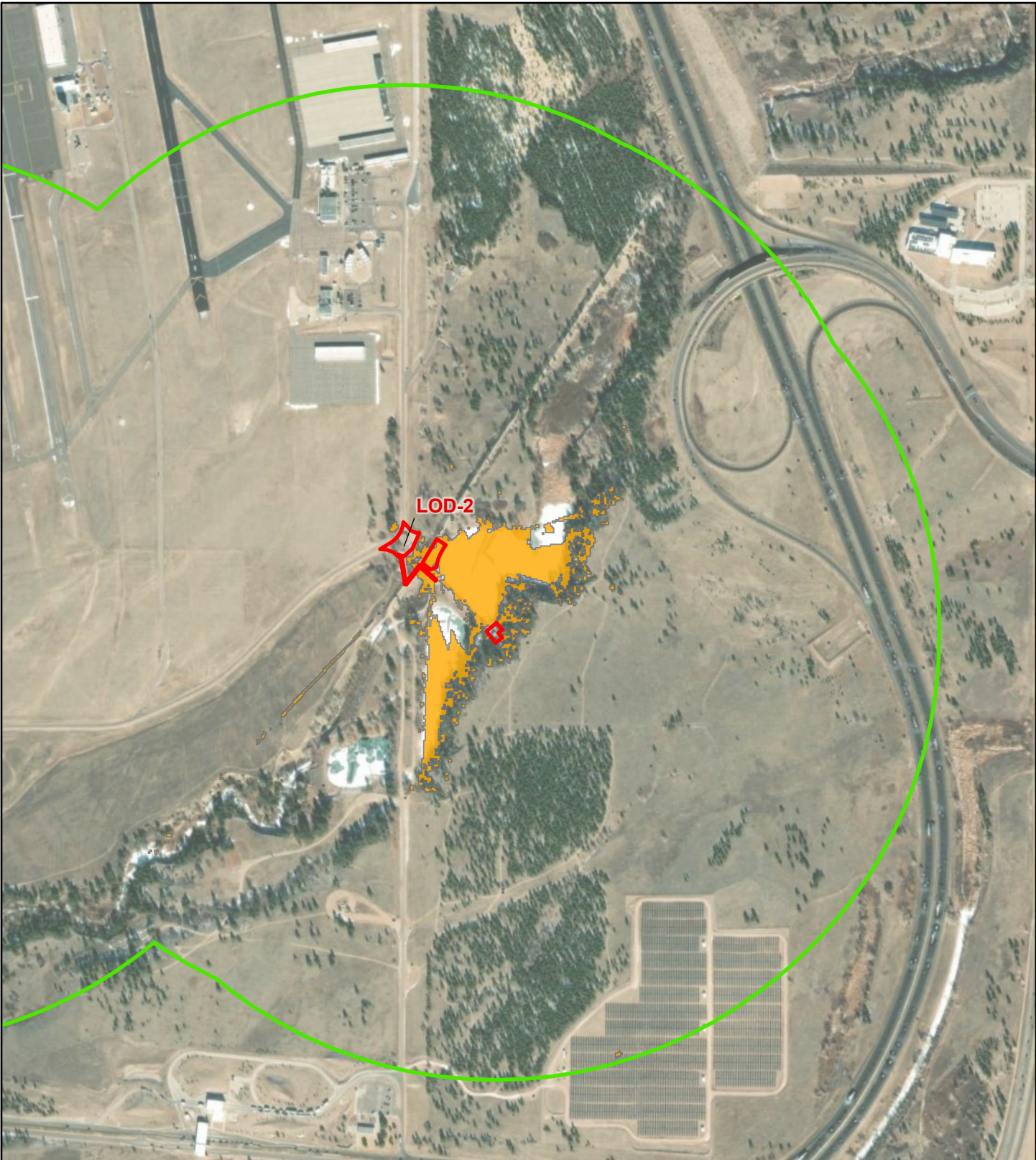
- LOD Visibility
- Study Area
- Project LOD



AECOM 12420 Milestone Center Dr.
Germantown, MD 20876

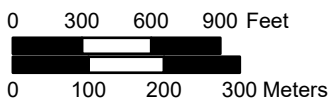
USAFA Combat Survival Training
Viewshed Analysis
LOD - 1

Source: Maxar			
Project No. 60693612	Prepared by JTS	Date 9/14/2023	Figure 16



Legend

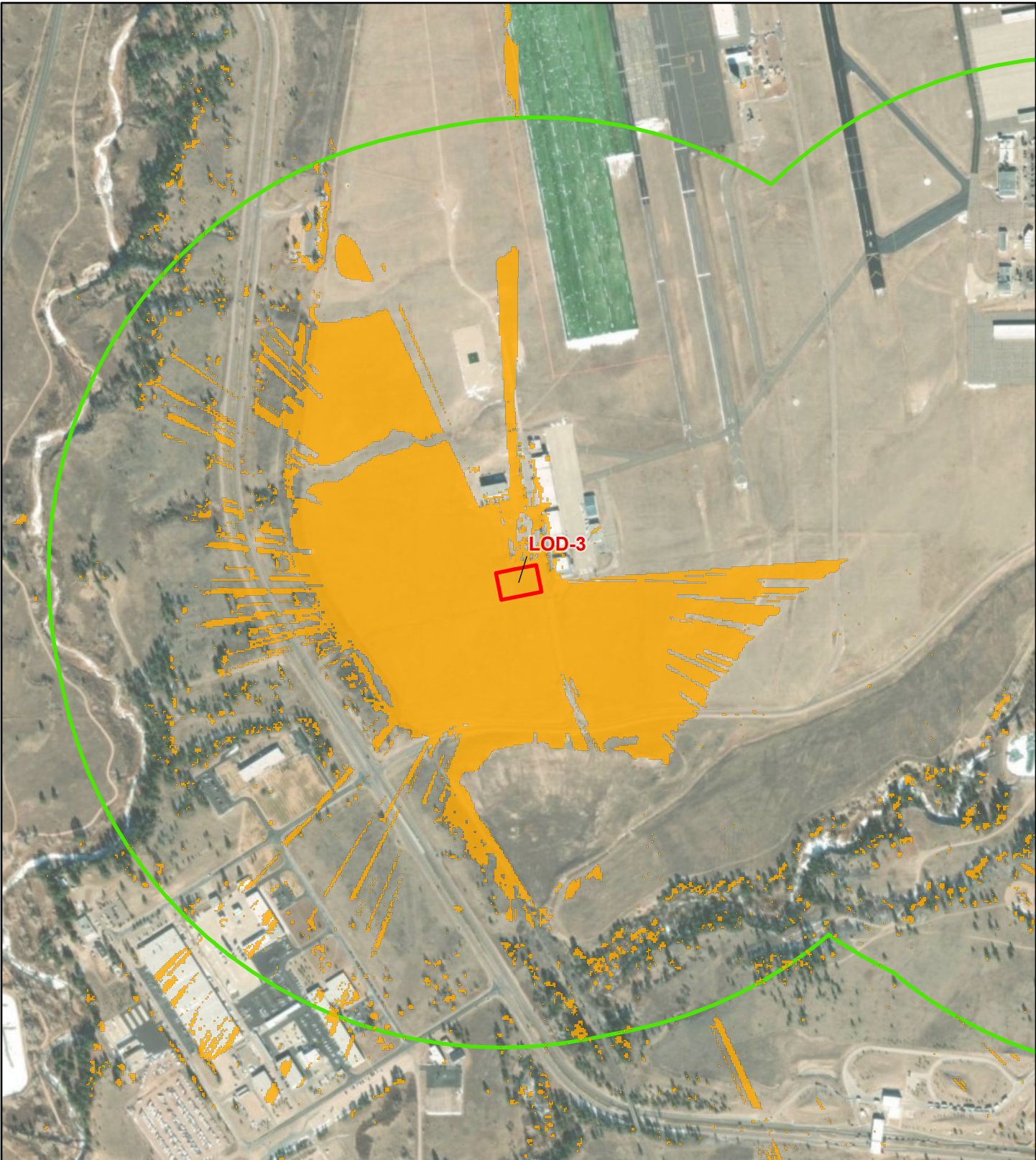
- LOD Visibility
- Study Area
- Project LOD



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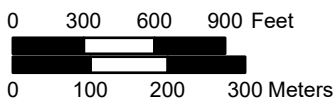
USAFA Combat Survival Training
Viewshed Analysis
LOD-2

Source: Maxar			
Project No. 60693612	Prepared by KAM	Date 9/14/2023	Figure 17



Legend


- LOD Visibility
- Study Area
- Project LOD




AECOM 12420 Milestone Center Dr.
Germantown, MD 20876

USAFA Combat Survival Training
Viewshed Analysis
LOD-3

Source: Maxar			
Project No. 60693612	Prepared by JTS	Date 9/14/2023	Figure 18

Photograph: 1	Date: 2023	
Feature ID: APE-1		
Direction: Northwest		
Description: View from eastern corner of location of proposed CST equipment storage warehouse, facing northwest.		

Photograph: 2	Date: 2023	
Feature ID: APE-1		
Direction: West		
Description: View from eastern corner of proposed CST equipment storage warehouse location, facing west.		

Photograph: 3	Date: 2023
Feature ID: APE-1	
Direction: North-Northeast	
Description: View from southeastern boundary of proposed CST equipment storage warehouse location, facing north-northeast.	



Photograph: 4	Date: 2023
Feature ID: APE-1	
Direction: Northwest	
Description: View from southwestern boundary of proposed CST equipment storage warehouse location, facing northwest.	



Photograph: 5	Date: 2023
Feature ID: APE-1	
Direction: Southeast	
Description: View from southwestern boundary of proposed CST equipment storage warehouse location, facing southeast.	



Photograph: 6	Date: 2023
Feature ID: APE-1	
Direction: Northeast	
Description: View of front side of nearby Building 1016, an existing equipment warehouse upon which the design of the proposed CST equipment storage warehouse will be based, facing northeast.	



Photograph: 7	Date: 2023
Feature ID: APE-1	
Direction: South	
Description: View of left side of nearby Building 1016, an existing equipment warehouse upon which the design of the proposed CST equipment storage warehouse will be based, facing south.	



Photograph: 8	Date: 2023
Feature ID: APE-1	
Direction: Northeast	
Description: View of right side of nearby Building 1016, an existing equipment warehouse upon which the design of the proposed CST equipment storage warehouse will be based, facing northeast.	




Photograph: 9	Date: 2023
Feature ID: APE-1	
Direction: South	
Description: View of proposed CST equipment warehouse location from roadway, facing south.	




Photograph: 10	Date: 2023
Feature ID: APE-1	
Direction: Southeast	
Description: View of proposed CST equipment warehouse location from roadway, facing southeast.	




Photograph: 11	Date: 2023	
Feature ID: APE-1		
Direction: East		
Description: View of proposed CST equipment warehouse location from rear of Building 1016, facing east.		

Photograph: 12	Date: 2023	
Feature ID: APE-2		
Direction: Southeast		
Description: View of Kettle Lake #3 from conduit access road, facing southeast.		

Photograph: 13	Date: 2023	
Feature ID: APE-2		
Direction: Northwest		
Description: View of Kettle Lake #3 from conduit access road, facing Northwest.		

Photograph: 14	Date: 2023	
Feature ID: APE-2		
Direction: East		
Description: View from northwestern boundary of Kettle Lake #3, facing east.		

Photograph: 15	Date: 2023	
Feature ID: APE-2		
Direction: Northeast		
Description: View from northwestern boundary of Kettle Lake #3, facing Northeast.		


Photograph: 16	Date: 2023	
Feature ID: APE-2		
Direction: Southwest		
Description: View from northwestern boundary of Kettle Lake #3, facing southwest.		


Photograph: 17	Date: 2023
Feature ID: APE-2	
Direction: South	
Description: View of operational staging area, facing South.	



Photograph: 18	Date: 2023
Feature ID: APE-2	
Direction: Southeast	
Description: View of pavilion within operational staging area, facing southeast.	



Photograph: 19	Date: N.D.	
Feature ID: APE-2		
Direction: South		
Description: View of former cadet water training facility (Building 10088), facing south. Facility was demolished between 2011 and 2015.		

Photograph: 20	Date: N.D.	
Feature ID: APE-2		
Direction: Southeast		
Description: View of former cadet water training facility (Building 10088), facing southeast. Facility was demolished between 2011 and 2015.		

Photograph: 21	Date: N.D.	
Feature ID: APE-2		
Direction: West		
Description: View of former cadet water training facility (Building 10088), facing west. Facility was demolished between 2011 and 2015.		

Photograph: 22	Date: 2023	
Feature ID: APE-2		
Direction: Southwest		
Description: View of former cadet water training facility (Building 10088), facing southwest. Facility was demolished between 2011 and 2015.		

Photograph: 23	Date: 2023	
Feature ID: APE-3		
Direction: Northeast		
Description: View of proposed parachute emergency training facility location, facing northeast.		

Photograph: 24	Date: 2023	
Feature ID: APE-3		
Direction: East		
Description: View from proposed parachute emergency training facility location, facing east.		

Photograph: 25	Date: 2023
Feature ID: APE-3	
Direction: Southeast	
Description: View from proposed parachute emergency training facility location, facing southeast.	



Photograph: 26	Date: 2023
Feature ID: APE-3	
Direction: South	
Description: View from proposed parachute emergency training facility location, facing south.	



Photograph: 27	Date: 2023
Feature ID: APE-3	
Direction: Southwest	
Description: View from proposed parachute emergency training facility location, facing southwest.	



Photograph: 28	Date: 2023
Feature ID: APE-3	
Direction: West	
Description: View from proposed parachute emergency training facility location, facing west.	



Photograph: 29	Date: 2023
Feature ID: APE-3	
Direction: Northwest	
Description: View from proposed parachute emergency training facility location, facing Northwest. Western edge of Building 9214 visible on right.	



Photograph: 30	Date: 2023
Feature ID: APE-3	
Direction: North	
Description: View from proposed parachute emergency training facility location, facing North. Southern façade of Building 9214 visible in center of photo.	



Photograph: 31	Date: 2023
Feature ID: APE-3	
Direction: North-Northeast	
Description: View from proposed parachute emergency training facility location, facing north-northeast.	



Photograph: 32	Date: 2023
Feature ID: APE-3	
Direction: South	
Description: View of proposed parachute emergency training facility location, facing south.	





Figure 1. Rendering of proposed CST Equipment Warehouse (LOD-1), Front Mock-up (Facing South).

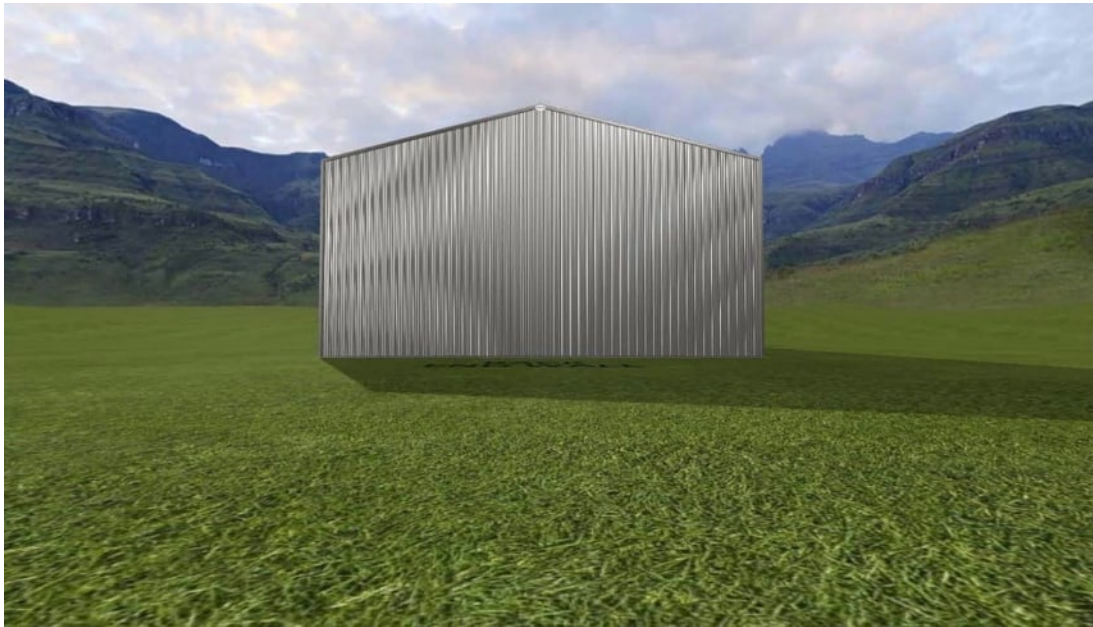


Figure 2. Rendering of proposed CST Equipment Warehouse (LOD-1), Left Mock-up (Facing West).

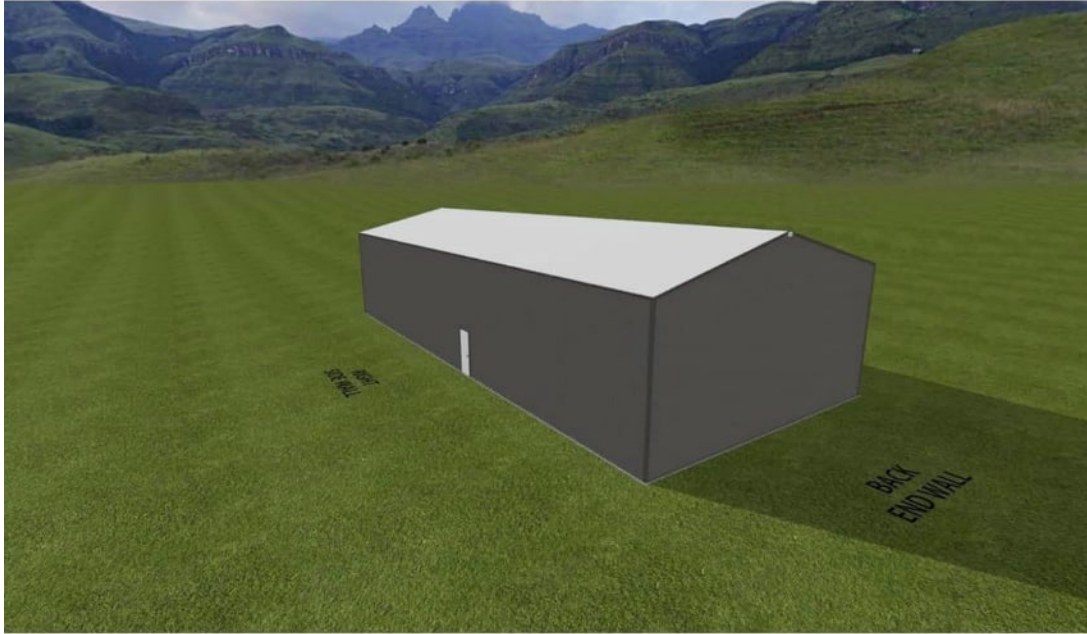


Figure 3. Rendering of proposed CST Equipment Warehouse (LOD-1), Left-Rear Mock-up (Facing Northwest).

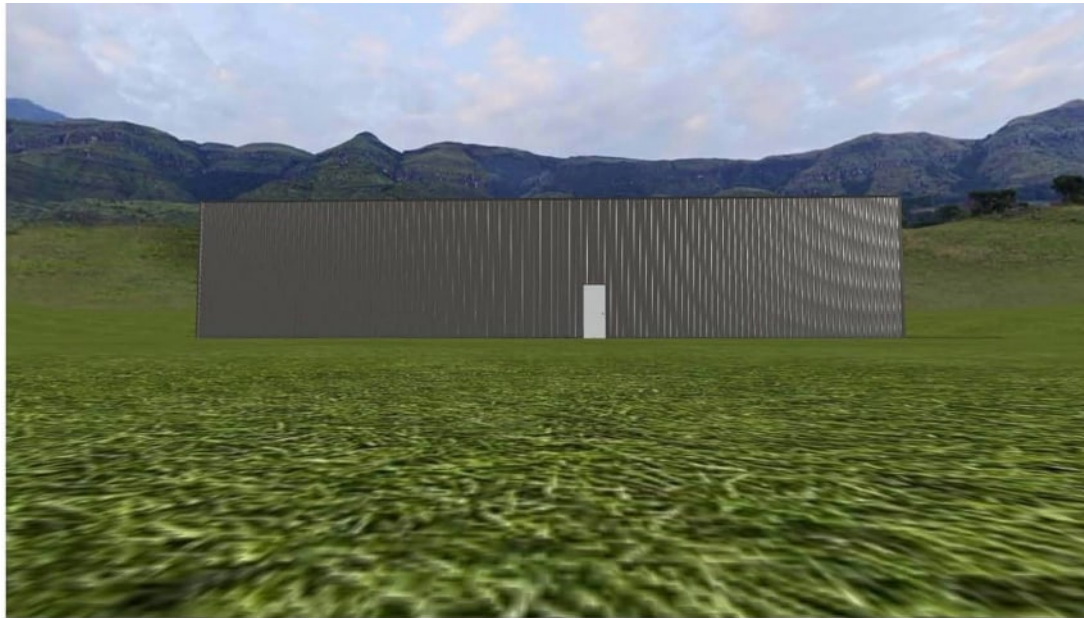


Figure 4. Rendering of proposed CST Equipment Warehouse (LOD-1), Rear Mock-up (Facing North).

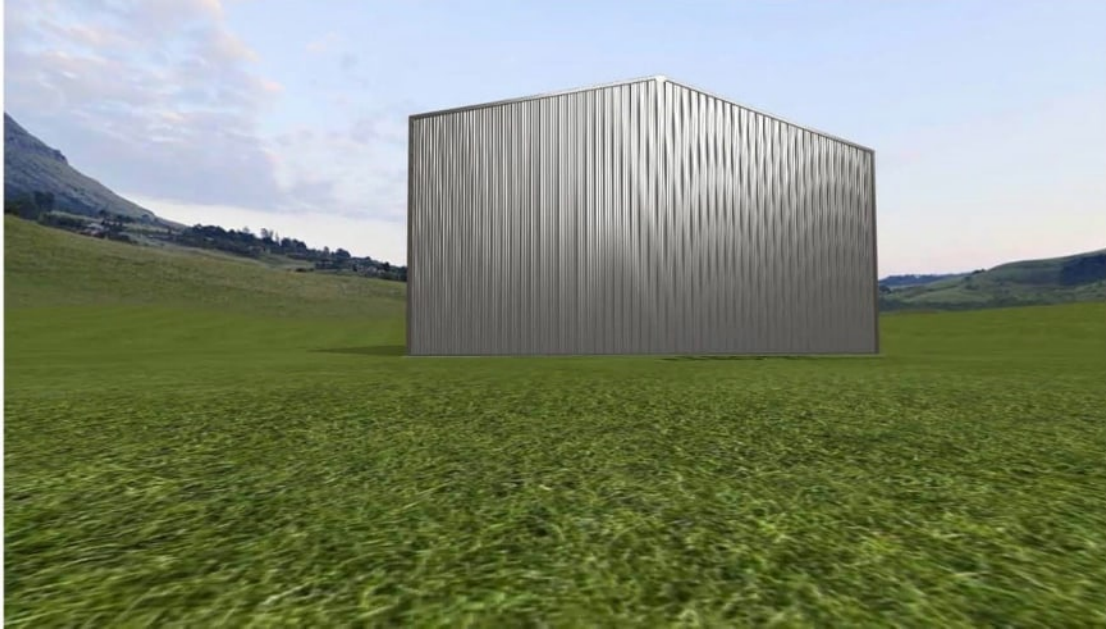


Figure 5. Rendering of proposed CST Equipment Warehouse (LOD-1), Right Mock-up (Facing East).

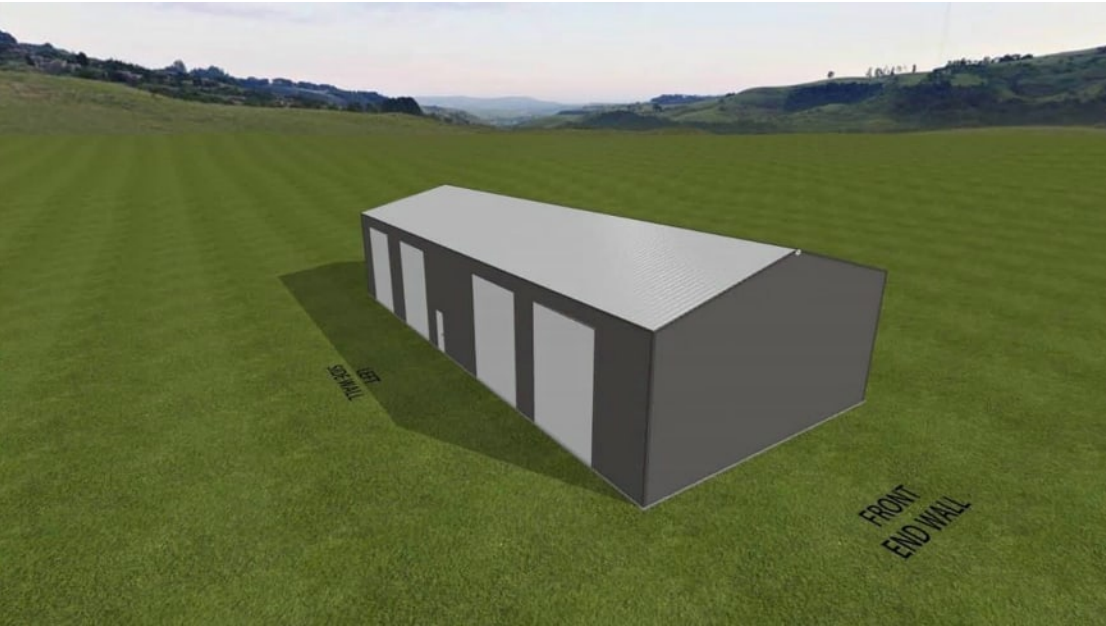


Figure 6. Rendering of proposed CST Equipment Warehouse (LOD-1), Right-Front Mock-up (Facing Southeast).

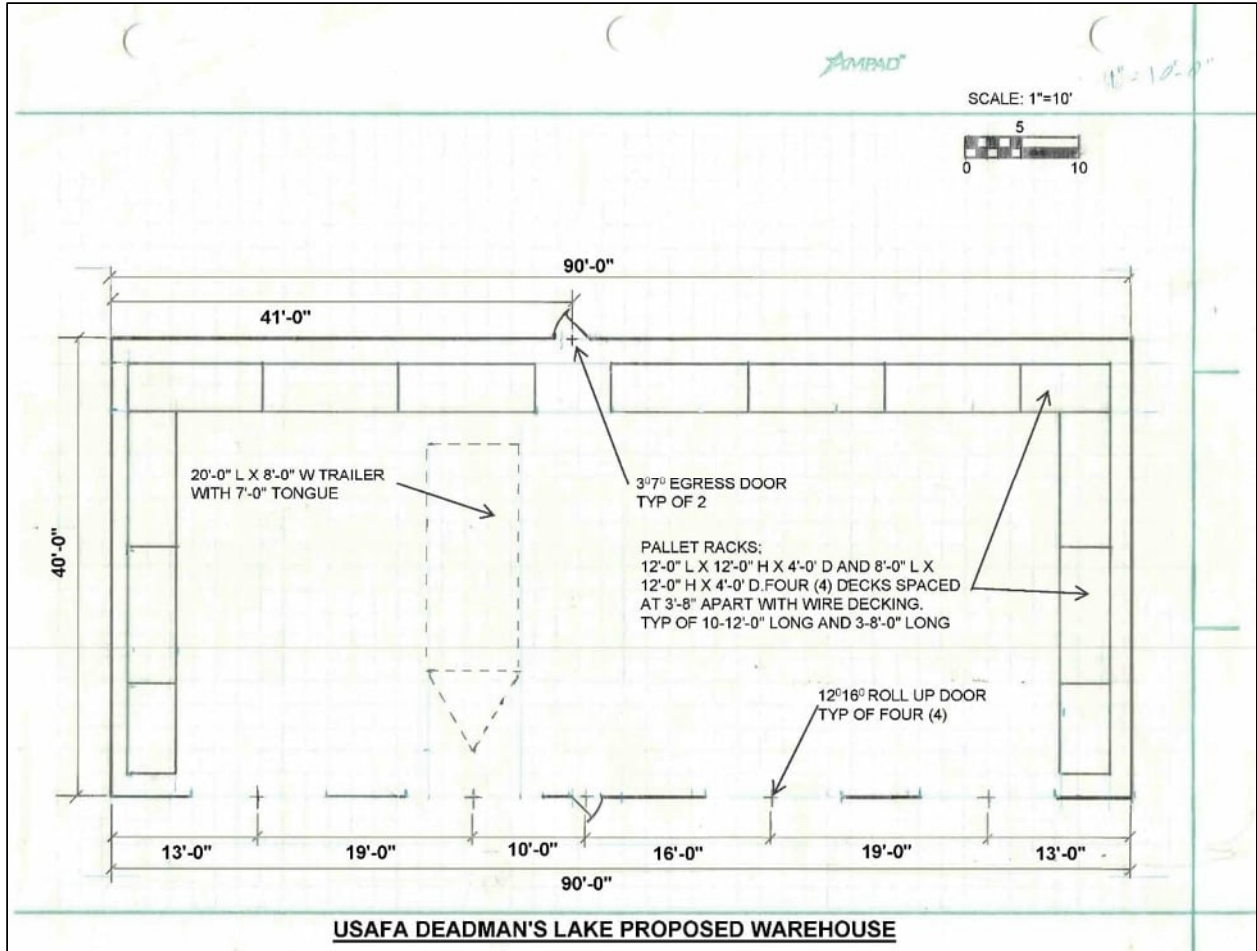


Figure 7. Schematic drawing of proposed CST Equipment Warehouse (LOD-1).

LATERAL DRIFT TOWER

UNITED STATES AIRFORCE ACADEMY

GENERAL

- ALL DESIGN, MATERIALS, CONSTRUCTION AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE COLORADO STATE BUILDING CODE 2013 EDITION, AND ALL OTHER APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
- CONTRACTOR SHALL COORDINATE ALL ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND CIVIL DRAWINGS AND SPECIFICATIONS WORK WITH THE STRUCTURAL CONTRACT DRAWINGS AND SPECIFICATIONS. CONSULT THE APPROPRIATE DRAWINGS FOR LOCATIONS AND DIMENSIONS OF OPENINGS, CHASES, INSERTS, REGLETS, SLEEVES, DEPRESSIONS, AND OTHER DETAILS NOT SHOWN ON STRUCTURAL DRAWINGS. ALL DIMENSIONS AND CONDITIONS MUST BE VERIFIED IN THE FIELD. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING WITH THE AFFECTED PART OF THE WORK.
- CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR DETERMINING AND VERIFYING THE EXISTENCE AND LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF WORK.
- CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR DETERMINING AND VERIFYING ALL SITE CONDITIONS AND FIELD VERIFYING DIMENSIONS BEFORE THE COMMENCEMENT OF WORK. THE STRUCTURAL ENGINEER OF RECORD SHALL BE NOTIFIED OF ANY DISCREPANCIES OR DEVIATIONS FROM THE DRAWINGS.
- THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE BUILDING IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURES AND SEQUENCE TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF NECESSARY SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIE-DOWNS, PROVIDE ALL SHORING AND BRACING REQUIRED TO STABILIZE AND PROTECT EXISTING AND ADJACENT STRUCTURES AND SYSTEMS DURING COURSE OF DEMOLITION AND CONSTRUCTION. SUCH MATERIAL SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER COMPLETION OF THE PROJECT.
- SECTIONS AND DETAILS SHOWN ON STRUCTURAL DRAWINGS SHALL BE CONSIDERED TYPICAL FOR SIMILAR CONDITIONS. REFER TO TYPICAL DETAILS AS REQUIRED TO COMPLETE THE WORK.
- ANY CONTRACTOR PERFORMING WORK SHOWN ON THESE DRAWINGS WHICH REQUIRE OUTDOOR CONSTRUCTION, DIGGING, OR DISTURBING THE EARTH ARE REQUIRED TO NOTIFY THE LOCAL EXCAVATION ONE-CALL CENTER AT LEAST THREE BUSINESS DAYS PRIOR TO COMMENCING ANY WORK.

FOUNDATION

- NOT USED
- THE CONTRACTOR SHALL EMPLOY THE SERVICES OF A PROFESSIONAL GEOTECHNICAL ENGINEER LICENSED IN THE PROJECT STATE TO VERIFY THE SPECIFIED ALLOWABLE SOIL BEARING PRESSURE BENEATH ALL FOUNDATIONS.
- EXCAVATE THE BUILDING SITE TO THE DEPTH AND EXTENT INDICATED ON THE FOUNDATION DRAWING. ALL SUBGRADES SHALL BE APPROVED IN WRITING BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF STRUCTURAL FILL.
- BOTTOM OF FOOTINGS ARE TO BEAR ON UNDISTURBED NATURAL SOIL OR CONTROLLED COMPACTED FILL CAPABLE OF SAFELY SUPPORTING 1,500 PSF. ADJUST FOOTING ELEVATION OR SIZE AS DIRECTED BY THE GEOTECHNICAL ENGINEER IF SUITABLE BEARING IS NOT FOUND AT THE ELEVATIONS INDICATED.
- BOTTOM OF ALL FOOTINGS MUST BE INSPECTED AND APPROVED BY A LICENSED GEOTECHNICAL ENGINEER BEFORE PLACING CONCRETE. APPROVAL IN WRITING MUST CONFIRM THAT SOIL IS ADEQUATE TO SAFELY SUSTAIN SPECIFIED SOIL BEARING PRESSURE.
- AREAS REQUIRING UNDERCUT AND FILL MATERIAL DUE TO THE PRESENCE OF UNSUITABLE MATERIAL SHALL BE BACKFILLED TO THE DESIGN FOOTING SUBGRADE WITH NEW COMPACTED STRUCTURAL FILL IN ACCORDANCE WITH THE GEOTECHNICAL INVESTIGATION.
- UNLESS NOTED OTHERWISE IN THE GEOTECHNICAL REPORT SATISFACTORY FILL MATERIALS ARE THOSE COMPLYING WITH ASTM D2487, GROUPS SW, GP, GM, SM, SW AND SP. ON-SITE BORROW MATERIAL SHALL BE TESTED TO DETERMINE SUITABILITY FOR USE AS FILL MATERIAL.
- COMPACT SOILS IN ACCORDANCE WITH THE GEOTECHNICAL INVESTIGATION.
- FOOTINGS AND SLABS SHALL BE PLACED ONLY ON A FIRM, DRY, NON-FROZEN SUBGRADE.
- NO EXCAVATION SHALL BE CLOSER THAN AT A SLOPE OF 2H:1V (TWO HORIZONTAL TO ONE VERTICAL) TO A FOOTING.
- THE CONTRACTOR SHALL OBSERVE WATER CONDITIONS AT THE SITE AND TAKE THE NECESSARY PRECAUTIONS TO ENSURE THAT THE FOUNDATION EXCAVATIONS REMAIN DRY DURING CONSTRUCTION. ANY SHEETING OR SHORING REQUIRED FOR DEWATERING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- THE EXCAVATION FOR PLACEMENT OF COMPACTED STRUCTURAL FILL SHOULD EXTEND BEYOND THE EDGE OF FOOTINGS A MINIMUM DISTANCE EQUAL TO THE DEPTH OF FILL.
- GRADE AWAY FROM THE FOUNDATION WALLS AND COORDINATE THE FINAL SITE GRADING WITH THE CIVIL DRAWINGS.
- STEP FOOTINGS DOWN AT 2H:1V TO PASS UNDER ALL PIPES UNLESS NOTED OTHERWISE.
- CENTER COLUMN PIERS AND FOOTINGS ON COLUMN LINES, AND CENTER WALL FOOTINGS UNDER WALLS UNLESS SHOWN OTHERWISE. WHERE MORE THAN ONE COLUMN BEARS ON A FOOTING, CENTER FOOTING UNDER CENTER OF BOTH COLUMNS IN EITHER DIRECTION UNLESS NOTED OTHERWISE ON PLANS.

CONCRETE

- ALL REINFORCED CONCRETE SHALL BE DESIGNED, DETAILED AND PLACED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, LATEST EDITION.
- NORMAL WEIGHT CONCRETE SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:
TYPE I PORTLAND CEMENT
28-DAY COMPRESSIVE STRENGTH (f_c):

SLAB ON GRADE:	4,000 PSI
FOOTINGS:	4,000 PSI
FOUNDATION WALLS & PIERS:	4,000 PSI

MAXIMUM AGGREGATE SIZE: 1 INCH
MAXIMUM SLUMP: 3 INCHES +/- 1 INCH
- MAXIMUM WATER-CEMENT RATIO (W/C) SHALL BE AS FOLLOWS:
W/C MAX = 0.50 FOR f_c = 4,000 PSI (NON AIR ENTRAINED)
- THE RECOMMENDATIONS CONTAINED IN ACI COMMITTEE REPORT 306R, COLD WEATHER CONCRETING, LATEST EDITION, SHALL BE OBSERVED.
- THE RECOMMENDATIONS CONTAINED IN ACI COMMITTEE REPORT 305R, HOT WEATHER CONCRETING, LATEST EDITION, SHALL BE OBSERVED.
- ALL REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615, GRADE 60 DEFORMED BARS.
- ALL TENSION LAP SPLICING OF REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS FOR ACI CLASS "B" SPLICES, UNLESS NOTED OTHERWISE.
- LAP ALL BARS MINIMUM 40 DIAMETERS.
- REINFORCING STEEL DIMENSIONS ARE TO THE CENTERLINE OF THE BAR UNLESS NOTED OTHERWISE. COVER DISTANCES ARE TO THE OUTSIDE FACE OF THE BAR.

- UNLESS NOTED OTHERWISE ON THE DRAWINGS, UTILIZE THE FOLLOWING FOR REINFORCEMENT CLEARANCES:

CONCRETE PLACED DIRECTLY ON EARTH, FOOTINGS:	3" COVER ALL AROUND SLABS, FROM TOP UNLESS OTHERWISE NOTED.
FORMED SURFACES EXPOSED TO WEATHER OR EARTH:	1 1/2" (#6 BAR OR SMALLER) 2" (#8 BAR OR LARGER)
CONCRETE NOT EXPOSED TO WEATHER:	1 1/2" (#14 OR #18 BARS)
SLABS, WALLS AND JOISTS:	3/4" (#11 OR SMALLER)
BEAMS, COLUMNS:	1 1/2"

- WELDED WIRE FABRIC SHALL CONFORM TO THE REQUIREMENTS OF ASTM A1064. MINIMUM SIZE SHALL BE 6x6-W1.4xW1.4.
- INSTALL WELDED WIRE FABRIC IN LENGTHS AS LONG AS PRACTICABLE. LAP ADJOINING PIECES AT LEAST ONE FULL MESH AND LACE SPLICES WITH WIRE. OFFSET LAPS OF ADJOINING WIDTHS TO PREVENT CONTINUOUS LAPS IN EITHER DIRECTION.
- WELDING OF REINFORCEMENT IS NOT PERMITTED.
- REINFORCEMENT SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH ACI 315, LATEST EDITION AND AS PER CRSI MANUAL OF STANDARD PRACTICE, LATEST EDITION.
- THE PLACEMENT OF THE STEEL REINFORCEMENT SHALL BE REVIEWED BY AN ENGINEER OR QUALIFIED INSPECTION AGENCY.
- REINFORCING SUPPORTS, SPACERS AND CHAIRS SHALL MEET THE REQUIREMENTS OF ACI 301 AND CRSI MANUAL OF STANDARD PRACTICE, LATEST EDITION.
- ANCHOR BOLT PLACEMENT SHALL CONFORM TO THE APPROVED ANCHOR BOLT PLANS PREPARED BY THE STEEL FABRICATOR.
- CONTRACTOR SHALL PROVIDE ADEQUATE BRACING FOR ALL WALLS AND PIERS AS REQUIRED DURING BACKFILLING AND COMPACTION.
- FORM MATERIALS SHALL BE OF SUFFICIENT STRENGTH AND STABILITY TO WITHSTAND PRESSURE OF PLACED CONCRETE WITHOUT BOW OR DEFLECTION. FORMS FOR EXPOSED FINISH CONCRETE SHALL BE PLYWOOD, METAL, METAL-FRAMED PLYWOOD FACED, OR OTHER ACCEPTABLE PANEL-TYPE MATERIALS, TO PROVIDE CONTINUOUS, STRAIGHT, SMOOTH, EXPOSED SURFACES. FURNISH IN LARGEST PRACTICABLE SIZES TO MINIMIZE NUMBER OF JOINTS AND TO CONFORM TO JOINT SYSTEM SHOWN ON DRAWINGS.
- PROVIDE COMMERCIAL FORMULATION FORM-COATING COMPOUNDS THAT WILL NOT BOND WITH, STAIN, NOR ADVERSELY AFFECT CONCRETE SURFACES, AND WILL NOT IMPAIR SUBSEQUENT TREATMENTS OF CONCRETE SURFACES.
- FORM TIES OR SPREADERS SHALL LEAVE NO METAL WITHIN 1 1/2 INCHES OF EXPOSED CONCRETE SURFACE. PLUG ROD HOLES SOLID.
- NO CONCRETE SHALL BE DEPOSITED UNTIL ALL WATER AND DEBRIS HAVE BEEN COMPLETELY REMOVED FROM THE FORMWORK.
- CONCRETE SHALL BE DEPOSITED AS NEARLY AS PRACTICABLE IN ITS FINAL POSITION TO AVOID SEGREGATION DUE TO REHANDLING. IMMEDIATELY AFTER DEPOSITING CONCRETE SHALL BE COMPACTED BY MEANS OF MECHANICAL AGITATION TO PREVENT THE FORMATION OF VOIDS. EXTERNAL VIBRATION WILL NOT BE PERMITTED. THE PLACING OF CONCRETE SHALL BE CARRIED ON AT SUCH A RATE THAT CONCRETE IS AT ALL TIMES PLACED AND FLOWS READILY INTO SPACES BETWEEN BARS. CONCRETE SHALL NOT BE PLACED ON CONCRETE WHICH HAS ACQUIRED ITS INITIAL SET. CONCRETE WHICH HAS CONTAINED ITS MIXING WATER MORE THAN 1 1/2 HOURS SHALL NOT BE DEPOSITED IN THE WORK (ONE HOUR WHEN AIR TEMPERATURE IS ABOVE 75 F).
- FINISHING CONCRETE: ALL CONCRETE SURFACES SHALL BE TRUE AND EVEN, FREE FROM HONEYCOMBING, STONE POCKETS AND EXCESSIVE DEPRESSIONS. PROJECTIONS, AND AIR POCKETS, ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 1 INCH X 1 INCH UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- HORIZONTAL SURFACES SHALL BE CAREFULLY FINISHED TO THE REQUIRED ELEVATIONS, AND SHALL BE THOROUGHLY WORKED AND FINISHED AS NOTED.
- FINISHES:
BROOM FINISH - FOR EXTERIOR STAIRS AND CONCRETE SIDEWALKS AND PAVING.
GROUT CLEANED FINISH - FOR ALL OTHER SURFACES EXPOSED TO VIEW.
- CURING OF CONCRETE: APPLY LIQUID MEMBRANE-FORMING COMPOUND FOR CURING AND SEALING CONCRETE. PRODUCT SHALL BE ASTM C309, TYPE 1-D, WITH FLUORINE DYE. SEALTIGHT CS-309 BY W.R. MEADOWS, "KURE-N-SEAL" BY SONNEBORN OR APPROVED EQUAL. COMPOUNDS SHALL NOT DISCOLOR CONCRETE SURFACES.
- UNHARDENED CONCRETE SHALL BE PROTECTED FROM HEAVY RAINS OR FLOWING WATER. ALL CONCRETE SHALL BE ADEQUATELY PROTECTED FROM MECHANICAL INJURY.
- CONCRETE FOOTINGS, PIERS AND WALLS SHALL ACHIEVE EITHER 75 PERCENT OF THE INTENDED MINIMUM COMPRESSIVE DESIGN STRENGTH OR SUFFICIENT STRENGTH TO SUPPORT THE LOADS IMPOSED DURING STEEL ERECTION. THE CONCRETE STRENGTH IS BASED ON AN APPROPRIATE ASTM STANDARD TEST METHOD OF FIELD-CURED SAMPLES.
- PROVIDE GALVANIZED STEEL SLEEVES WHERE PIPES PASS THROUGH EXTERIOR CONCRETE WALLS, FOOTINGS, BEAMS OR SLABS. PROVIDE PVC SLEEVES WHERE PIPES PASS THROUGH INTERIOR CONCRETE WALLS, BEAM OR SLABS. SLEEVE SHALL BE 2 INCHES LARGER DIAMETER THAN THE PIPE PASSING THROUGH THE CONSTRUCTION.
- PRIOR TO PLACING NEW CONCRETE OVER EXISTING CONCRETE, CONTRACTOR SHALL INTENTIONALLY ROUGHEN THE EXISTING SURFACES WHERE CONCRETE IS TO BE PLACED. APPLY SIKADUR 32 HI-MOD BONDING AGENT OR APPROVED EQUAL TO EXISTING CONCRETE SURFACES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- COMPLETE SHOP DRAWINGS AND SCHEDULES OF ALL REINFORCING STEEL SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR REVIEW.

STRUCTURAL STEEL

- ALL STRUCTURAL STEEL SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE AISC STEEL CONSTRUCTION MANUAL LATEST EDITION.
- ALL STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE LATEST AISC AND ASTM STANDARDS AND SPECIFICATIONS:

W-SHAPES	ASTM A992, F _y = 50 KSI
ANGLE, CHANNEL, PLATES AND BARS	ASTM A36, F _y = 36 KSI
RECTANGULAR HSS	ASTM A500, GR. B, F _y = 46 KSI
HSS PIPE	ASTM A500, GR. B, F _y = 42 KSI
ANCHOR RODS	ASTM F1554, F _y = 36, 55, 105 KSI
- FABRICATE BEAMS WITH THE NATURAL CAMBER UP.
- FULL DEPTH CONNECTIONS ARE TO BE USED ON ALL GIRDER AND BEAM CONNECTIONS TO COLUMNS. BOLTS TO BE AT 3 INCHES ON CENTER VERTICAL.
- WELDING SHALL CONFORM TO THE STRUCTURAL WELDING CODE - AWS D1.1, LATEST EDITION. SHOP AND FIELD WELDING SHALL BE PERFORMED BY WELDERS QUALIFIED AS DESCRIBED IN THE AMERICAN WELDING SOCIETY'S "STANDARD QUALIFICATION PROCEDURE" (AWS D1.1) TO PERFORM THE TYPE OF WORK REQUIRED. WELDING ELECTRODES SHALL BE E70XX. PRE-HEATING OF MEMBERS PRIOR TO WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1, AS REQUIRED.
- ALL WELDS SHALL BE 3/16 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.
- NO FIELD BURNING OF BOLT HOLES WILL BE PERMITTED. FIELD HOLES SHALL BE DRILLED AND/OR REAMED.
- THERE SHALL BE NO FIELD CUTTING OF STRUCTURAL STEEL MEMBERS FOR THE WORK OF OTHER TRADES WITHOUT THE PRIOR APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD.
- FIELD CONNECTIONS SHALL BE BOLTED USING 3/4 INCH DIAMETER ASTM A325-N HIGH STRENGTH BOLTS UNLESS NOTED OTHERWISE ON THE PLANS AND DETAILS.
- HIGH-STRENGTH BOLTS, NUTS AND WASHERS SHALL CONFORM TO THE FOLLOWING CRITERION:
a. ASTM A325-N, TYPE 1, PLAIN, HEAVY HEX STRUCTURAL BOLTS
b. ASTM A563, PLAIN, HEAVY HEX CARBON-STEEL NUTS
c. ASTM F436, TYPE 1, PLAIN, HEAVY HEX HARDENED CARBON-STEEL WASHERS.
d. DIRECT-TENSION INDICATORS: ASTM F959, TYPE 325.
- THE METHOD OF BOLTING ALL STRUCTURAL BOLTS SHALL BE "TURN OF THE NUT" AS OUTLINED IN THE ASD SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS (LATEST EDITION).
- CONTRACTOR SHALL PREPARE, CHECK AND SUBMIT DETAILED STRUCTURAL STEEL SHOP DRAWINGS OF WORK FOR ENGINEER'S REVIEW PRIOR TO FABRICATION.
- NOT USED.
- CONTRACTOR SHALL SUPPLY TURNBUCKLES, CLEAVES AND PINS THAT MEET ALL GEOMETRIC AND STRENGTH REQUIREMENTS. SAFE WORKING TENSION LOAD SHALL BE GREATER THAN OR EQUAL TO 31 KIPS. TIGHTEN TURNBUCKLES AS REQUIRED TO ASSURE ALL SLACK IS REMOVED FROM THE TENSION RODS AND THE RODS ARE FULLY TIGHT (DO NOT OVERLY TIGHTEN).
- ALL ALUMINUM AND STEEL MEMBERS SHALL BE TREATED OR PROPERLY SEPARATED TO PREVENT GALVANIC AND CORROSIVE EFFECTS.
- ALL NEW GRATING SHALL BE HOT DIPPED GALVANIZED AND ATTACHED WITH MANUFACTURER SUPPLIED FASTENING CLIP TO FRAMING STEEL. ALL GRATING SHALL HAVE 1 1/2 INCH X 3/16 INCH BEARING BARS. AT 1 3/16 INCHES ON CENTER. PLACE BEARING BARS SPANNING ACROSS THE SHORT DIRECTION. STAIR GRATING SHALL CONTAIN INTEGRAL ABRASIVE NOSINGS.
- CONSTRUCTION MANAGER (OR OWNER) SHALL ENGAGE AN INDEPENDENT TESTING AND INSPECTION AGENCY TO INSPECT WELDED CONNECTIONS, INSTALLATION OF SHEAR CONNECTORS AND OTHER WELDMENTS AND TO PERFORM TESTS AND PREPARE TEST REPORTS. TESTING AGENCY SHALL CONDUCT AND INTERPRET TESTS IN ACCORDANCE WITH ASTM E709, MAGNETIC PARTICLE INSPECTION; ASTM E94, E142, RADIOGRAPHIC INSPECTION; OR ASTM E164, ULTRASONIC INSPECTION, AND STATE IN EACH REPORT WHETHER TEST RESULTS COMPLY WITH REQUIREMENTS, AND SPECIFICALLY STATE ANY DEVIATIONS.

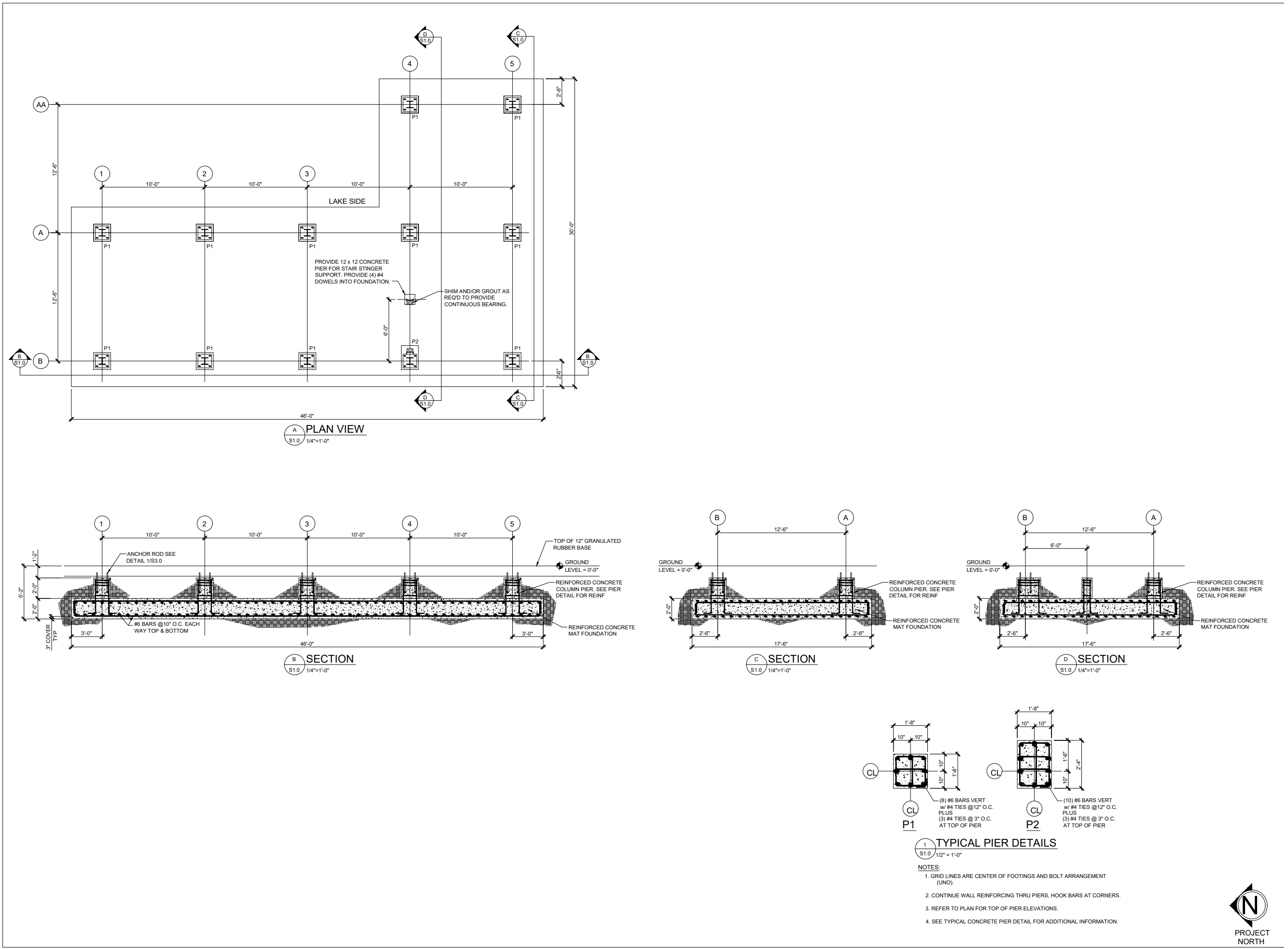
CONCEPT DRAWINGS	
DWG No.	DRAWING TITLE
S0.0	COVER SHEET
S1.0	PLAN - ELEVATIONS GROUND LEVEL
S1.1	PLAN - ELEVATIONS LEVEL 1
S1.2	PLAN - ELEVATIONS LEVEL 2
S1.3	PLAN - ELEVATIONS LEVEL 3
S1.4	PLAN - ELEVATIONS LEVEL 4
S1.5	PLAN - ELEVATIONS LEVEL 5
S2.0	PLAN VIEW SOUTH - EAST ELEVATIONS
S2.1	PLAN VIEW NORTH - WEST ELEVATIONS
S2.2	SECTION AT FRAME LINES
S2.2.1	SECTION AT FRAME LINES (CONTINUED)
S2.3	SECTION AT STAIR TOWER
S3.0 DETAILS	
S3.1	DETAILS

DRAWING TITLE
COVER SHEET

DRAWING NO.

S0.0

Figure 8. Lateral Drift Tower (LOD-2) schematics, Page 1.



DRAWING TITLE
**PLAN - ELEVATIONS
GROUND LEVEL**

DRAWING NO.
S1.0

PROJECT
NORTH

Figure 9. Lateral Drift Tower (LOD-2) schematics, Page 2.

NOTE:
 REMOVABLE SHIPPING MEMBERS ARE SUGGESTED MINIMUM TIES TO HELP PROVIDE STABILITY TO THE MODULES DURING SHIPPING. THE STABILITY AND CARE OF THE STEEL MODULES DURING SHIPPING AND ERECTION SHALL REMAIN THE RESPONSIBILITY OF THE STEEL FABRICATOR AND SHIPPER. THE MODULES ARE DESIGNED TO BE SUPPORTED AT THE COLUMNS LOCATED ON CENTERLINES A & B. FABRICATOR TO PROVIDE ANY ADDITIONAL SUPPORTS REQUIRED FOR SHIPPING.

PLANK NOTE:
 B-LINE TRACTION TREAD GRATING SYSTEM AS MANUFACTURED BY EATON (800.851.7415) GALVANIZED, 2" DEEP x 10" WIDE (9 7/8" ACTUAL) x 13 GA W/ DRAIN HOLE PATTERN.

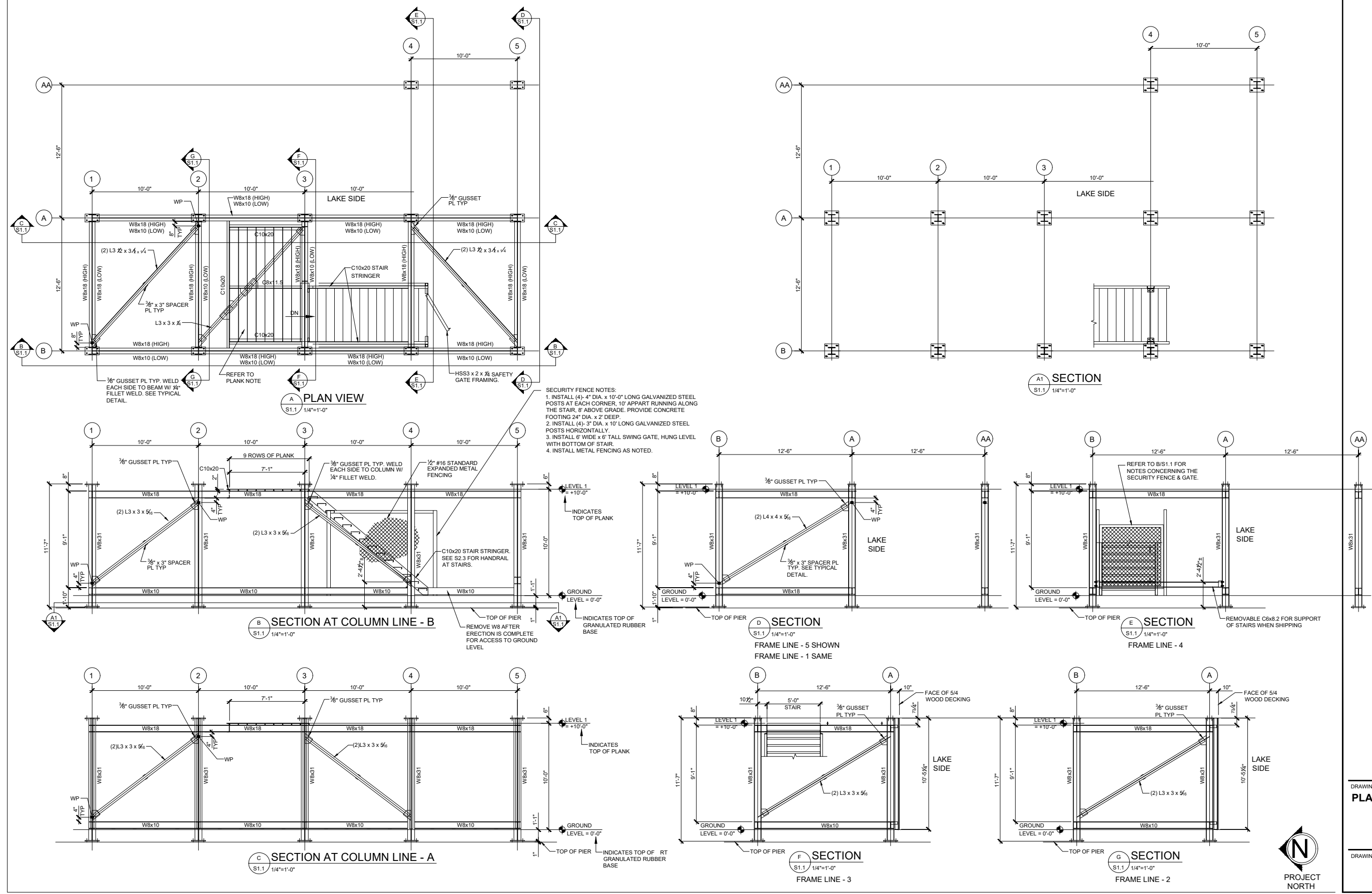


Figure 10. Lateral Drift Tower (LOD-2) schematics, Page 3.

DRAWING TITLE
**PLAN - ELEVATIONS
 LEVEL 1**

DRAWING NO.
S1.1

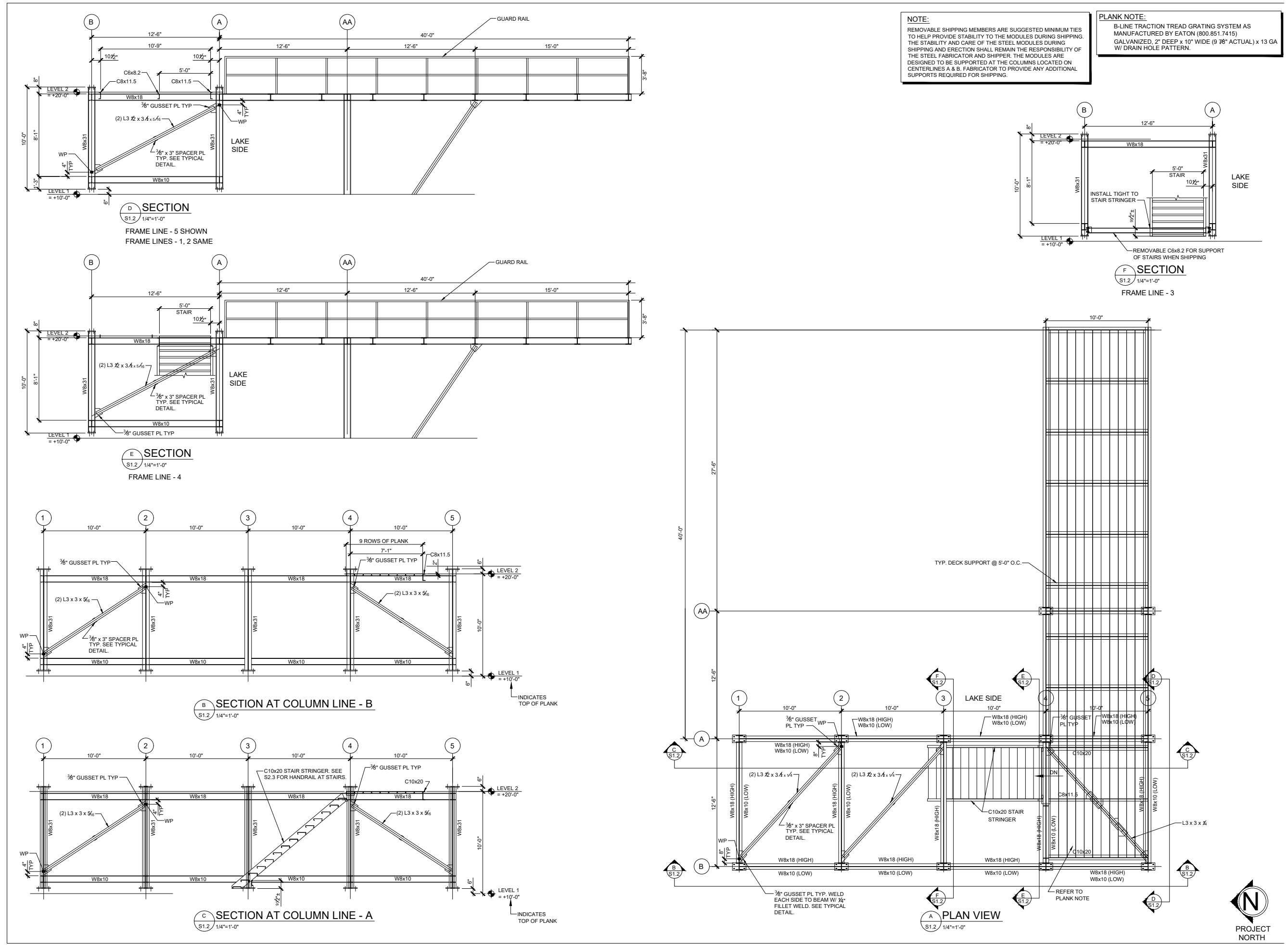
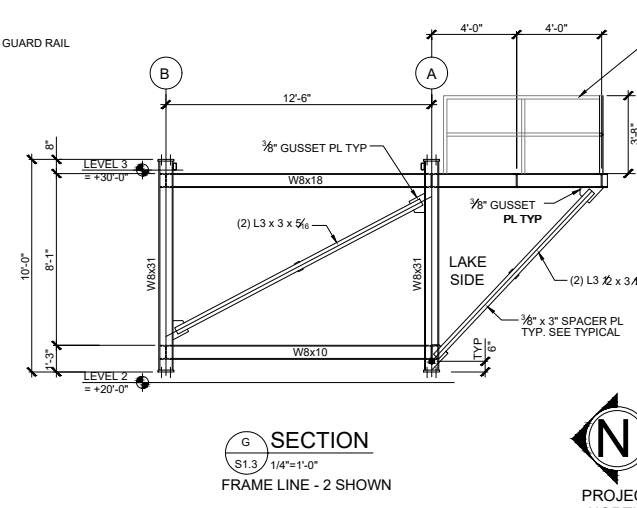
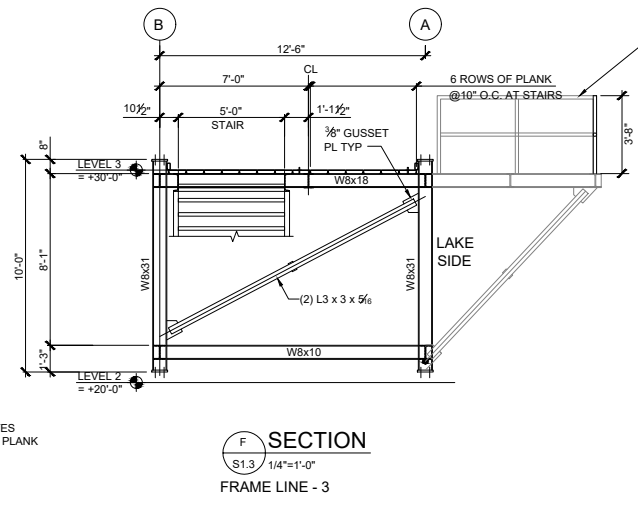
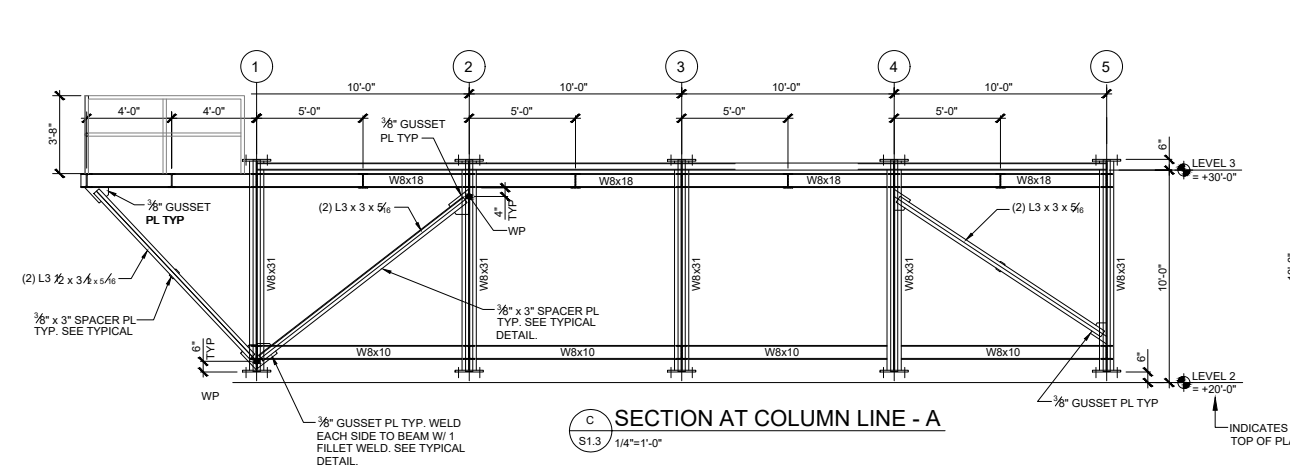
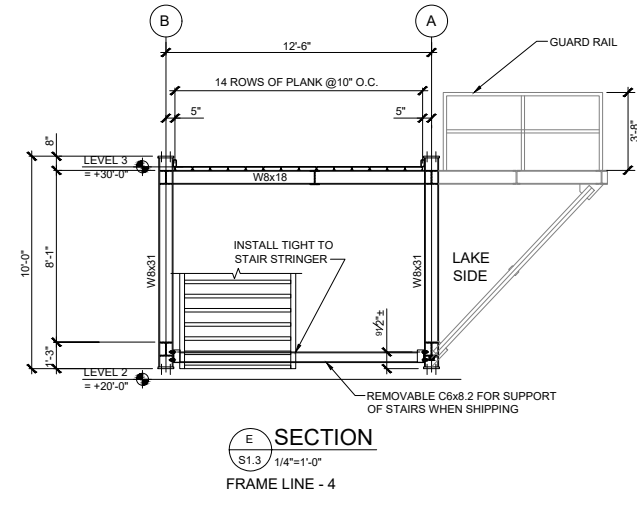
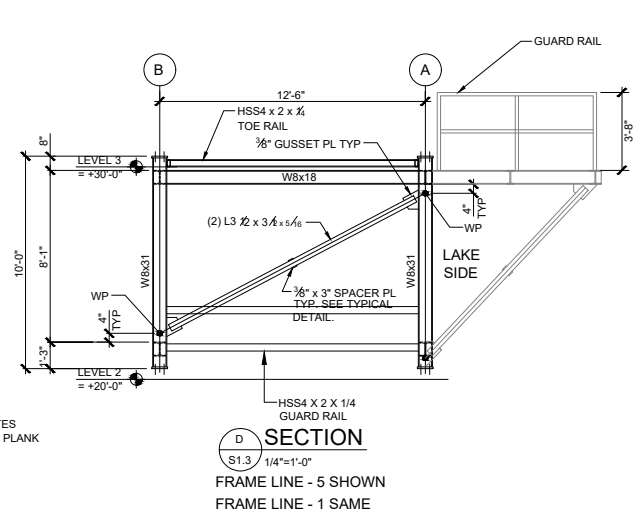
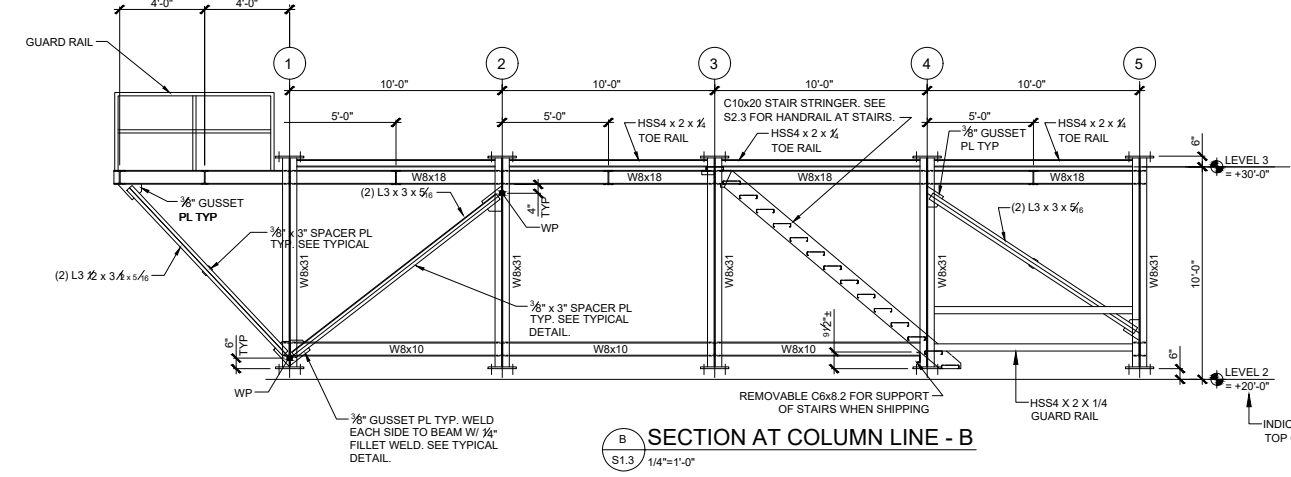
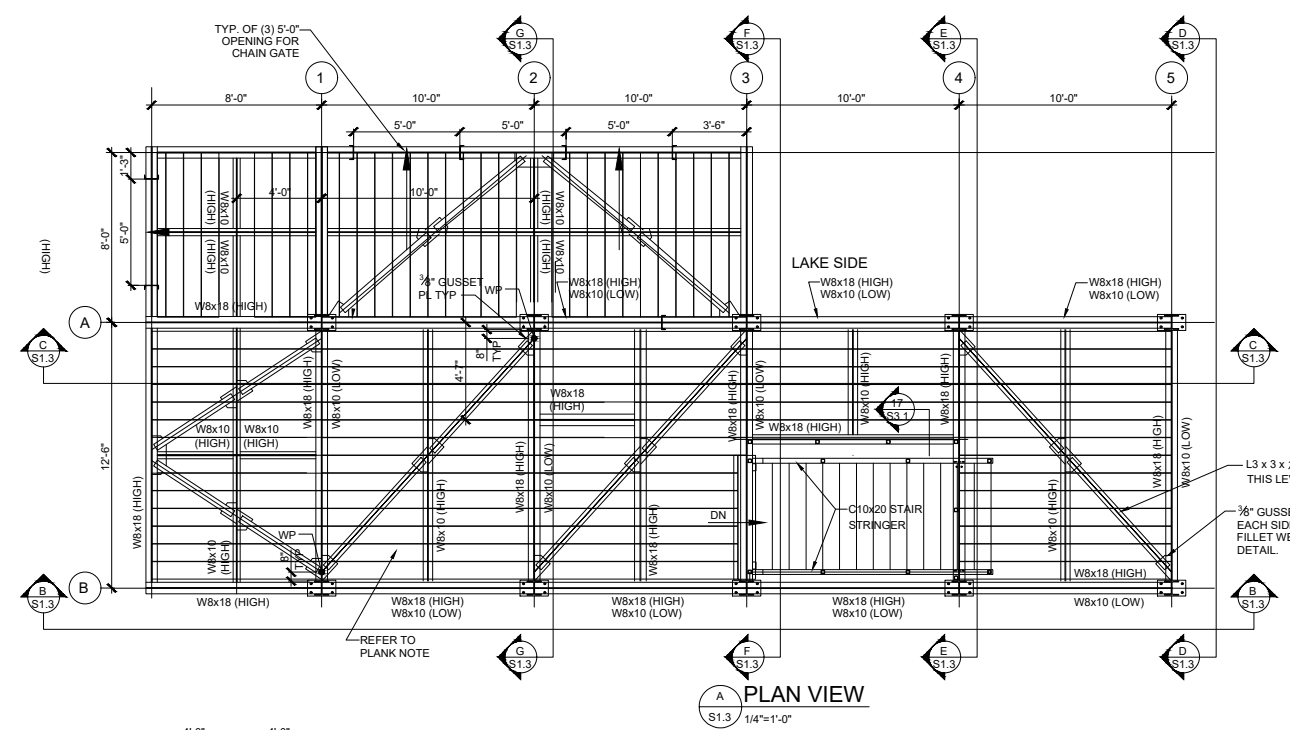


Figure 11. Lateral Drift Tower (LOD-2) schematics, Page 4.

NOTE:
 REMOVABLE SHIPPING MEMBERS ARE SUGGESTED MINIMUM TIES TO HELP PROVIDE STABILITY TO THE MODULES DURING SHIPPING. THE STABILITY AND CARE OF THE STEEL MODULES DURING SHIPPING AND ERECTION SHALL REMAIN THE RESPONSIBILITY OF THE STEEL FABRICATOR AND SHIPPER. THE MODULES ARE DESIGNED TO BE SUPPORTED AT THE COLUMNS LOCATED ON CENTERLINES A & B. FABRICATOR TO PROVIDE ANY ADDITIONAL SUPPORTS REQUIRED FOR SHIPPING.

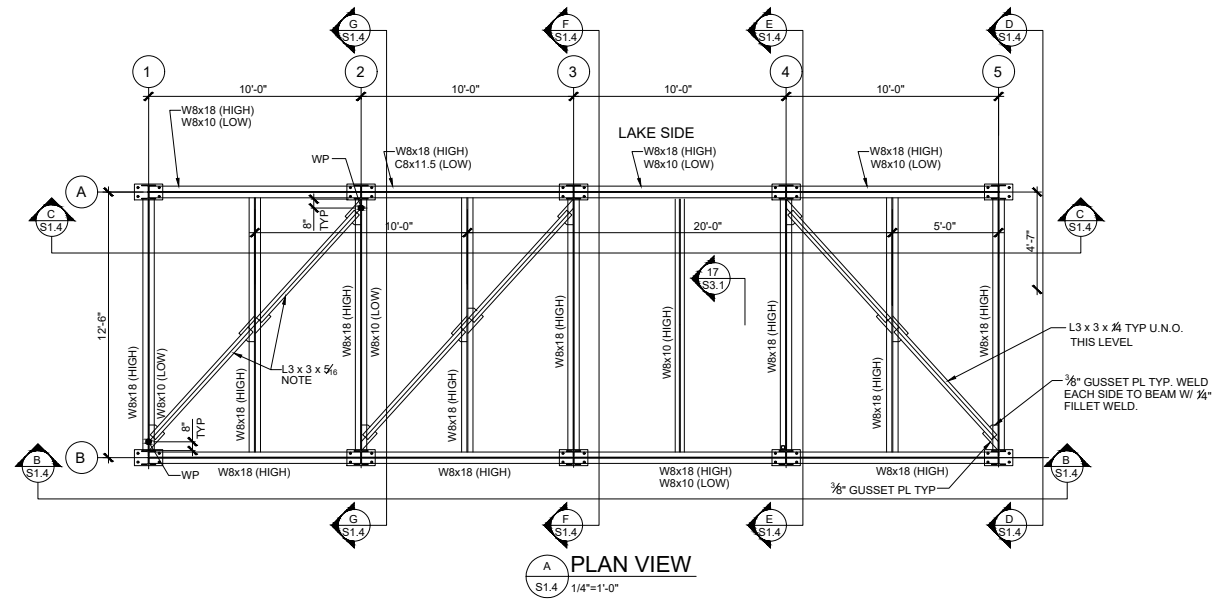
PLANK NOTE:
 B-LINE TRACTION TREAD GRATING SYSTEM AS MANUFACTURED BY EATON (800.851.7415)
 GALVANIZED, 2" DEEP x 10" WIDE (9 7/8" ACTUAL) x 13 GA W/ DRAIN HOLE PATTERN.



DRAWING TITLE
PLAN - ELEVATIONS LEVEL 3

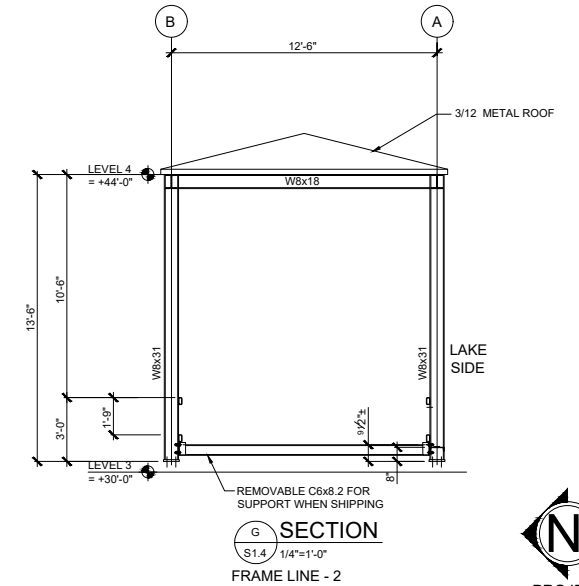
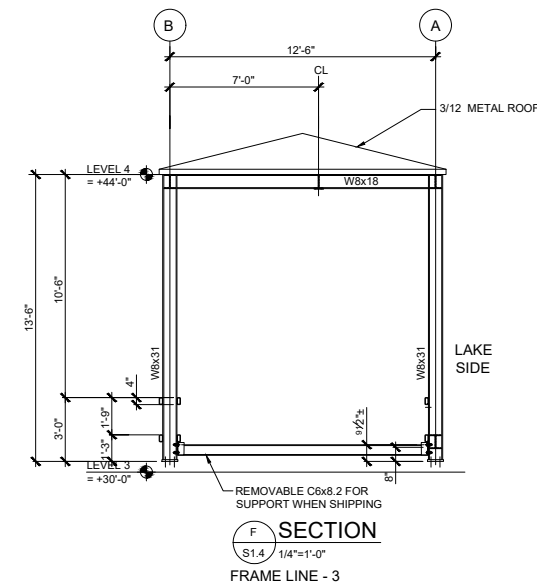
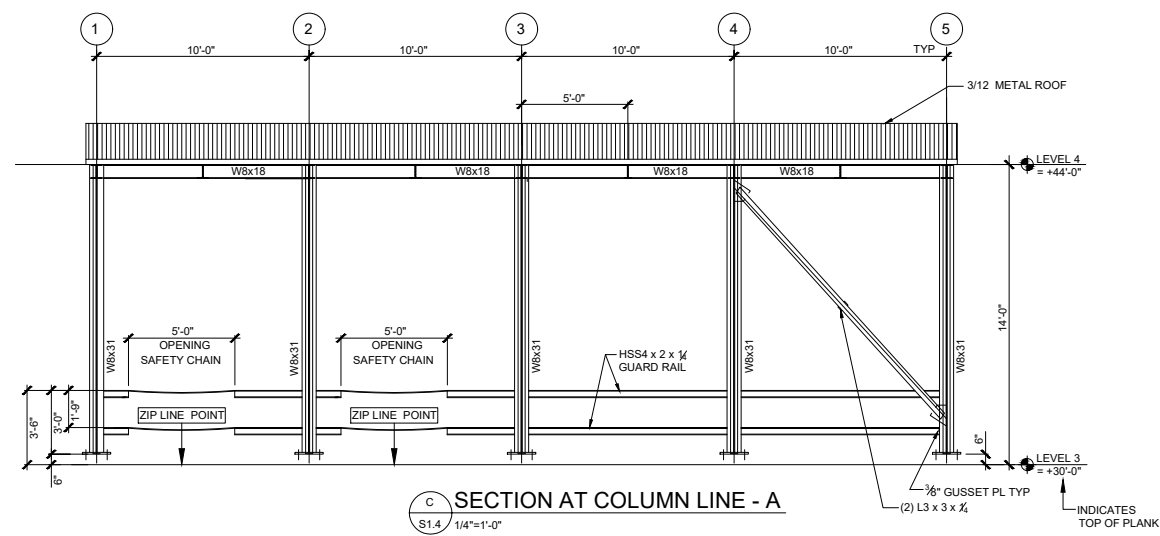
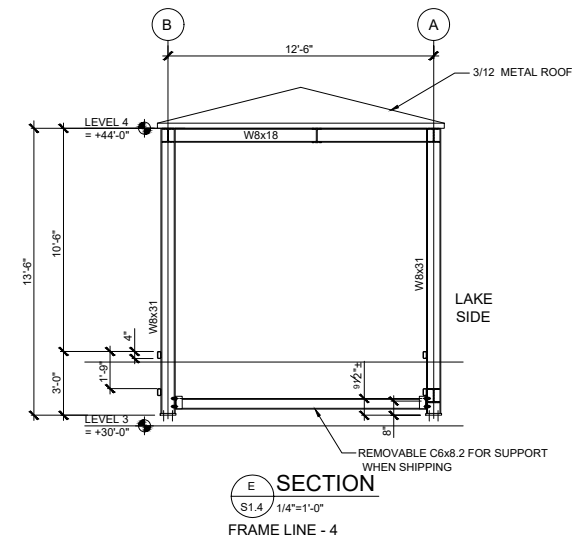
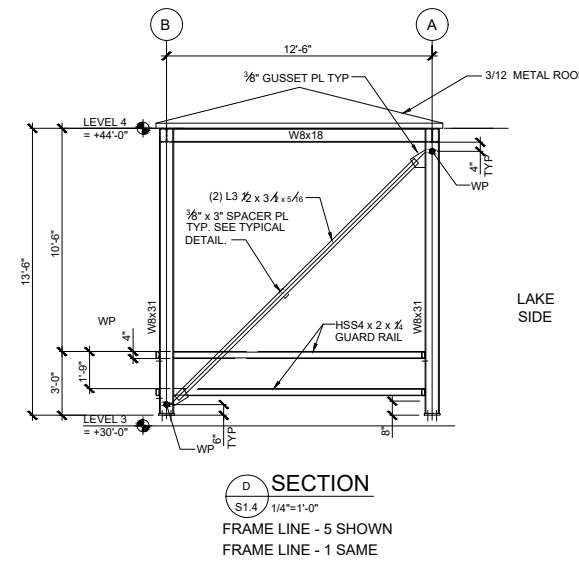
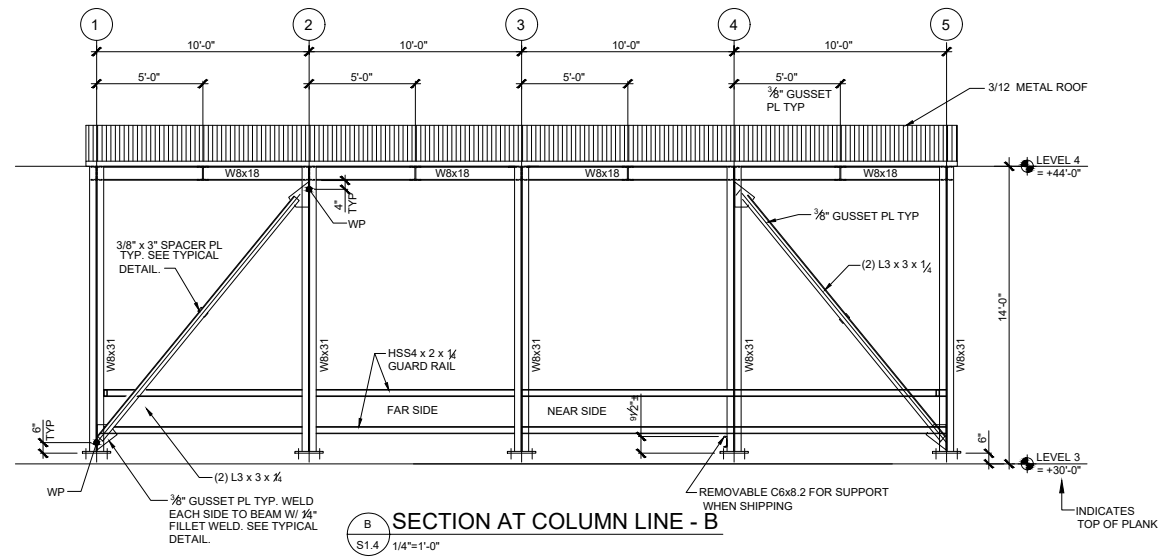
DRAWING NO.
S1.3

Figure 12. Lateral Drift Tower (LOD-2) schematics, Page 5.



PLANK NOTE:
 B-LINE TRACTION TREAD GRATING SYSTEM AS MANUFACTURED BY EATON (800.851.7415) GALVANIZED, 2" DEEP x 10" WIDE (9 7/8" ACTUAL) x 13 GA W/ DRAIN HOLE PATTERN.

NOTE:
 REMOVABLE SHIPPING MEMBERS ARE SUGGESTED MINIMUM TIES TO HELP PROVIDE STABILITY TO THE MODULES DURING SHIPPING. THE STABILITY AND CARE OF THE STEEL MODULES DURING SHIPPING AND ERECTION SHALL REMAIN THE RESPONSIBILITY OF THE STEEL FABRICATOR AND SHIPPER. THE MODULES ARE DESIGNED TO BE SUPPORTED AT THE COLUMNS LOCATED ON CENTERLINES A & B. FABRICATOR TO PROVIDE ANY ADDITIONAL SUPPORTS REQUIRED FOR SHIPPING.



DRAWING TITLE
**PLAN - ELEVATIONS
 LEVEL 4**

DRAWING NO.

S1.4

Figure 13. Lateral Drift Tower (LOD-2) schematics, Page 6.

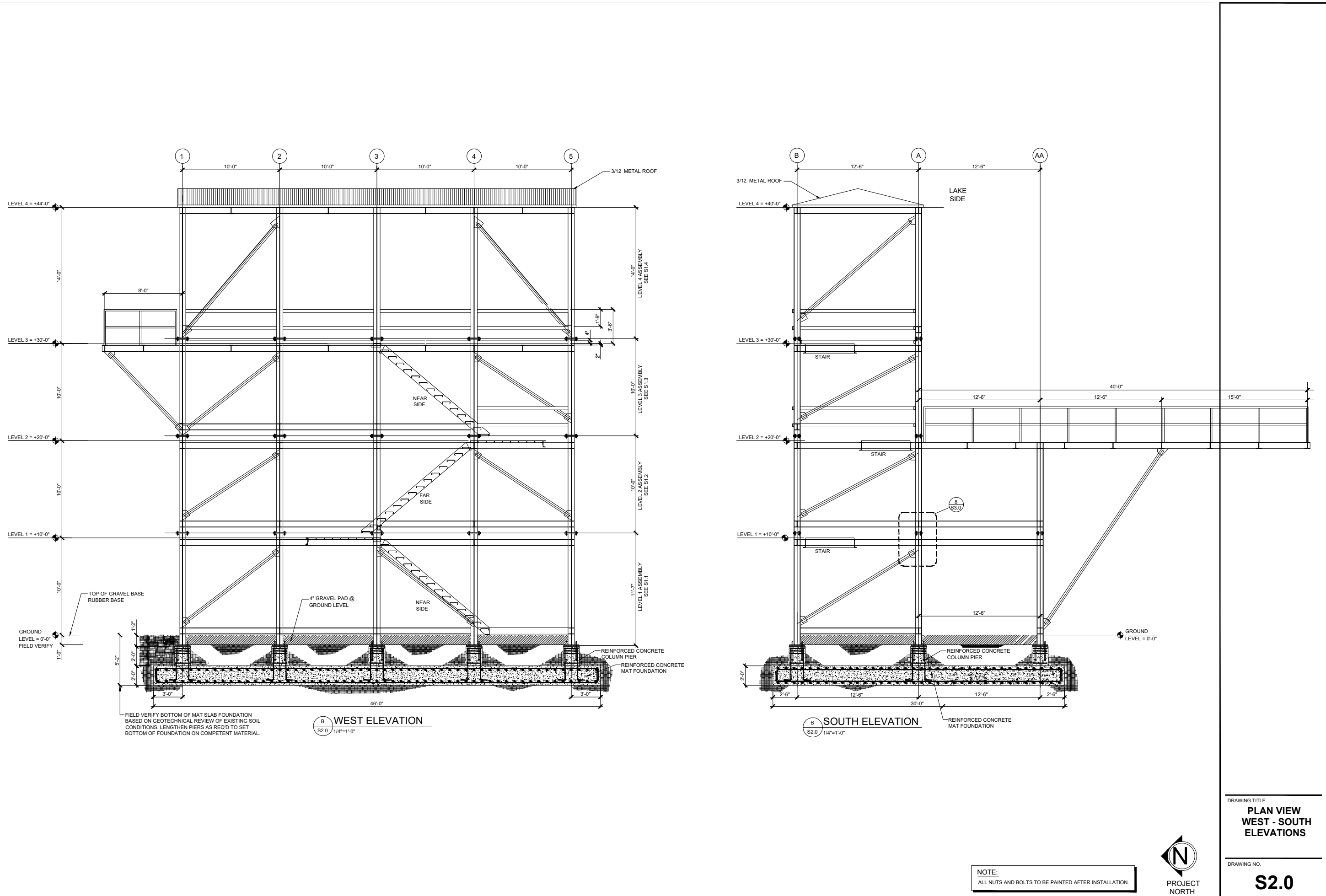


Figure 14. Lateral Drift Tower (LOD-2) schematics, Page 7.

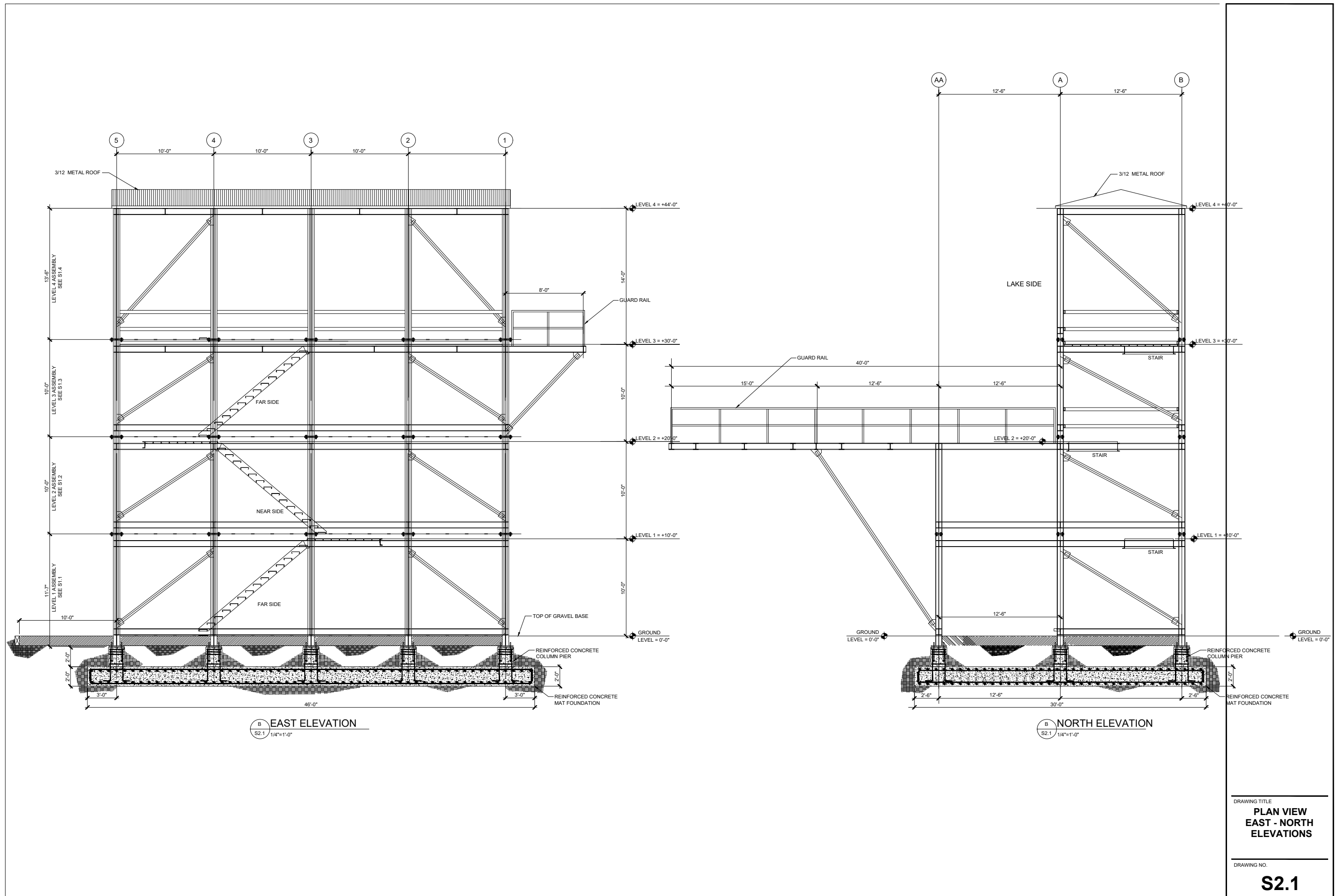
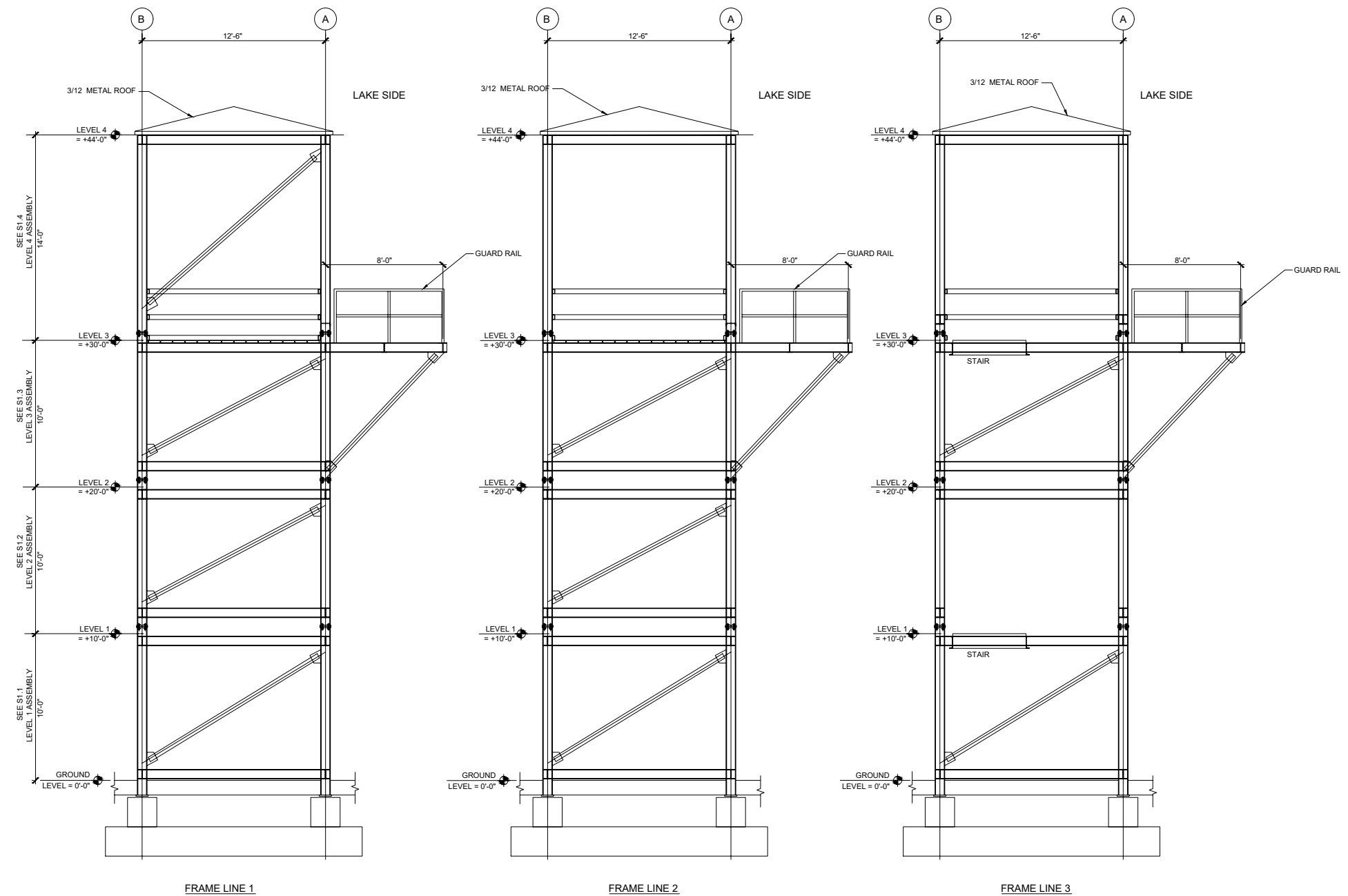


Figure 15. Lateral Drift Tower (LOD-2) schematics, Page 8.



A SECTION AT FRAME LINES
S2.2 1/4"=1'-0"

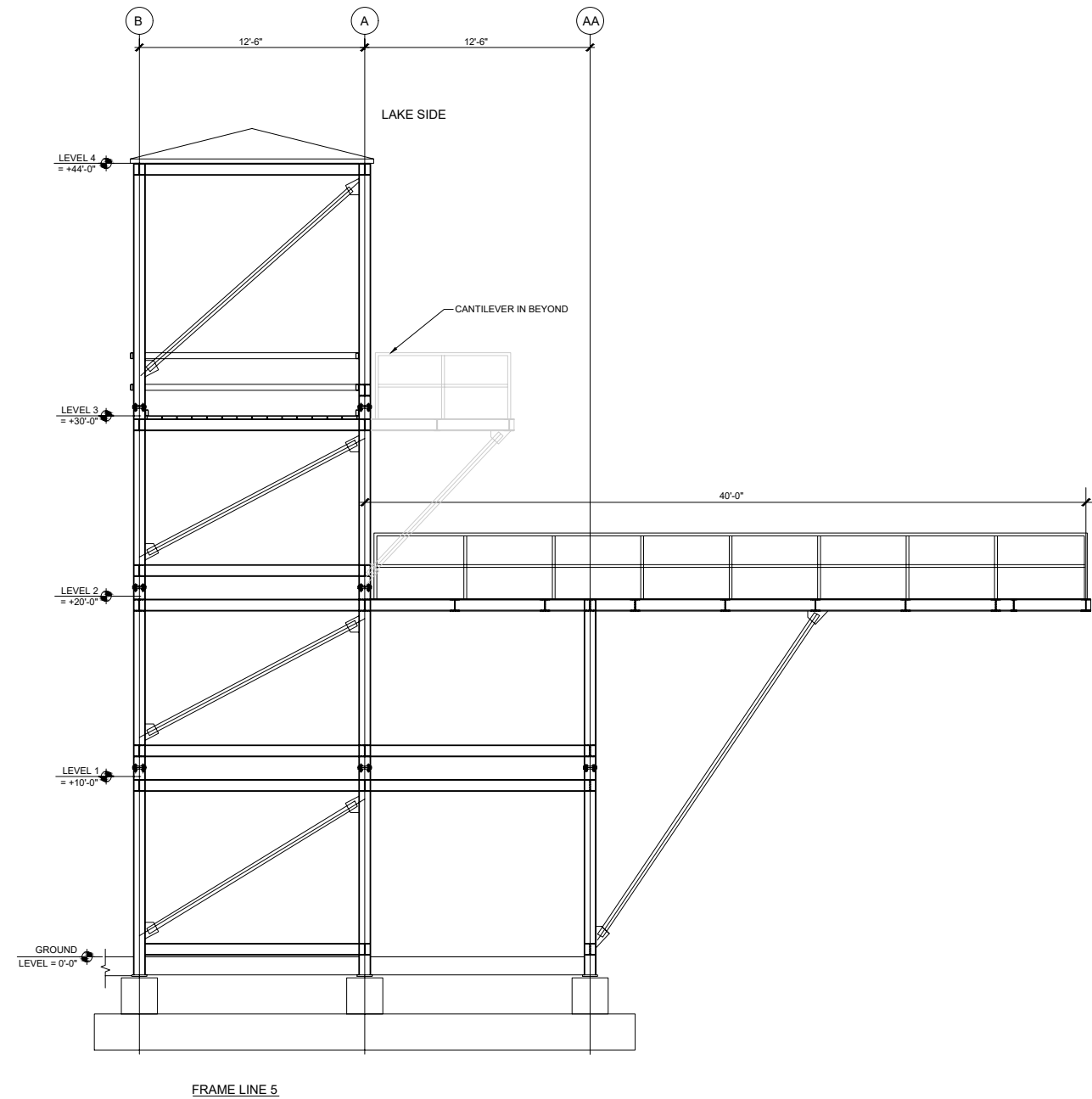
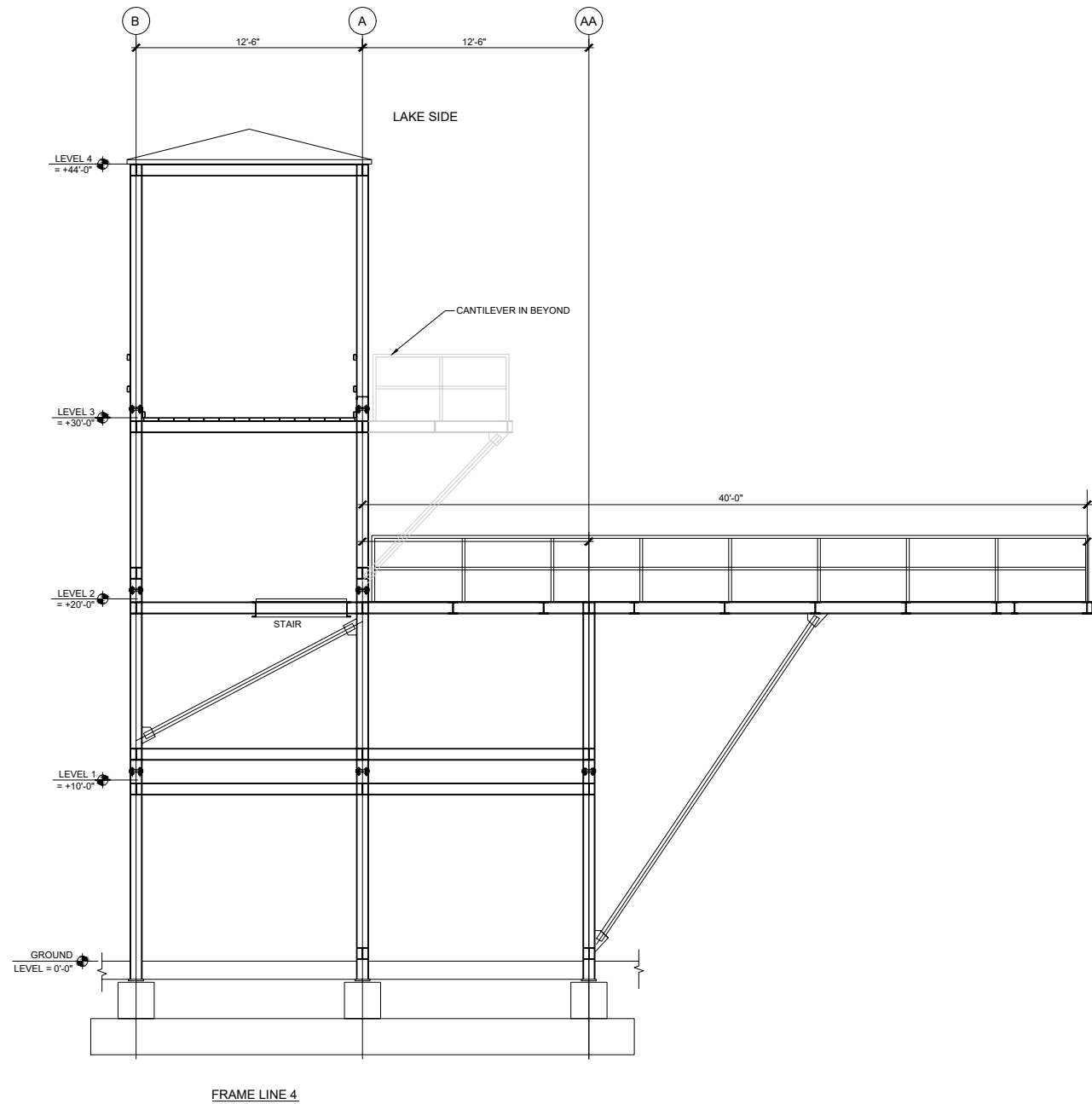


DRAWING TITLE
**SECTION AT
FRAME LINES**

DRAWING NO.

S2.2

Figure 16. Lateral Drift Tower (LOD-2) schematics, Page 9.



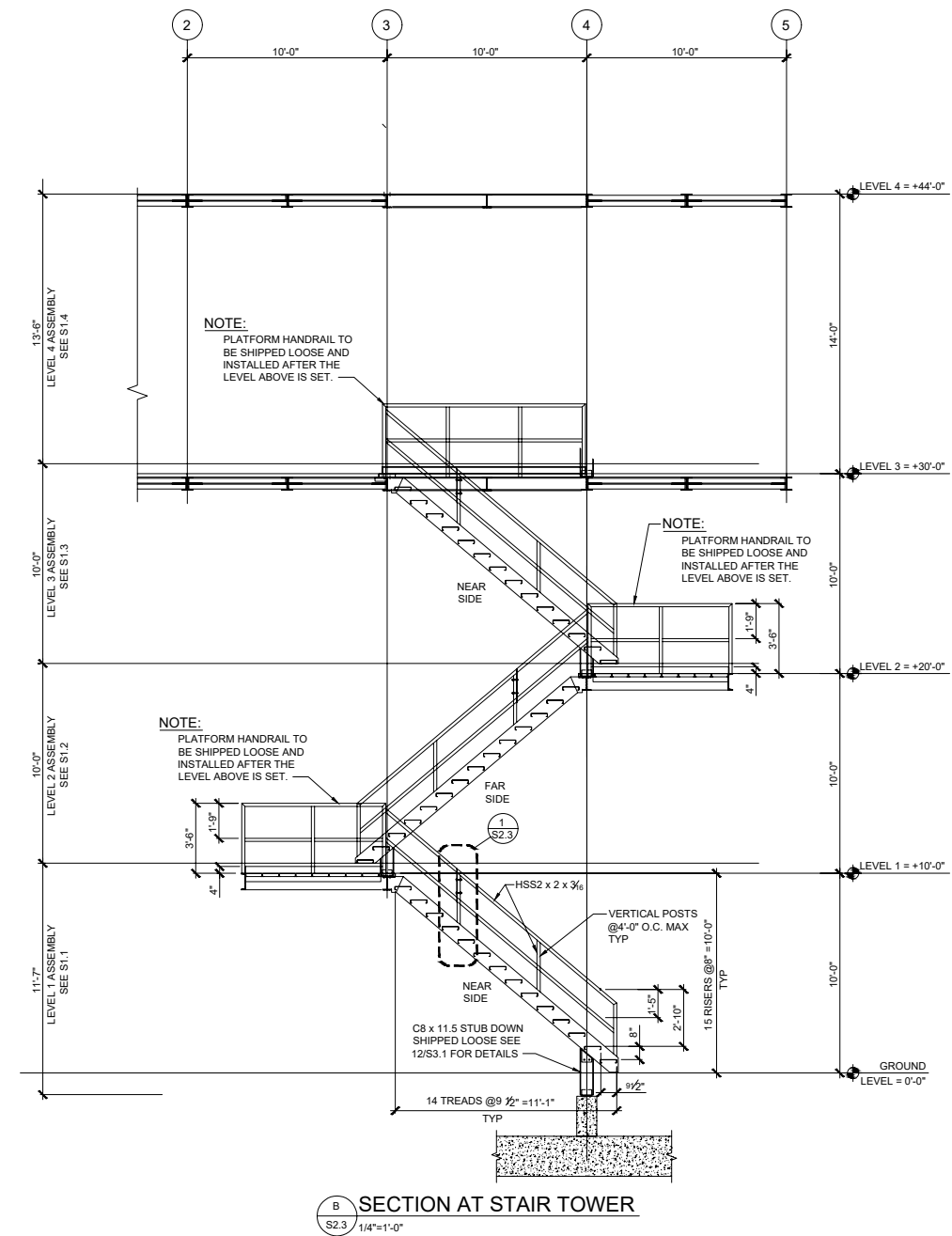
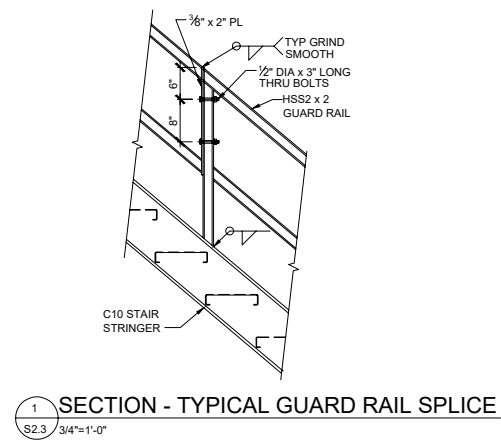
SECTION AT FRAME LINES
 S2.2.1 1/4"=1'-0"



DRAWING TITLE
**SECTION AT
 FRAME LINES**

DRAWING NO.
S2.2.1

Figure 17. Lateral Drift Tower (LOD-2) schematics, Page 10.



DRAWING TITLE
SECTION AT STAIR TOWER

DRAWING NO.
S2.3

Figure 18. Lateral Drift Tower (LOD-2) schematics, Page 11.

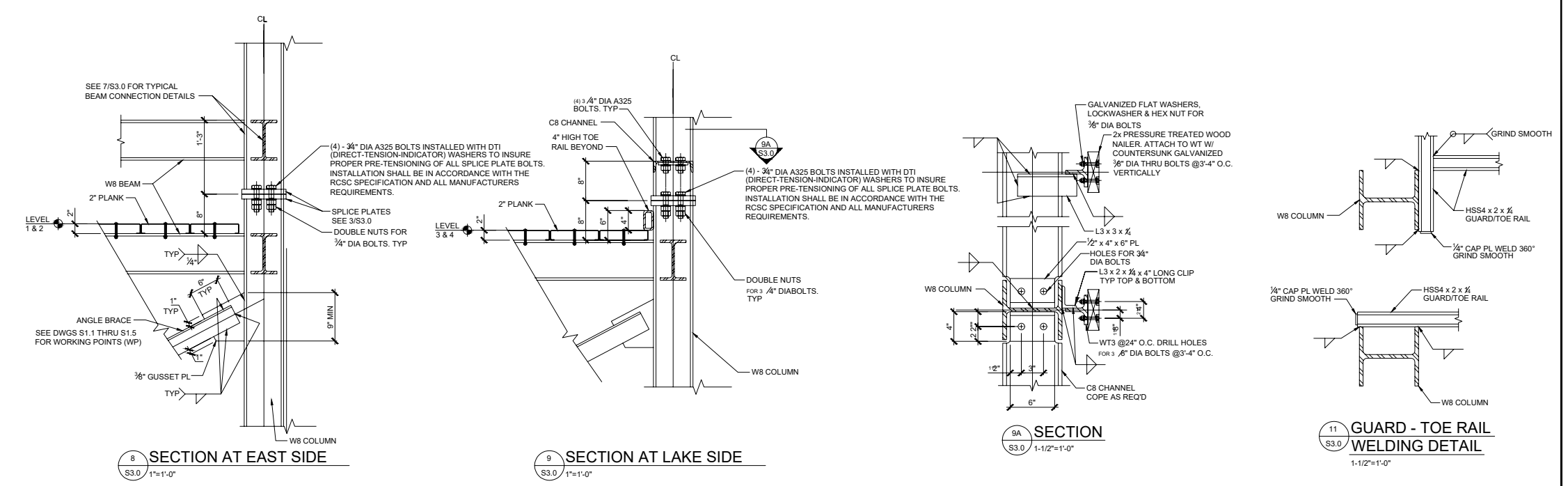
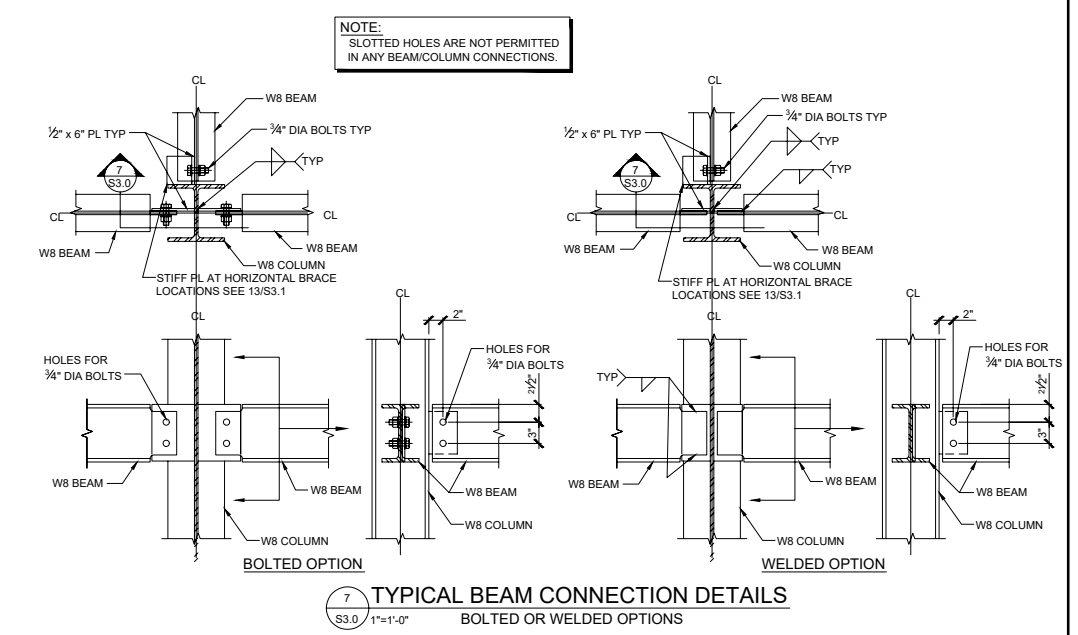
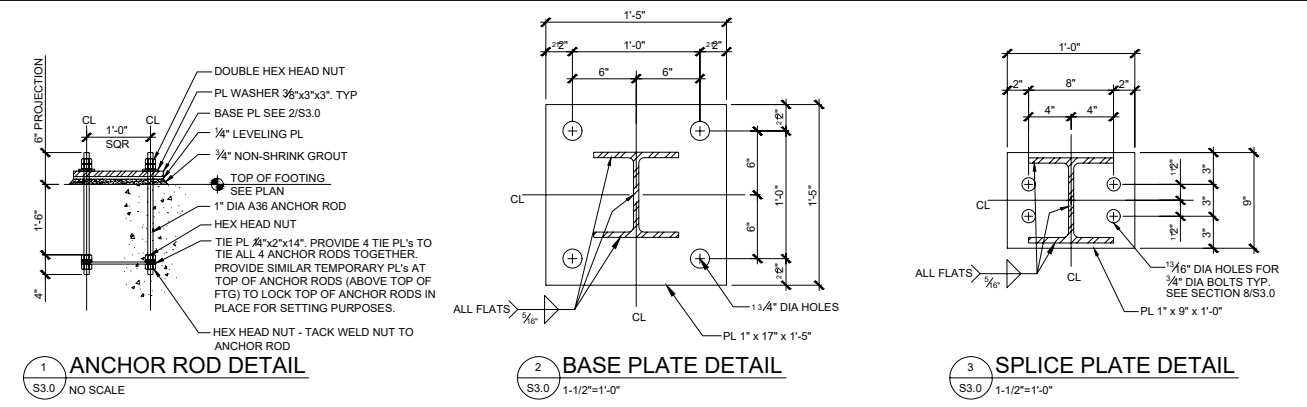
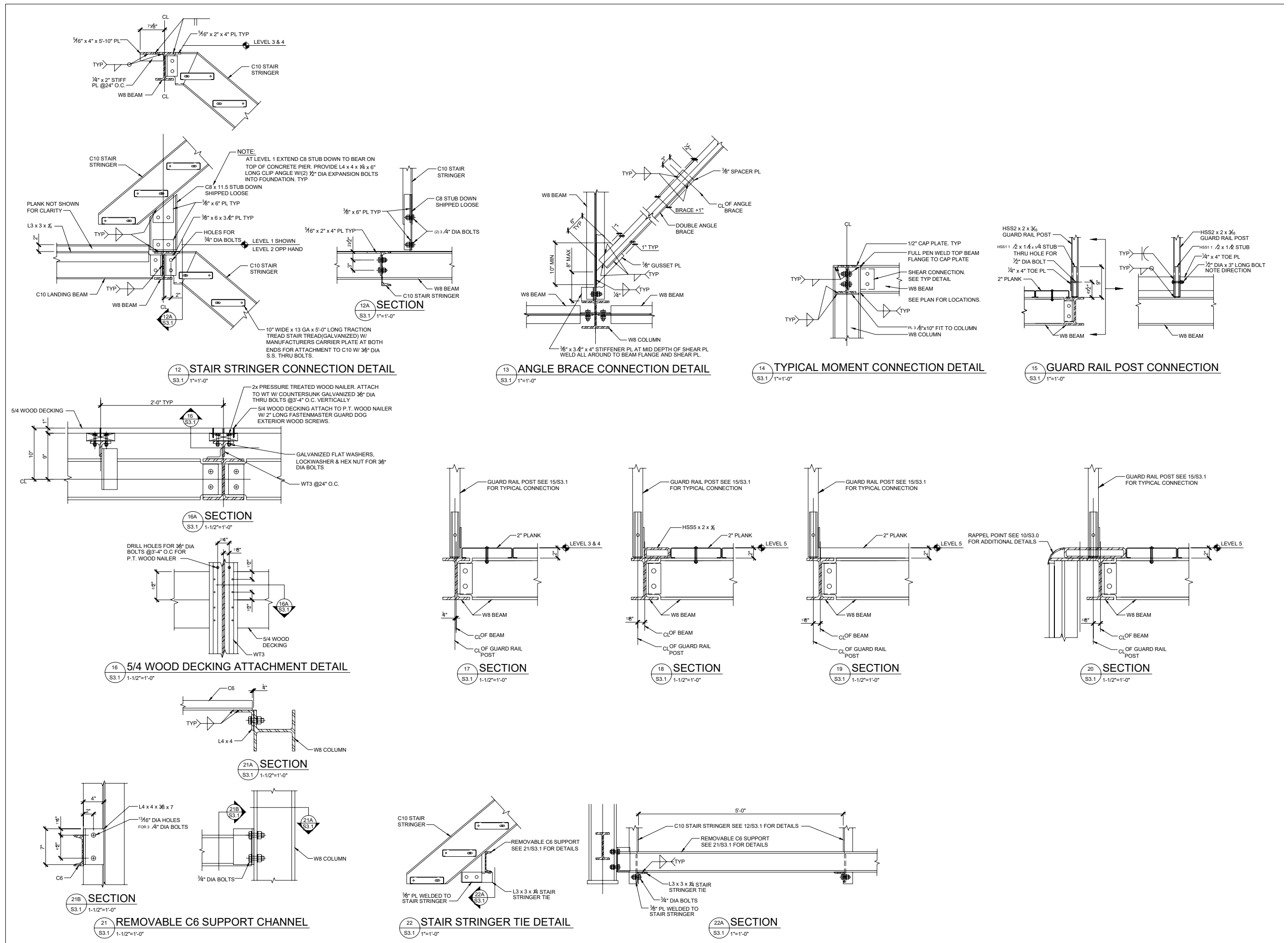


Figure 19. Lateral Drift Tower (LOD-2) schematics, Page 12.

DRAWING TITLE
DETAILS

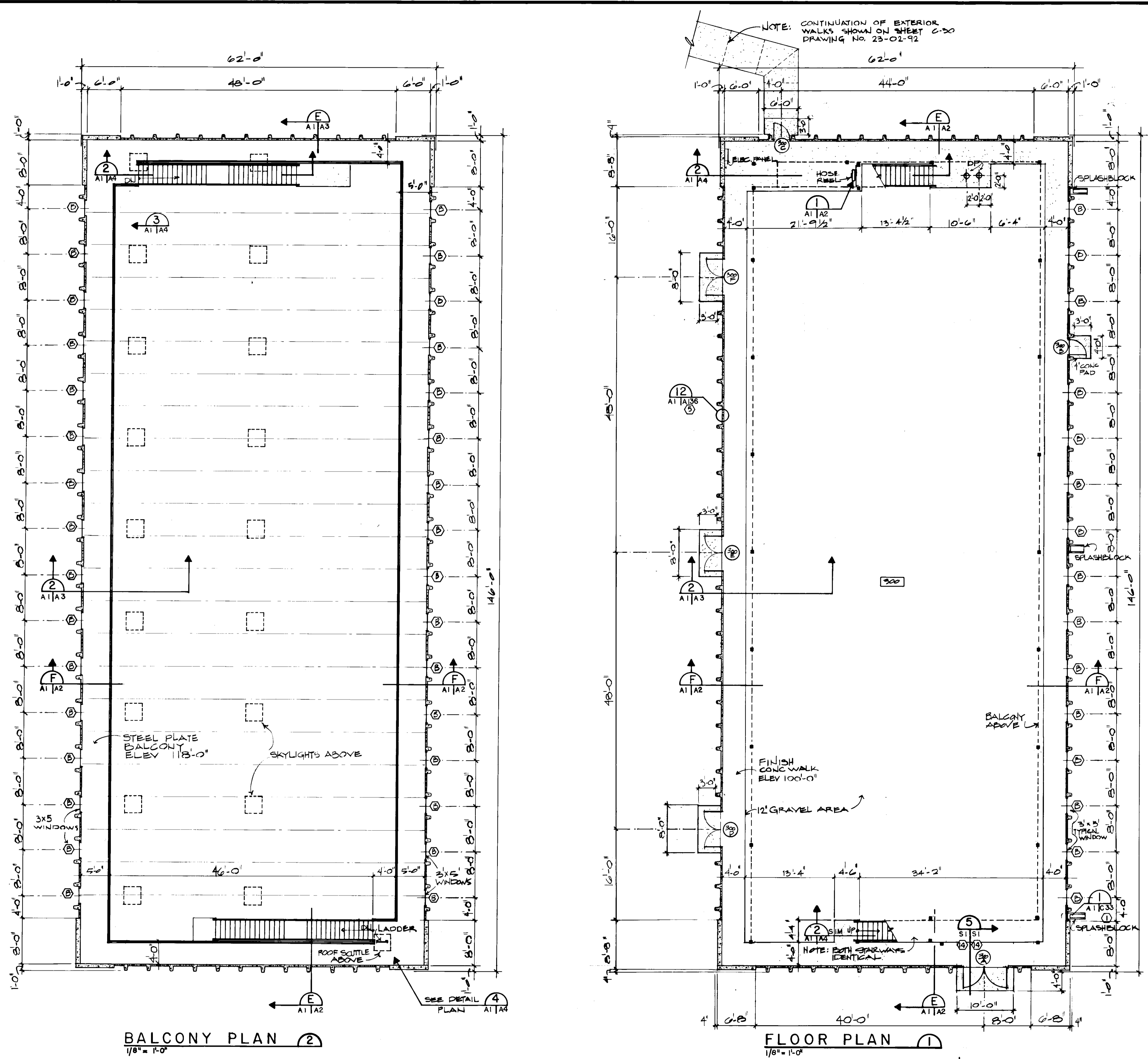
DRAWING NO.
S3.0



DRAWING TITLE
DETAILS

DRAWING NO.
S3.1

Figure 20. Lateral Drift Tower (LOD-2) schematics, Page 13.



GENERAL NOTES

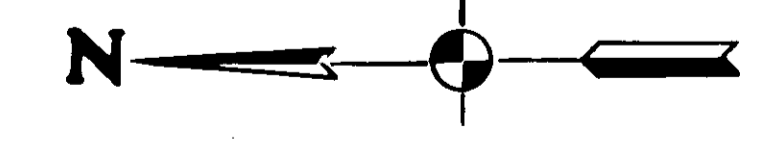
- 1 FINISH FLOOR ELEVATIONS NOTED AS +100'-0" ARE EQUIVALENT TO MEAN SEA LEVEL ELEVATIONS NOTED ON SITE PLAN.
- 2 SEE SH A134 DWG NO. 17-12-01 FOR DOOR & FINISH SCHEDULES.
- 3 SEE SH C-30 DWG NO. 23-02-92 FOR SITE PLAN.
- 4 MECHANICAL, ELECTRICAL AND PLUMBING FIXTURE AND EQUIPMENT LOCATIONS ARE TO BE COORDINATED WITH ARCHITECTURAL DRAWINGS.

DRAWING NUMBER CROSS REFERENCE LEGEND

①	23-02-92	⑩	17-23-01	⑲	17-22-05
②	4-05-92	⑪	17-23-02	⑳	17-21-01
③	20-00-92	⑫	17-23-03	㉑	17-21-02
④	21-03-92	⑬	17-23-05	㉒	17-21-03
⑤	17-12-01	⑭	17-22-01	㉓	17-21-04
⑥	17-12-02	⑮	17-22-02	㉔	17-21-05
⑦	17-12-03	⑯	17-22-03	㉕	21-03-92
⑧	17-12-05				

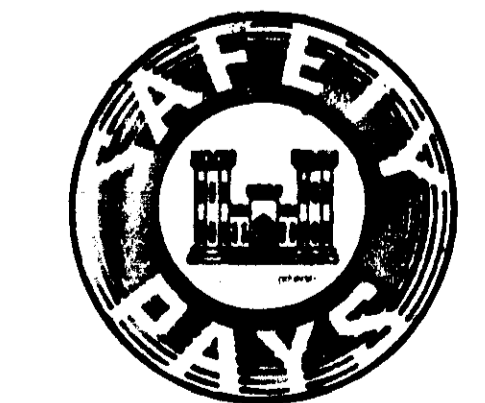
BALCONY PLAN (2)
1/8" = 1'-0"

FLOOR PLAN (1)
1/8" = 1'-0"



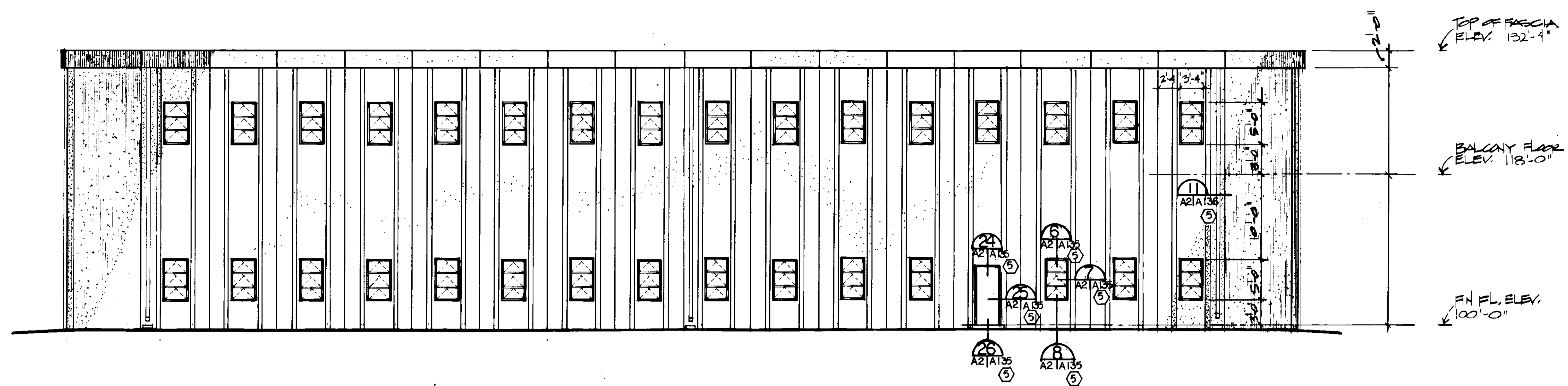
SCALE 1/8" INCH = 1 FOOT
12' 0" 5' 10' 15'

GRAPHIC SCALES

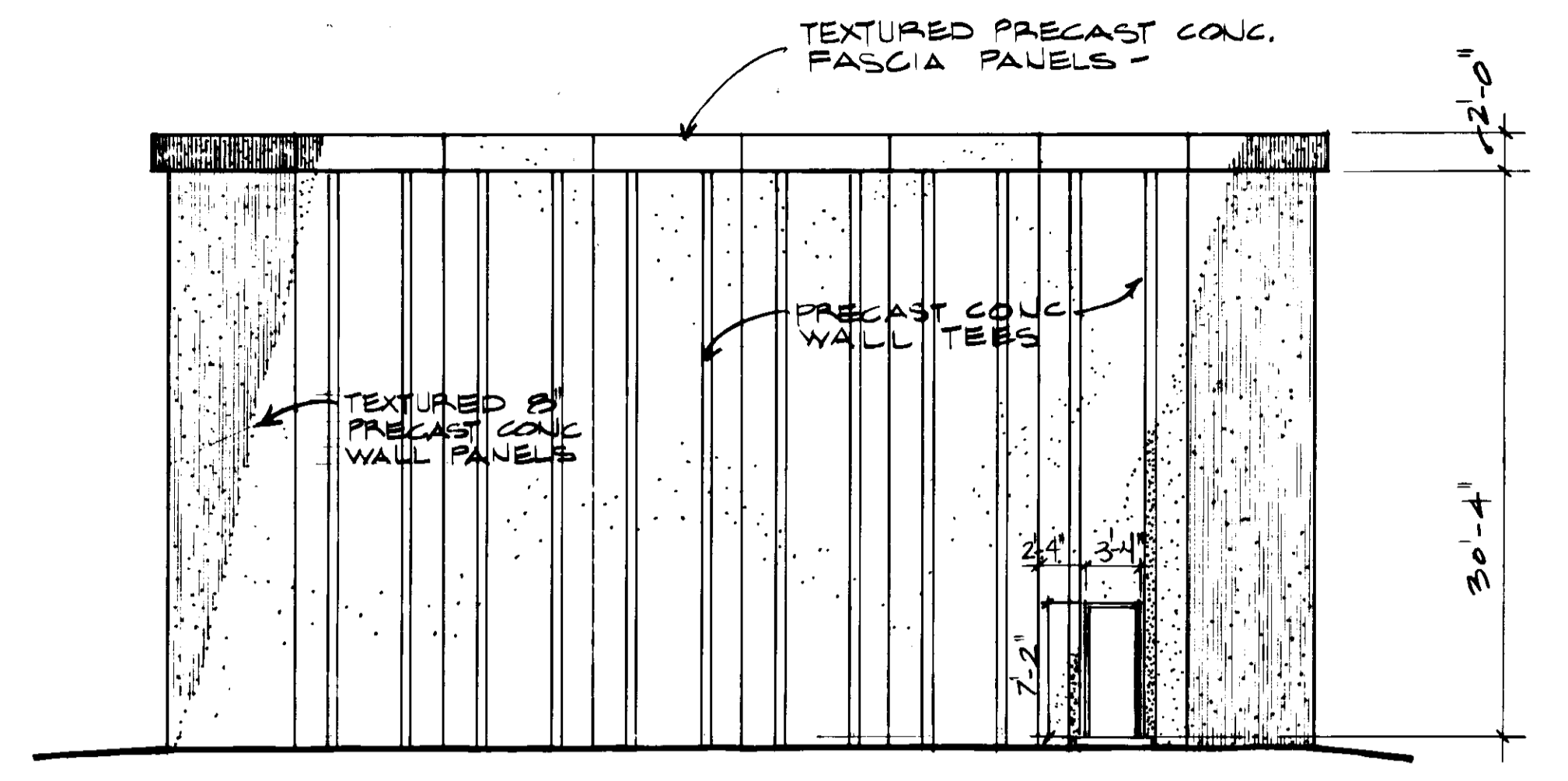


DATE	DESCRIPTION	MADE	APPROV
REVISIONS			
OLIVER AND HELLGREN ARCHITECTS DENVER COLORADO		U. S. ARMY ENGINEER DISTRICT OMAHA COLORADO	
DESIGNED BY: WKO		UNITED STATES AIRFORCE ACADEMY COLORADO	
DRAWN BY: MO/EEM		AIRMANSHIP TRAINING FACILITY	
CHECKED BY: WKO		PARA-TRAINING AIDS BLDG 9204	
SUBMITTED BY: WKO		FLOOR PLAN	
RECOMMENDED BY:		APPROVED:	DATE: FEB. 1993
ARCHITECT-ENGINEER		SHIEF, ENGINEERING DIVISION	SCALE: DATA 45 83 80043
APPROVED:		DRAWING NUMBER: 17-22-01	
COL. D. E. DISTRICT ENGINEER		SHEET A1	

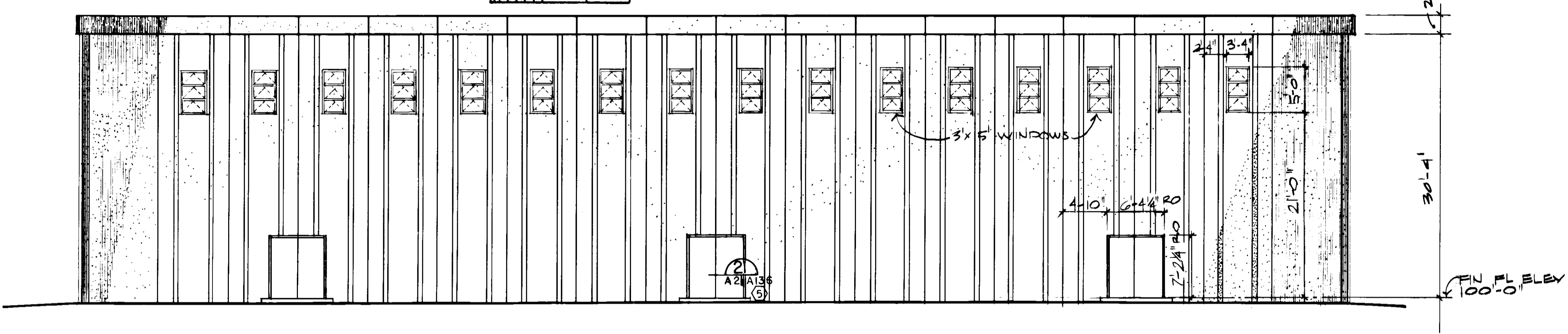
Figure 21. Building 9204 schematics, Page 1. Proposed Emergency Parachute Building (LOD-3) designs will be based off Building 9204.



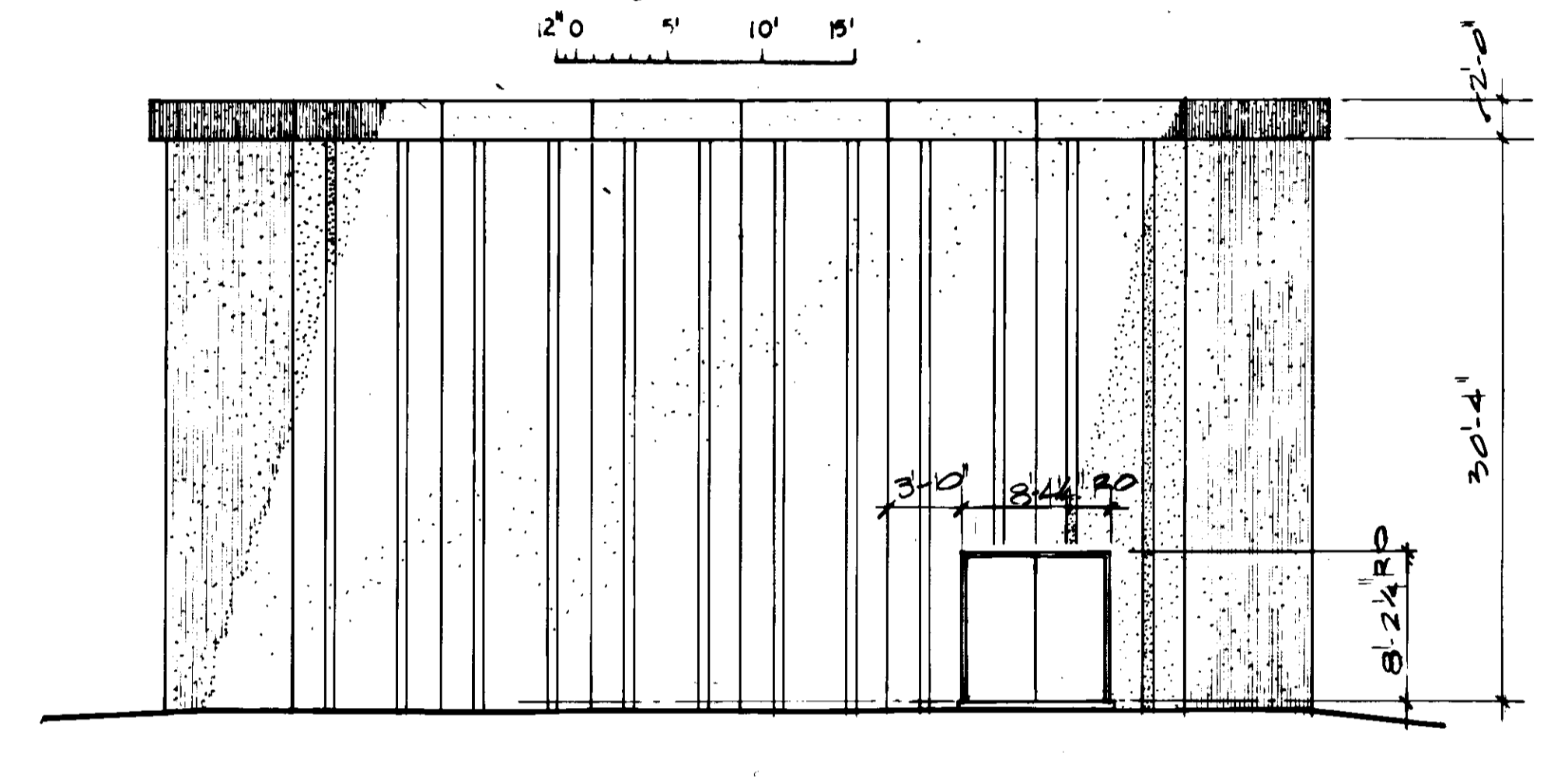
SOUTH ELEVATION (A)
 1/8" = 1'-0"
 SCALE 1/8" INCH = 1 FOOT
 12' 0" 5' 10' 15'



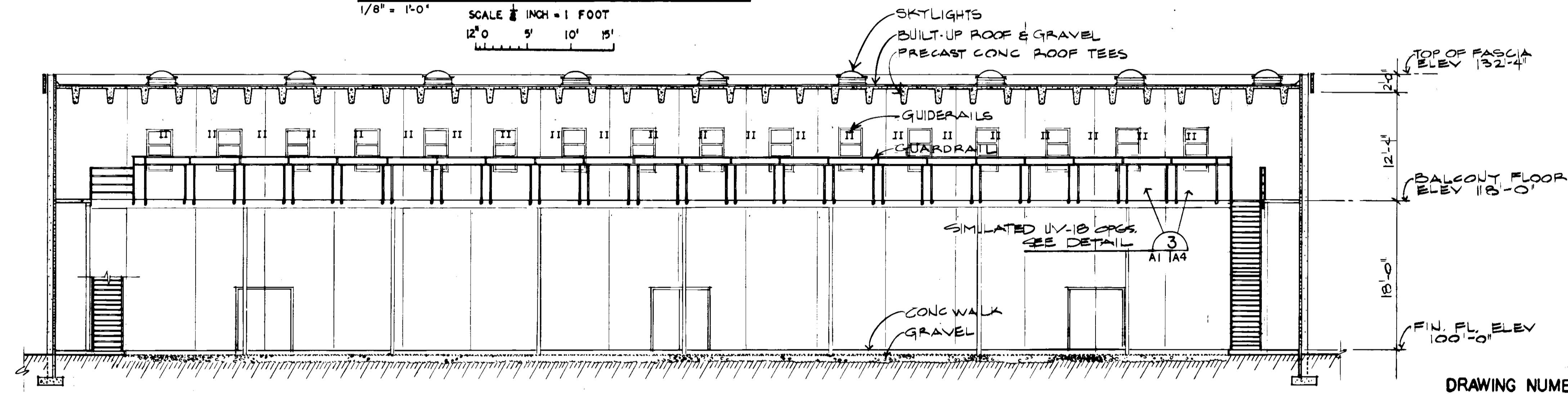
EAST ELEVATION (B)
 1/8" = 1'-0"
 SCALE 1/8" INCH = 1 FOOT
 12' 0" 5' 10' 15'



NORTH ELEVATION (C)
 1/8" = 1'-0"
 SCALE 1/8" INCH = 1 FOOT
 12' 0" 5' 10' 15'



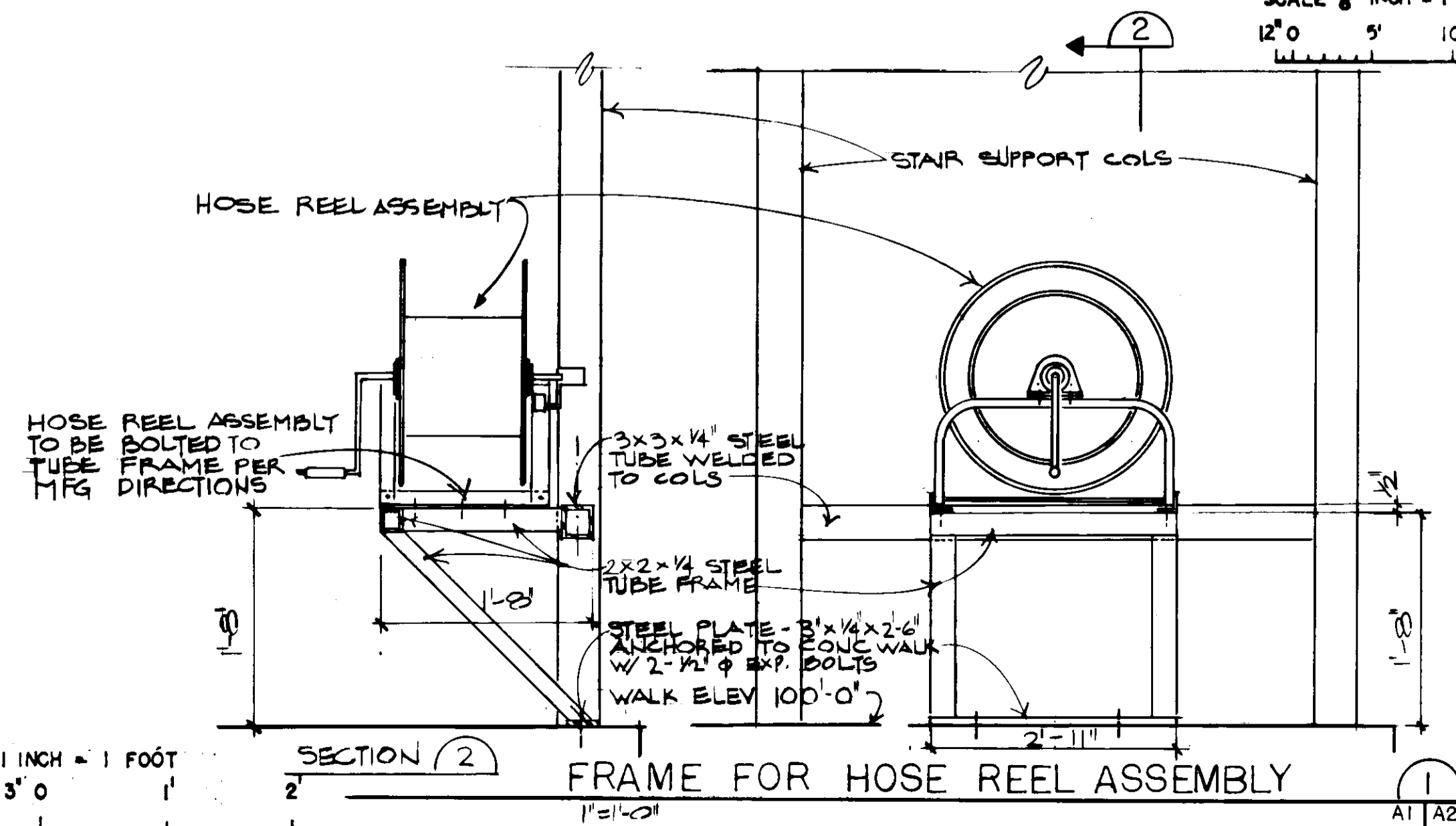
WEST ELEVATION (D)
 1/8" = 1'-0"
 SCALE 1/8" INCH = 1 FOOT
 12' 0" 5' 10' 15'



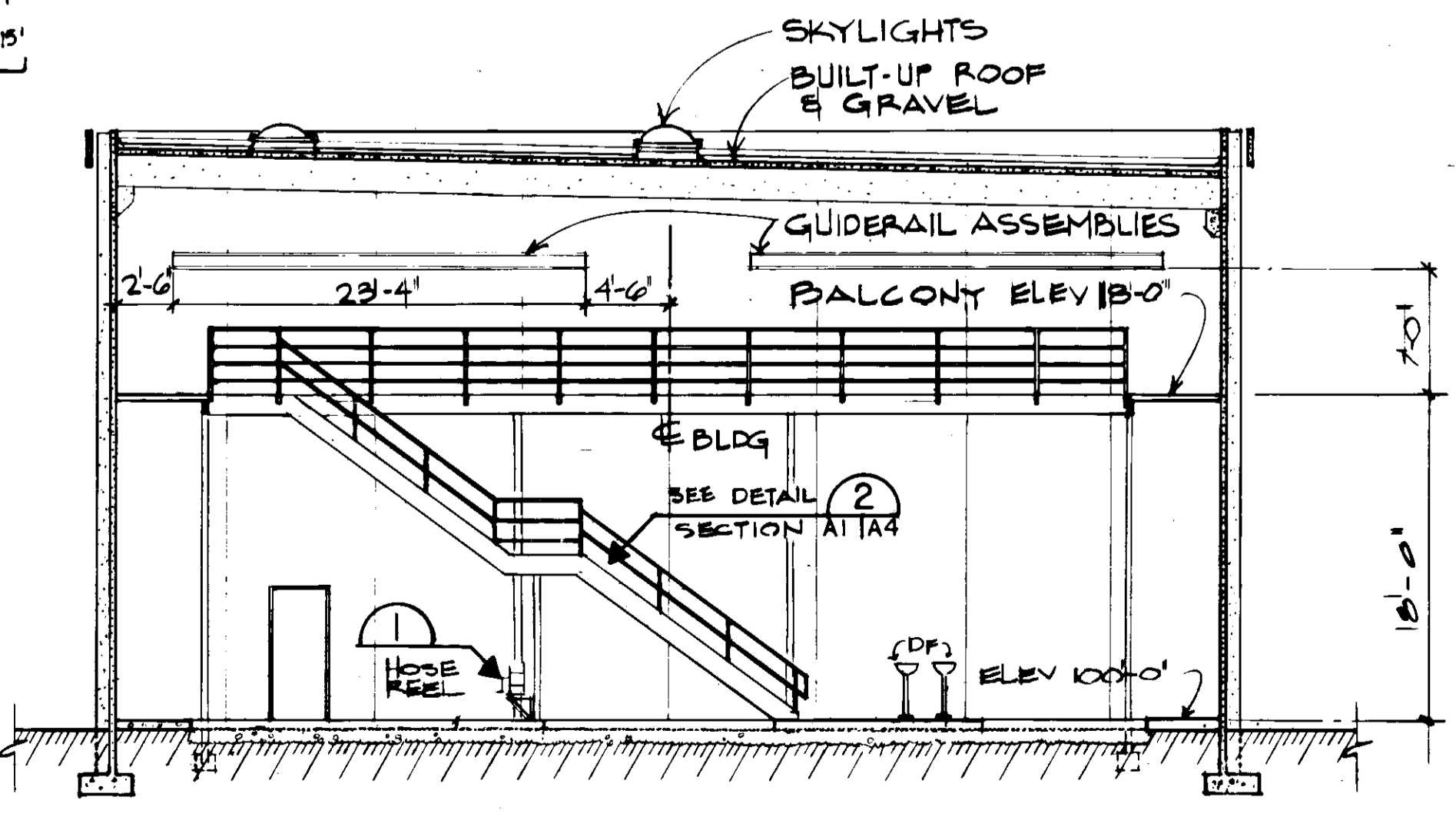
EAST-WEST CROSS SECTION (E)
 1/8" = 1'-0"
 SCALE 1/8" INCH = 1 FOOT
 12' 0" 5' 10' 15'

DRAWING NUMBER CROSS REFERENCE LEGEND

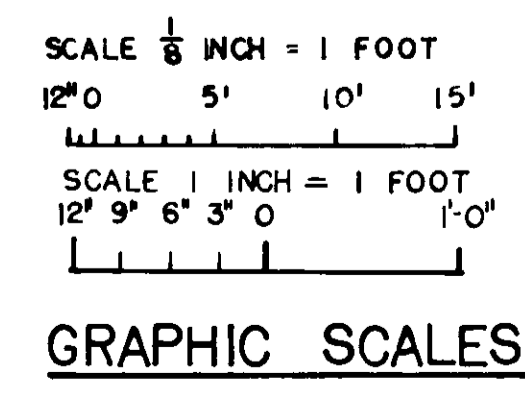
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② 4-05-92	⑩ 17-23-02	⑱ 17-21-01
③ 20-00-92	⑪ 17-23-03	⑲ 17-21-02
④ 21-03-92	⑫ 17-23-05	⑳ 17-21-03
⑤ 17-12-01	⑬ 17-22-01	㉑ 17-21-04
⑥ 17-12-02	⑭ 17-22-02	㉒ 17-21-05
⑦ 17-12-03	⑮ 17-22-03	㉓ 21-03-92
⑧ 17-12-05		



SCALE 1/8" INCH = 1 FOOT
 12' 9" 6" 3" 0"

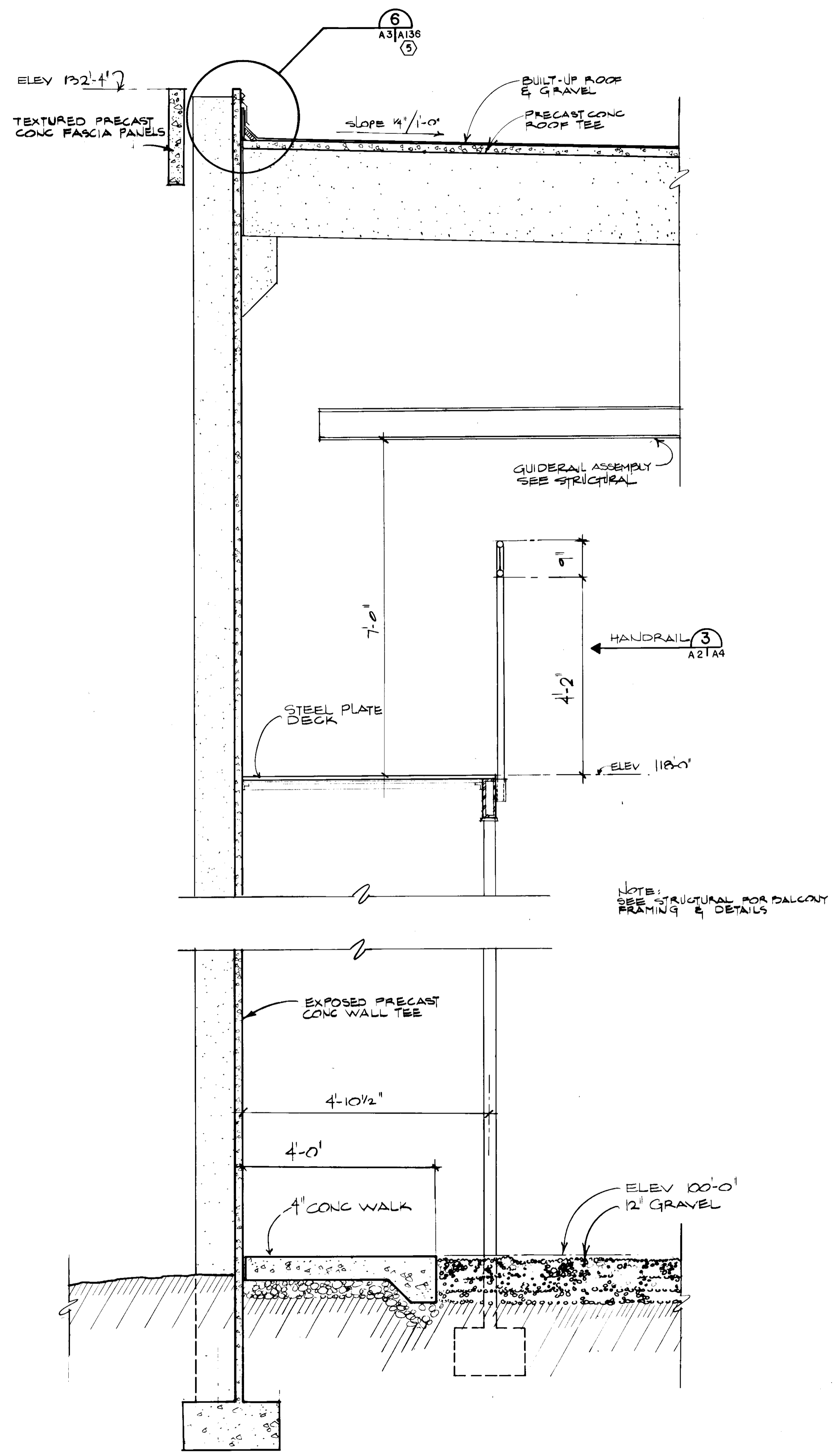


NORTH-SOUTH CROSS SECTION (F)
 1/8" = 1'-0"

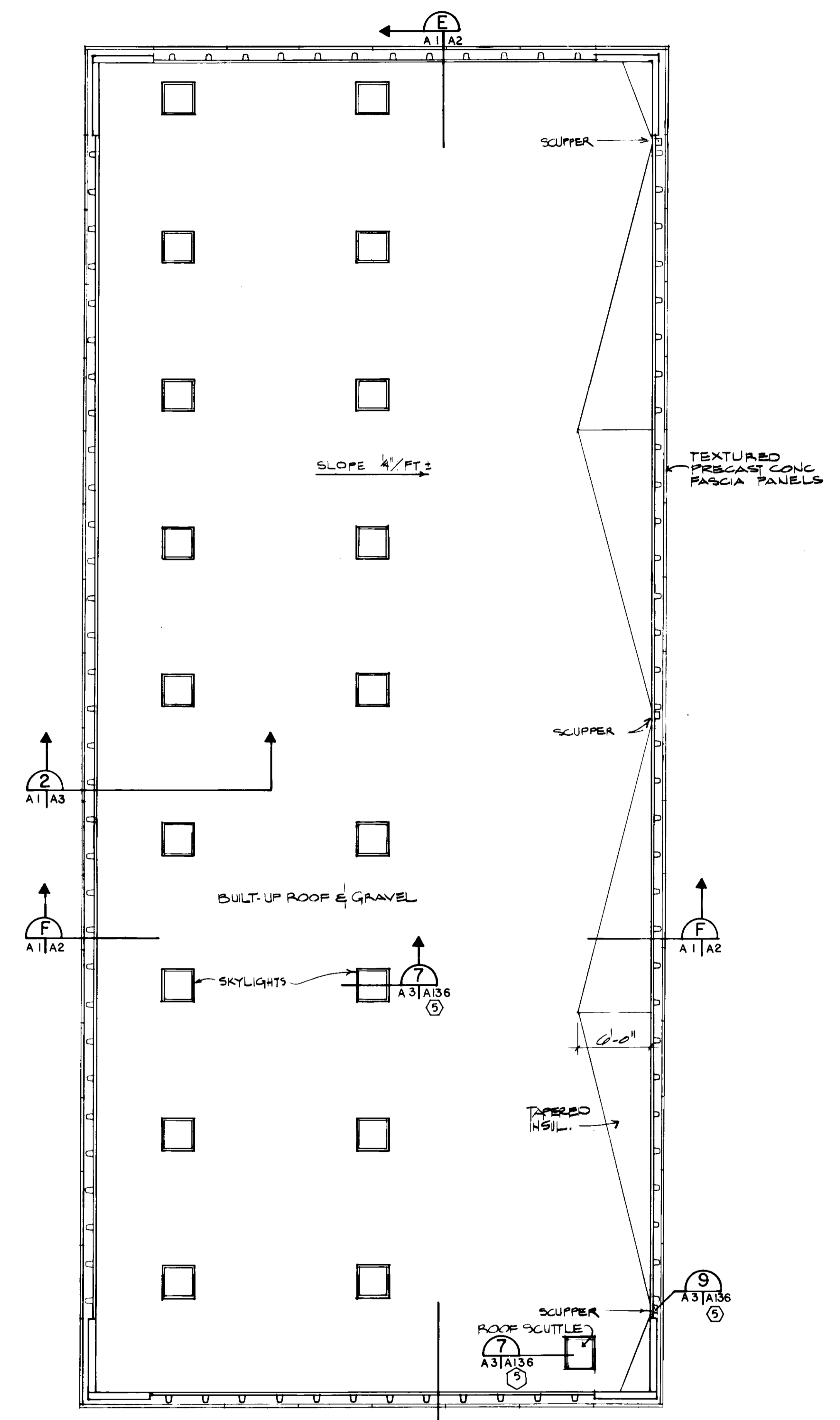


DATE	DESCRIPTION	MADE	APPROV
REVISIONS			
OLIVER AND HELLGREN ARCHITECTS DENVER COLORADO		U. S. ARMY ENGINEER DISTRICT OMAHA COLORADO	
DESIGNED BY: WKO		USAF ACADEMY COLORADO	
CHECKED BY: BH/EEM		AIRMANSIP TRAINING FACILITY	
SUBMITTED BY: WKO		PARA-TRAINING AIDS BLDG 9204	
ARCHITECT-ENGINEER		ELEVATIONS & SECTIONS	
APPROVED:	DATE: FEB. 1963	SHEET NO. 17-22-01	
CHIEF, ENGINEERING DIVISION	CHIEF, ENGINEERING DIVISION	SPEC. NO. DACA 45 83 8006	
APPROVED:	DATE:	DRAWING NUMBER 17-22-01	
DR. E. E. DISTRICT ENGINEER		SHEET A 2	

Figure 22. Building 9204 schematics, Page 2. Proposed Emergency Parachute Building (LOD-3) designs will be based off Building 9204.



WALL SECTION (2)
SCALE: 3/4 INCH = 1 FOOT
12' 6" 0' 2'



ROOF PLAN
SCALE: 1/8 INCH = 1 FOOT
12' 0" 5' 10' 15'

DRAWING NUMBER CROSS REFERENCE LEGEND

① 23-02-92	⑨ 17-23-01	⑮ 17-22-05
② 4-05-92	⑩ 17-23-02	⑯ 17-21-01
③ 20-00-92	⑪ 17-23-03	⑰ 17-21-02
④ 21-03-92	⑫ 17-23-05	⑱ 17-21-03
⑤ 17-12-01	⑬ 17-22-01	⑲ 17-21-04
⑥ 17-12-02	⑭ 17-22-02	⑳ 17-21-05
⑦ 17-12-03	⑰ 17-22-03	㉑ 21-03-92
⑧ 17-12-05		

DATE	DESCRIPTION	MADE	APPRO
REVISIONS			
OLIVER AND HELLGREN ARCHITECTS DENVER COLORADO		U. S. ARMY ENGINEER DISTRICT OMAHA CORPS OF ENGINEERS OMAHA, NEBRASKA	
DESIGNED BY: WKO	USAF ACADEMY	COLORADO	
DRAWN BY: ME/CEM	AIRMANSHIP TRAINING FACILITY		
CHECKED BY: WKO	PARA-TRAINING AIDS BLDG 9204		
ROOF PLAN & WALL SECTIONS		APPROVED:	DATE: FEB. 1983
CHIEF, DESIGN BRANCH	CHIEF, ENGINEERING DIVISION	SCALE:	SPEC. NO. DACA 43 83 80043
APPROVED:		DRAWING NUMBER	17-22-01
COL. G. E. DISTRICT ENGINEER		SHEET A3	3204-3

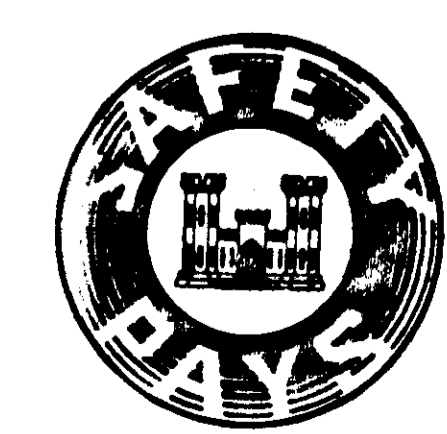


Figure 23. Building 9204 schematics, Page 3. Proposed Emergency Parachute Building (LOD-3) designs will be based off Building 9204.

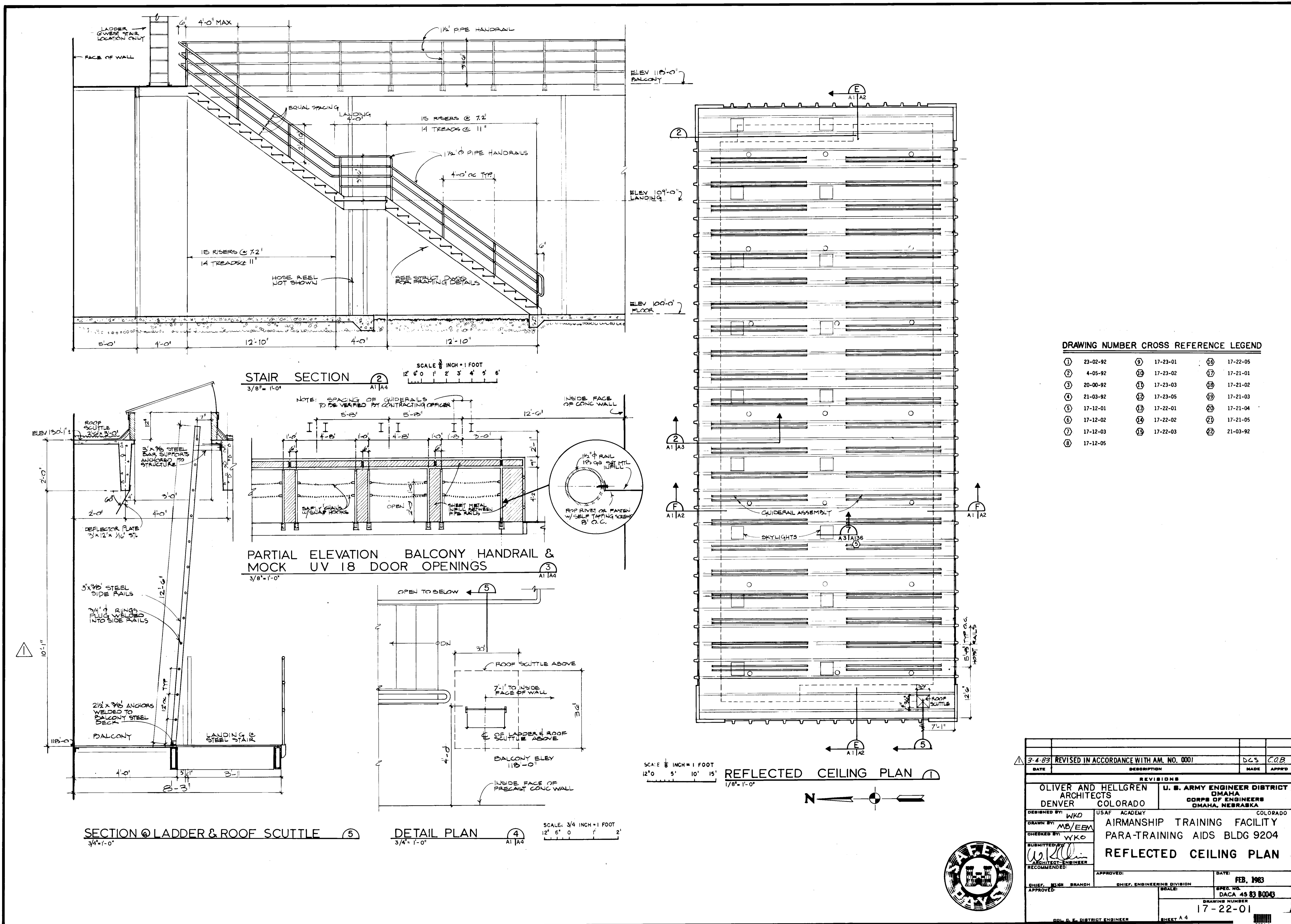


Figure 24. Building 9204 schematics, Page 4. Proposed Emergency Parachute Building (LOD-3) designs will be based off Building 9204.



History Colorado

Erin Manning
Deputy Director
10th Civil Engineer Squadron
U.S. Air Force
8120 Edgerton Drive, Suite 40
U.S. Air Force Academy, CO 80840

RE: U.S. Air Force Academy Combat Survival Training Facilities (HC# 83274)

Dear Ms. Manning,

Thank you for your correspondence received on October 16, 2023 continuing consultation for the above referenced undertaking under Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations 36 CFR 800.

Based on the documentation provided, we agree that your finding of no adverse effect [36 CFR 800.5(d)(1)] to historic properties is appropriate for the subject undertaking.

Should unidentified archaeological resources be discovered in the course of the project, work must be interrupted until the resources have been evaluated in terms of the National Register eligibility criteria (36 CFR 60.4) in consultation with our office pursuant to 36 CFR 800.13. Also, should the consulted-upon scope of the work change, please contact our office for continued consultation under Section 106 of the NHPA.

We request being involved in the consultation process with the local government, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking, and with other consulting parties. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings. Please note that our compliance letter does not end the 30-day review period provided to other consulting parties.

Thank you for the opportunity to comment. If you have any questions, please contact Matthew Marques, Section 106 Compliance Manager, at (303) 866-4678, or matthew.marques@state.co.us.

Sincerely,

Dr. Holly Kathryn

Norton

Dawn DiPrince
State Historic Preservation Officer



Digitally signed by Dr. Holly
Kathryn Norton

Date: 2023.10.30 09:22:58 -06'00'

**APPENDIX D:
NATIVE AMERICAN CONSULTATION**

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DEPARTMENT OF THE AIR FORCE
10TH CIVIL ENGINEER SQUADRON
USAF ACADEMY COLORADO

Ms. Erin M. Manning
Deputy Director
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy CO 80840-2400

Dear Tribal Historic Preservation Officers

The United States Air Force Academy (USAFA) proposes to construct training facilities in support of its Combat Survival Training (CST) program. The project is an undertaking subject to review under National Historic Preservation Act (NHPA) Section 106 process. We seek your concurrence on our recommendations that the project will result in “no adverse effect” to Historic Properties as described in 36 CFR § 800.5(a)(1).

Attachment 1 provides details of the proposed undertaking, discussion of the proposed Area of Potential Effects (APE), and results of identification and assessment of the potential for the undertaking to affect Historic Properties. Two different potential construction alternatives are covered by the APE although USAFA leadership eventually will select only one of those alternatives for actual construction. Careful examination of information from previous inventories for Historic Properties was sufficient for purposes of planning, i.e., no new fieldwork was conducted. There are no known tribally significant resources within the APE. The small number of Historic Properties in the APE are not eligible for listing in the National Register of Historic Places. There will be no adverse effects to proposed USAFA Campus District 5EP.595. Inadvertent discoveries are extremely unlikely for this project. However, your office would be immediately notified if any were encountered and consulted upon following provisions of 36 CFR Part 800.

Please submit your comments to the above address or via email. We respectfully request a reply within 30 days of receiving the consultation package. The parties consulted on this matter are depicted by Attachment 2. This proposed undertaking is associated with a National Environmental Policy Act (NEPA) environmental assessment. Should your tribe wish to be consulted also under the NEPA planning process, please notify us on that matter. For any questions, please contact Mr. Erwin Roemer, 10 CES/CENP, USAFA Cultural Resources Manager, at erwin.roemer@us.af.mil, or at (646) 673-4642. Thank you for your review and assistance on this matter.

Very Respectfully

MANNING.ERIN.M Digitally signed by
ARIE.1047632192 MANNING.ERIN.MARIE.10476321
92
Date: 2023.07.21 14:41:18 -06'00'
ERIN M. MANNING, GS-14, USAF

2 Attachments:

1. USAFA Cultural Resources Section 106 Project Review
2. Consulting/Interested Parties

Attachment 1 contains sensitive cultural resources data. A redacted version of Attachment 1 is available upon request.

Attachment 2
USAFA
Consulting Parties

Apache Tribe of Oklahoma
Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation
Cheyenne and Arapaho Tribes of Oklahoma
Cheyenne River Sioux Tribe
Comanche Nation of Oklahoma
Crow Nation
Eastern Shoshone Tribe of the Wind River Reservation
Flandreau Santee Sioux Tribe of South Dakota
Fort Belknap Indian Community
Fort Sill Apache Tribe
Jicarilla Apache Tribe
Kiowa Tribe of Oklahoma
Lower Brule Sioux Tribe of the Lower Brule Reservation
Mescalero Apache Tribe
Navajo Nation
Northern Arapaho Tribe
Northern Cheyenne Tribe
Oglala Sioux Tribe
Pawnee Nation of Oklahoma
Pueblo de Cochiti
Pueblo of Picuris
Pueblo of Santa Ana (only for new ground disturbance or pre-contact sites or materials)
Pueblo of Santa Clara
Pueblo of Taos
Pueblo of Zuni
Rosebud Sioux Tribe
San Ildefonso Pueblo (Only for NAGPA type consultations)
Santee Sioux Nation
Southern Ute Indian Tribe
Spirit Lake Nation
Standing Rock Sioux Tribe
Three Affiliated Tribes of the Mandan, Hidatsa, and Arikara Nation
Ute Indian Tribe of the Uintah and Ouray Reservation
Ute Mountain Ute Tribe
Yankton Sioux Tribe

Colorado SHPO

From: [Richard M. Begay](#)
To: [SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP](#); [ROEMER, ERWIN JR CIV USAF USAFA 10 CES/CENP](#)
Cc: [Timothy Begay](#)
Subject: [Non-DoD Source] RE: Government to Government Section 106 Consultation Request for Comments-Construct Permanent Combat Survival Training Facilities
Date: Saturday, July 22, 2023 12:08:02 PM

Dear Sirs,

I reviewed the information for the proposed undertaking, construction of permanent combat survival training facilities, and concur with the USAFA's determination of No Adverse Effect. Please proceed without further consultation with the Navajo Nation.

Thank you,
Richard M. Begay, THPO
Navajo Nation

-----Original Message-----

From: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP <bernard.schriever.ctr@us.af.mil>

Sent: Friday, July 21, 2023 4:29 PM

To: coltenarchambeau@gmail.com; tknight@utemountain.org; robertflyinghawk@gmail.com; maneul.heart@utemountain.org; marybaker@mhanation.com; ademaray@mhanation.com; Betsy Chapoose <BetsyC@utetribe.com>; chairmanfox@mhanation.com; schapoose@utetribe.com; KjGraywater@spiritlakenation.com; douglasy@spiritlakenation.com; j.eagle@standingrock.org; cwhitemountain@standingrock.org; sunagpra@southernute-nsn.gov; ssn.thpo@gmail.com; alonzo.denney@ssndakota.com; benjamin.young@rst-nsn.gov; benjamin1011young@gmail.com; rst.thpo@rst-nsn.gov; scott.herman@rst-nsn.gov; kdongoske@gmail.com; arden.kucate@ashiwi.org; ddnaranjo@santaclarapueblo.org; bchavarria@santaclarapueblo.org; governor@santaclarapueblo.org; rima@taospueblo.com; warchief@taospueblo.com; governor@taospueblo.com; tribalsecretary@picurispueblo.org; Cecilia Shields <tribal.interpreter@picurispueblo.org>; Jayson A Romero <jayson.romero@cochiti.org>; governor@cochiti.org; jreed@pawneenation.org; jnelson@pawneenation.org; gary.lafranier@cheyennenation.com; serena.wetherelt@cheyennenation.com; fstarcomesout@oglala.org; Thomas Brings <t.brings@oglala.org>; Crystal C'Bearing <crystal.cbearing@northernarapaho.com>; Crystal Reynolds <crystal.reynolds@northernarapaho.com>; benridgley007@gmail.com; Lloyd.goggles@northernarapaho.com; Richard M. Begay <r.begay@navajo-nsn.gov>; Dr. Buu V. Nygren <president.buunygren@navajo-nsn.gov>; holly@mathpo.org; clyde.estes@lowerbrule.net; Emartinez@mescaleroapachetribe.com; janthpo@gmail.com; evelarde@janadmin.com; Curator@kiowatribe.org; THPO@kiowatribe.org; LSpottedBird@kiowatribe.org; THPO Compliance <thpocompliance@ftbelknap.org>; jeffrey.stiffarm@ftbelknap.org; Michael.darrow@fortsillapache-nsn.gov; Naomi.hartford@fortsillapache-nsn.gov; fsat@fortsillapache-nsn.gov; jmann@easternshoshone.org; Receptionist@easternshoshone.org; garrie.killsahundred@fsst.org; tony.reider@fsst.org; Theodore Villicana <theodore.villicana@comanchenation.com>; Martina.Minthorn@comanchenation.com; mark.woommavovah@comanchenation.com; Aaron Brien <Aaron.brien@crow-nsn.gov>; Elizabeth Old Chief <Elizabeth.OldChief@crow-nsn.gov>; chrednose@c-a-tribes.org; mbear@c-a-tribes.org; rwassana@c-a-tribes.org; Tashina.crstpres@outlook.com; stevev.crstpres@outlook.com; apacheculture510@yahoo.com; atcp_crystal@yahoo.com; durellcooper05@gmail.com; Dyan Youpee <d.youpee@fortpecktribes.net>; fazure@fortpecktribes.net; monica.murrell@santaana-nsn.gov; Emma Filesteel <emma.filesteel@ftbelknap.org>; boydgourneau@yahoo.com

Cc: ROEMER, ERWIN JR CIV USAF USAFA 10 CES/CENP <erwin.roemer@us.af.mil>

Subject: RE: Government to Government Section 106 Consultation Request for Comments-Construct Permanent Combat Survival Training Facilities

Ms. Erin M. Manning
Deputy Director
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy CO 80840-2400

Pawnee Nation

Thursday, August 17, 2023

Erwin Roemer
Cultural Resources Manager
10th Civil Engineer Squadron
US Air Force Academy
US Air Force
US Department of Defense

RE: *Proposed Construction of Training Facilities for Combat Survival Training
US Air Force Academy
Colorado Springs, El Paso County, Colorado*

The Pawnee Nation Office of Historic Preservation has received the information and materials requested for our Section 106 Review & Consultation. Consultation with the Pawnee Nation is required by Section 106 of the National Historic Preservation Act of 1966 (NHPA), and 36 CFR Part 800.

Given the information provided, you are hereby notified that the proposed project/s should not adversely affect the cultural landscape of the Pawnee Nation.

However, be advised that additional undiscovered properties could be encountered, and they must be immediately reported to us under both the National Historic Preservation Act and the Native American Graves Protection and Repatriation Act regulations.

This information is provided to assist you in complying with 36 CFR Part 800 for Section 106 Consultation procedures. Should you have questions, please do not hesitate to contact me at jreed@pawneenation.org or by phone at 918-762-2180 ext. 220. Thank you for your time and consideration.

Sincerely,



Matt Reed
Historic Preservation Officer
Pawnee Nation of Oklahoma

Historic Preservation Office
Matt Reed
Phone: 918.762.2180
E-mail: jreed@pawneenation.org
P.O. Box 470
Pawnee, Oklahoma 74058

From: [SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP](#)
To: [ROEMER, ERWIN JR CTV USAF USAFA 10 CES/CENP](#)
Subject: FW: [Non-DoD Source] 5 projects and need more info on 2 projects
Date: Wednesday, October 25, 2023 12:30:00 PM
Importance: High

From: gary.lafranier@cheyennenation.com <gary.lafranier@cheyennenation.com>
Sent: Wednesday, October 25, 2023 11:50 AM
To: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP <bernard.schriever.ctr@us.af.mil>
Subject: [Non-DoD Source] 5 projects and need more info on 2 projects
Importance: High

Good Morning,

Construct Communication Line Between Bldgs. 1051 and 1052: Project will have a determination of **No Adverse Effect**.

Demolition of Bldg. 6556: Project will have a determination of **No Adverse Effect**.

Construct Permanent Combat Survival Training Facilities: Project will have a determination of **No Adverse Effect**.

USAFA Fiber Expansion from Bldg 4199-Bldg 2354: Project will have a determination of **No Adverse Effect**.

Research Design Airfield DP-BAA Report was confusing. Was there anything discovered and what was their determination?

Farish Memorial Recreation Area Archaeological Inventory Report and forms. I need report please

Consultation Request for Construct Training Facilities for Combat Survival Training: Project will have a determination of **No Adverse Effect**.

Thank You,

Gary LaFranier

FCC/ Section 106 Coordinator

(406) 477-8114

Lame Deer, MT. 59043



Hinono'ainino'

Northern Arapaho Tribe
TRIBAL HISTORIC PRESERVATION OFFICE
P.O. Box 67 - St. Stephens, Wyoming 82524 - PH: 307.856.1628 -
Crystal.reynolds@northernarapaho.com



Oct 11, 2023

Wyoming Department of Transportation
5300 Bishop Boulevard, Cheyenne, Wy 82009
307-777-4346

RE: Construct Facilities for Combat Survival Training

After reviewing your request under the Section 106 process of the NHPA, and NEPA, our office would like to comment on the proposed project: Construct Facilities for Combat Survival Training. Due to the area being previously disturbed the Northern Arapaho Tribal Historic Preservation Office makes the following determination:

Determination of Effect:

“No Adverse Effect on Historic Properties” in the Direct and Visual APE.

Our office has come to this determination by drawing conclusions from the survey and file search from maps depicting provenience of sites in regards to the Direct and Visual APE. There are no cultural resources or eligible historic properties within the APE. Currently, there are no properties of religious and cultural significance to the Northern Arapaho within the area of potential effect. However, if traditional cultural properties, rock features, or human remains are found during excavation with any new ground disturbance, we request to be contacted and a report provided.

Thank you for consulting with the Northern Arapaho THPO.

Sincerely,

Crystal Reynolds

Crystal Reynolds
NATHPO Tribal Archaeologist
crystal.reynolds@northernarapaho.com
307-856-1628 Office
307-856-4974 FAX



DEPARTMENT OF THE AIR FORCE
10TH CIVIL ENGINEER SQUADRON
USAF ACADEMY COLORADO

Ms. Erin M. Manning
Deputy Director
10th Civil Engineer Squadron
8120 Edgerton Drive, Suite 40
USAF Academy CO 80840-2400

Dear Tribal Historic Preservation Officers

The United States Air Force Academy (USAFA) proposes to construct training facilities in support of its Combat Survival Training (CST) program. We previously contacted you on this project by a letter dated July 21, 2023, at which time we proposed an Area of Potential Effects (APE) along with a description of Historic Properties inventory leading to our proposed finding of “no adverse effect.” No tribes responded with substantial concerns. However, the Colorado State Historic Preservation Officer did request additional information as shown by Attachment 1. As a response to that, Attachment 2 is a substantially revised information package compared to what we sent to you in July. However, we continue to propose that this project will result in “*no adverse effect*” to Historic Properties. We welcome your review comments on Attachment 2.

Please submit comments, if any, to the above address or via email. For questions, please contact Mr. Erwin Roemer, 10 CES/CENP, USAFA Cultural Resources Manager, at erwin.roemer@us.af.mil, or at (719) 333-7341. Thank you for your assistance on this matter.

Very Respectfully

MANNING.ERIN
.MARIE.104763
2192
ERIN M. MANNING, GS-14, USAF

Digitally signed by
MANNING.ERIN.MARIE.10
47632192
Date: 2023.10.12 15:14:21
-06'00'

Attachments:

1. SHPO email dated August 1, 2023
2. USAFA Cultural Resources Section 106 Project Review (revised),
Appendix A. Figures
Appendix B. Photographs
Appendix C. Engineering Plans and Schematic Drawings

From: [Sara Childers](#)
To: [SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP](#)
Subject: [Non-DoD Source] FW: [EXT] Government to Government Section 106 Consultation Request for Construct Training Facilities for Combat Survival Training
Date: Tuesday, October 31, 2023 5:50:35 PM
Attachments: [Tab 1 CST EA S106 - THPO Letter.pdf](#)
[Atch 1 CST EA S106 -SHPO email dated August 1, 2023.pdf](#)
[Atch 2 CST EA S106 - USAFA Cultural Resources Section 106 Project Review.pdf](#)
[Appendix A CST EA S106 - Figures.pdf](#)
[Appendix B CST EA S106 - Photographs.pdf](#)
[Appendix C CST EA S106 - Engineering Plans and Schematic Drawings.pdf](#)

Hello,

The Flandreau Santee Sioux Tribe has no issues with the proposed project at this site.

If any cultural material and or human remains are disturbed please stop and contact us ASAP.

Thank you,

Sara Childers

Sara Childers
Tribal Historic Preservation Assistant
Flandreau Santee Sioux Tribe
603 W Broad Ave | Flandreau, SD 57028
p. 605.997.3891 x1226
www.fsst-nsn.gov

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-----Original Message-----

From: Garrie Kills-A-Hundred <garrie.killsahundred@FSST.org>
Sent: Monday, October 23, 2023 3:48 PM
To: Sara Childers <sara.childers@FSST.org>
Subject: FW: [EXT] Government to Government Section 106 Consultation Request for Construct Training Facilities for Combat Survival Training

Garrie Kills-A-Hundred
Tribal Historic Preservation Officer
Flandreau Santee Sioux Tribe
603 W Broad Ave | Flandreau, SD 57028
p. 605.997.3891 x1226
www.fsst-nsn.gov

-----Original Message-----

From: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP <bernard.schriever.ctr@us.af.mil>
Sent: Monday, October 16, 2023 12:45 PM

From: [Steve Vance](#)
To: [SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP](#); [coltenarchambeau@gmail.com](#); [tknight@utemountain.org](#); [ademaray@mhanation.com](#); [Betsy Chapoose](#); [KjGraywater@spiritlakenation.com](#); [j.eagle@standingrock.org](#); [sunagpra@southernute-nsn.gov](#); [ssn.thpo@gmail.com](#); [benjamin.young@rst-nsn.gov](#); [benjamin1011young@gmail.com](#); [rst.thpo@rst-nsn.gov](#); [kdongoske@gmail.com](#); [ddnaranjo@santaclarapueblo.org](#); [bchavarria@santaclarapueblo.org](#); [rima@taospueblo.com](#); [warchief@taospueblo.com](#); [Cecilia Shields](#); [Jayson A Romero](#); [jreed@pawneenation.org](#); [gary.lafranier@cheyennenation.com](#); [Thomas Brings](#); [Crystal C'Bearing](#); [Crystal Reynolds](#); [benridgley007@gmail.com](#); [r.begay@navajo-nsn.gov](#); [holly@mathpo.org](#); [clyde.estes@lowerbrule.net](#); [janthpo@gmail.com](#); [THPO@kiowatribe.org](#); [THPO Compliance](#); [Michael.darrow@fortsillapache-nsn.gov](#); [Naomi.hartford@fortsillapache-nsn.gov](#); [jmann@easternshoshone.org](#); [garrie.killsahundred@fsst.org](#); [Theodore Villicana](#); [Aaron Brien](#); [chrednose@c-a-tribes.org](#); [Tashina.crstpres@outlook.com](#); [apacheculture510@yahoo.com](#); [atcp_crystal@yahoo.com](#); [Dyan Youpee](#); [monica.murrell@santaana-nsn.gov](#); [Emma Filesteel](#); [boydgourneau@yahoo.com](#); [monica.murrell@santaana-nsn.gov](#); [mbear@c-a-tribes.org](#); [ahill@kiowatribe.org](#); [sfox@spiritlakenation.com](#); [THPO@utetribes.com](#)
Cc: [ROEMER, ERWIN JR CIV USAF USAFA 10 CES/CENP](#); [Tashina Dupris](#); [Jervyn.bigeagle17@gmail.com](#)
Subject: [Non-DoD Source] Re: Follow-up for Government to Government Section 106 Consultation Request for Construct Training Facilities for Combat Survival Training
Date: Monday, November 6, 2023 10:47:15 AM

Erwin,

The Cheyenne River Sioux Tribe concurs with the recommended "no adverse effect to historic property".

Resent guidance from the Biden administration has supported Native Nation concerns to land, air, and water, as cultural resources. The concerns of global warming and climate change produced an MOU with multiple federal agencies stating, "bodies of water, landscapes, landforms, stone features, stone structures, and plant communities as sacred objects". I would encourage all individuals conducting survey/studies to continue Tribal involvement for Traditional Ecological Knowledge (TEK) and Indigenous Knowledge (IK).

Along with these changes there is the opportunity for federal agencies to offer "co-management/co-stewardship" in the decision-making process to Native Nations.

Although the documents state "low" potential of cultural resources to be discovered/disturbed during construction, I request the presence of a cultural resource manager on-site during all ground disturbance.

From: SCHRIEVER, BERNARD A II CTR USAF USAFA 10 CES/CENPP <bernard.schriever.ctr@us.af.mil>

Sent: Monday, November 6, 2023 9:47 AM

To: [coltenarchambeau@gmail.com](#) <coltenarchambeau@gmail.com>; [tknight@utemountain.org](#) <tknight@utemountain.org>; [ademaray@mhanation.com](#) <ademaray@mhanation.com>; [Betsy Chapoose](#) <BetsyC@utetribes.com>; [KjGraywater@spiritlakenation.com](#) <KjGraywater@spiritlakenation.com>; [j.eagle@standingrock.org](#) <j.eagle@standingrock.org>; [sunagpra@southernute-nsn.gov](#) <sunagpra@southernute-nsn.gov>; [ssn.thpo@gmail.com](#) <ssn.thpo@gmail.com>; [benjamin.young@rst-nsn.gov](#) <benjamin.young@rst-nsn.gov>; [benjamin1011young@gmail.com](#) <benjamin1011young@gmail.com>; [rst.thpo@rst-nsn.gov](#) <rst.thpo@rst-nsn.gov>; [kdongoske@gmail.com](#) <kdongoske@gmail.com>; [ddnaranjo@santaclarapueblo.org](#) <ddnaranjo@santaclarapueblo.org>; [bchavarria@santaclarapueblo.org](#) <bchavarria@santaclarapueblo.org>; [rima@taospueblo.com](#) <rima@taospueblo.com>; [warchief@taospueblo.com](#) <warchief@taospueblo.com>; [Cecilia Shields](#) <tribal.interpreter@picurispueblo.org>; [Jayson A Romero](#) <jayson.romero@cochiti.org>; [jreed@pawneenation.org](#) <jreed@pawneenation.org>; [gary.lafranier@cheyennenation.com](#) <gary.lafranier@cheyennenation.com>; [Thomas Brings](#) <t.brings@oglala.org>; [Crystal C'Bearing](#)

<crystal.cbearing@northernarapaho.com>; Crystal Reynolds
<crystal.reynolds@northernarapaho.com>; benridgley007@gmail.com
<benridgley007@gmail.com>; r.begay@navajo-nsn.gov <r.begay@navajo-nsn.gov>;
holly@mathpo.org <holly@mathpo.org>; clyde.estes@lowerbrule.net
<clyde.estes@lowerbrule.net>; janthpo@gmail.com <janthpo@gmail.com>; THPO@kiowatribe.org
<thpo@kiowatribe.org>; THPO Compliance <thpocompliance@ftbelknap.org>;
Michael.darrow@fortsillapache-nsn.gov <Michael.darrow@fortsillapache-nsn.gov>;
Naomi.hartford@fortsillapache-nsn.gov <Naomi.hartford@fortsillapache-nsn.gov>;
jmann@easternshoshone.org <jmann@easternshoshone.org>; garrie.killsahundred@fsst.org
<garrie.killsahundred@fsst.org>; Theodore Villicana <theodore.villicana@comanchenation.com>;
Aaron Brien <Aaron.brien@crow-nsn.gov>; chrednose@c-a-tribes.org <chrednose@c-a-tribes.org>;
Tashina.crstpres@outlook.com <tashina.crstpres@outlook.com>; stevev.crstpres@outlook.com
<stevev.crstpres@outlook.com>; apacheculture510@yahoo.com <apacheculture510@yahoo.com>;
atcp_crystal@yahoo.com <atcp_crystal@yahoo.com>; Dyan Youpee
<d.youpee@fortpecktribes.net>; monica.murrell@santaana-nsn.gov <monica.murrell@santaana-
nsn.gov>; Emma Filesteel <emma.filesteel@ftbelknap.org>; boydgourneau@yahoo.com
<boydgourneau@yahoo.com>; monica.murrell@santaana-nsn.gov <monica.murrell@santaana-
nsn.gov>; mbear@c-a-tribes.org <mbear@c-a-tribes.org>; ahill@kiowatribe.org
<ahill@kiowatribe.org>; sfox@spiritlakenation.com <sfox@spiritlakenation.com>;
THPO@utetribes.com <THPO@utetribes.com>

Cc: ROEMER, ERWIN JR CIV USAF USAFA 10 CES/CENP <erwin.roemer@us.af.mil>

Subject: Follow-up for Government to Government Section 106 Consultation Request for Construct
Training Facilities for Combat Survival Training

Dear Tribal Historic Preservation Officers

The Government to Government communication regarding the construction of facilities to support
Combat Survival Training for USAFA Cadets (attached) was sent to your office on October 16, 2023
for review and comment. By this current email, USAFA is checking to see if you will be replying by
16 November 2023, the end of the comment period. For questions or to request additional time,
please respond by email to Mr. Schriever (bernard.schriever.ctr@us.af.mil) or by phone (719) 333-
8375. We appreciate your time to collaborate with USAFA, and the advice and assistance you and
your staff provide for other Section 106 consultations at USAFA.

Thank you,

Erwin Roemer, RPA
USAF Academy Cultural Resource Manager
8120 Edgerton Drive, USAFA, CO 80840
erwin.roemer@us.af.mil
teleworking pers cell 646-673-4642 Mountain Time Zone

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APPENDIX E:
**EARLY NOTICE OF A PROPOSED ACTIVITY WITH THE POTENTIAL
TO IMPACT WETLANDS AND FLOODPLAINS**

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Proof of Publication

SIXTY35 MEDIA

STATE OF COLORADO,} ss.
COUNTY OF EL PASO }

I, Ralph Routon, Interim Co-Publisher, or the undersigned Authorized Agent of the Interim Co-Publisher, do solemnly swear that I am the Interim Co-Publisher, or Authorized Agent of the Interim Co-Publisher of Sixty35 Media, LLC; that the same is a weekly newspaper printed, in whole or in part and published in the County of El Paso, State of Colorado, and has a general circulation therein; that said newspaper has been published continuously and uninterruptedly in said county of El Paso for a period of more than fifty-two consecutive weeks prior to the first publication of the annexed legal notice or advertisement; that said newspaper has been admitted to the United States mails as second-class matter under the provisions of the Act of March 3, 1879, or any amendments thereof, and that said newspaper is a weekly newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado.

That the annexed legal notice or advertisement was published in the regular and entire issue of every number of said weekly newspapers for the period of 1 consecutive insertion(s), and/or once each week and on the same days of each week; and that the first publication of said notice was in the issue of said newspaper dated,

23, MARCH, A.D., 2023.

and that the last publication of said notice was in the issue of said newspaper dated

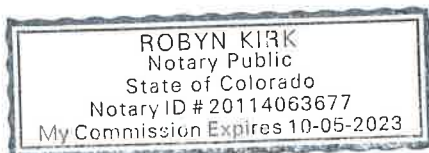
23, MARCH, A.D., 2023.

In witness whereof I have hereunto set my hand this 23rd day of March, A.D., 2023.

Interim Co-Publisher / Authorized Agent

Subscribed and sworn to before me, a notary public in and for the County of El Paso, State of Colorado, this 23rd day of March, A.D., 2023.

Notary Public



EARLY NOTICE OF A PROPOSED ACTIVITY WITH THE POTENTIAL TO IMPACT WETLANDS AND FLOODPLAINS U.S. AIR FORCE ACADEMY, EL PASO COUNTY, COLORADO

The United States (U.S.) Air Force (USAF) is preparing an Environmental Assessment (EA) to evaluate the potential environmental impacts resulting from the implementation of a Combat Survival Training (CST) program at the U.S. Air Force Academy (USAFA) in El Paso County, Colorado (Proposed Action). The purpose of this Proposed Action is to follow the leadership directive to offer CST at USAFA, meet new standards for survival, evasion, resistance, and escape (SERE) training, and increase the overall SERE training capacity of the USAF. The Proposed Action is needed because the current USAF SERE program does not meet current and projected training demands, resulting in a backlog of all personnel waiting to complete accredited SERE training. Failure to implement a CST program at USAFA means the USAF's SERE training program would continue to operate at insufficient capacity and there would continue to be a backlog of USAFA Cadets and USAF Airmen waiting to complete required training.

The Proposed Action is subject to requirements and objectives of Executive Orders (EOs) 11990, Protection of Wetlands and 11988, Floodplain Management, as the project includes water-based training activities. The project sites are located next to a lake (man-made impoundment) with adjacent wetlands; the Proposed Action is anticipated to temporarily or permanently disturb up to 0.6 acre of wetlands, although USAFA would seek to minimize this potential disturbance during the project design phase. As the lake (impoundment) receives water primarily from a flow diversion culvert, and water height is regulated with a dam, it does not have an appreciable floodplain; however, given the potential for in-water construction, negligible floodplain impacts could be identified. The Proposed Action would not contribute to any measurable loss with regard to flood control capacity.

The Proposed Action will be analyzed in the forthcoming EA and the public will have the opportunity to comment on the draft EA when it is released. The draft EA will be available for public review at: www.usafa.af.mil.

This notice complies with Section 2(a)(4) of EO 11988 and Section 2(b) of EO 11990. The Air Force requests advance public comment to determine if there are any public concerns regarding the project's potential impacts on wetlands and floodplains. The public comment period is 23 March to 22 April 2023. Please submit comments or requests for more information to the Air Force by email to 10CES.CENPP.Planning_Programming@us.af.mil, or by mail to Barry Schatz, Environmental Flight Element, 8120 Edgerton Drive, USAFA, CO 80840. Publication Date: March 23, 2023 Published in Sixty35 Media, LLC



Brewers' Bracket Final Four: Vote for your favorite Colorado Springs breweries



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EARLY NOTICE OF A PROPOSED ACTIVITY



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POTENTIAL TO IMPACT WETLANDS AND FLOODPLAINS
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Published in The Gazette March 23, 2023.

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Details for EARLY NOTICE OF A PROPOSED ACTIVITY

6 hrs ago

EARLY NOTICE OF A PROPOSED ACTIVITY WITH THE POTENTIAL TO IMPACT WETLANDS AND FLOODPLAINS U.S. AIR FORCE ACADEMY, EL PASO COUNTY, COLORADO The United States (U.S.) Air Force (USAF) is preparing an Environmental Assessment (EA) to evaluate the potential environmental impacts resulting from the implementation of a Combat Survival Training (CST) program at the U.S. Air Force Academy (USAFA) in El Paso County, Colorado (Proposed Action). The purpose of this Proposed Action is to follow the leadership directive to offer CST at USAFA, meet new standards for survival, evasion, resistance, and escape (SERE) training, and increase the overall SERE training capacity of the USAF. The Proposed Action is needed because the current USAF SERE program does not meet current and projected training demands, resulting in a backlog of all personnel waiting to complete accredited SERE training. Failure to implement a CST program at USAFA means the USAF's SERE training program would continue to operate at insufficient capacity and there would continue to be a backlog of USAFA Cadets and USAF Airmen waiting to complete required training. The Proposed Action is subject to requirements and objectives of Executive Orders (EOs) 11990, Protection of Wetlands and 11988, Floodplain Management, as the project includes water-based training activities. The project sites are located next to a lake (man-made impoundment) with adjacent wetlands; the Proposed Action is anticipated to temporarily or permanently disturb up to 0.6 acre of wetlands, although USAFA would seek to minimize this potential disturbance during the project design phase. As the lake (impoundment) receives water primarily from a flow diversion culvert, and water height is regulated with a dam, it does not have an appreciable floodplain; however, given the potential for in-water construction, negligible floodplain impacts could be identified. The Proposed Action would not contribute to any measurable loss with regard to flood control capacity. The Proposed Action will be analyzed in the forthcoming EA and the public will have the opportunity to comment on the

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**APPENDIX F:
AIR CONFORMITY APPLICABILITY MODEL REPORTS**

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AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

1. General Information: The Air Force’s Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: USAF ACADEMY
State: Colorado
County(s): El Paso
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Titles: Alternative 1: Consolidated Training Area on North Side of Kettle Lake #3
 Alternative 2: Dispersed Training Facilities

c. Project Number/s (if applicable):

d. Projected Action Start Date: 3 / 2024

e.

Alternative 1 Action Description:

The USAF would construct consolidated training facilities for water survival training and emergency parachute training on the north bank of Kettle Lake #3.

Alternative 2 Action Description:

The water survival training facilities would be constructed along the southern bank of Kettle Lake #3 on the site of the previous water survival training facilities. Additionally, the emergency parachute training facility would either be constructed adjacent to Building 9204 at the Davis Airfield or in Jacks Valley. These sites (south bank of Kettle Lake #3, adjacent to Building 9204, and in Jacks Valley) all offer an adequate amount of space within the USAFA to conduct training activities and construct supporting infrastructure.

f. Point of Contact:

Name: Caitlin Shaw
Title: Contractor
Organization: AECOM

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the “worst-case” and “steady state” (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: applicable
 not applicable

Conformity Analysis Summary:

2024 (Construction)

Pollutant	Action Emissions (ton/yr)		INSIGNIFICANCE INDICATOR	
	Preferred Alternative	Alternative 2	Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA				
VOC	0.262	0.262	250	No
NOx	1.317	1.317	250	No
CO	2.075	2.075	250	No

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

SOx	0.006	0.006	250	No
PM 10	3.062	1.980	250	No
PM 2.5	0.048	0.048	250	No
Pb	0.000	0.000	25	No
NH3	0.002	0.002	250	No
CO2e	479.7	479.7		

2025 and Beyond - (Steady State)

Pollutant	Preferred Alternative or Alternative 2 Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.087	250	No
NOx	2.470	250	No
CO	1.094	250	No
SOx	0.157	250	No
PM 10	0.224	250	No
PM 2.5	0.206	250	No
Pb	0.000	25	No
NH3	0.001	250	No
CO2e	468.6		

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

Caitlin Shaw

Caitlin Shaw, Contractor

10/6/2023

DATE

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

Unless noted all inputs and calculations were the same between Alternative 1 and 2. Only Site Preparation has different emission input.

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Site Preparation
3.	Personnel	Cadets and staff
4.	Aircraft	Helicopter
5.	Construction / Demolition	Water Survival Training Building
6.	Construction / Demolition	Emergency Parachute Training Building
7.	Construction / Demolition	Warehouse
8.	Emergency Generator	Power use at Water Survival Training Building

Emission factors and air emission estimating methods come from the United States Air Force’s Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location

County: El Paso
Regulatory Area(s): Colorado Springs, CO

- Activity Title: Site Preparation

- Activity Description:

General site prep

- Activity Start Date

Start Month: 3
Start Month: 2024

- Activity End Date

Indefinite: False
End Month: 6
End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.133134
SO _x	0.002536
NO _x	0.707632
CO	0.952245
PM 10	1.958785

Pollutant	Total Emissions (TONs)
PM 2.5	0.026854
Pb	0.000000
NH ₃	0.000339
CO _{2e}	245.6

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 3
Start Quarter: 1

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

Start Year: 2024

- Phase Duration

Number of Month: 3
Number of Days: 0

2.1.2 Site Grading Phase Assumptions

- General Site Grading Information for Alternative 1:

Area of Site to be Graded (ft²): 79340
Amount of Material to be Hauled On-Site (yd³): 0
Amount of Material to be Hauled Off-Site (yd³): 0

- General Site Grading Information for Alternative 2:

Area of Site to be Graded (ft²): 34000
Amount of Material to be Hauled On-Site (yd³): 0
Amount of Material to be Hauled Off-Site (yd³): 0

- Site Grading Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH₄	CO_{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH₃	CO_{2e}
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Vehicle Exhaust On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 WD: Number of Total Work Days (days)
 WT: Average Worker Round Trip Commute (mile)
 1.25: Conversion Factor Number of Construction Equipment to Number of Works
 NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

2.2 Trenching/Excavating Phase

2.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 3
 Start Quarter: 1
 Start Year: 2024

- Phase Duration

Number of Month: 3
 Number of Days: 1

2.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information for Alternative 1:

Area of Site to be Trenched/Excavated (ft²): 21400
 Amount of Material to be Hauled On-Site (yd³): 0
 Amount of Material to be Hauled Off-Site (yd³): 0

- General Trenching/Excavating Information for Alternative 2:

Area of Site to be Trenched/Excavated (ft²): 30400
 Amount of Material to be Hauled On-Site (yd³): 0
 Amount of Material to be Hauled Off-Site (yd³): 0

- Trenching Default Settings

Default Settings Used: Yes
 Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of	Hours Per Day
----------------	-----------	---------------

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

	Equipment	
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDBGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDBGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDBGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

2.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM_{10FD} = (20 * ACRE * WD) / 2000$$

PM_{10FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3. Personnel

3.1 General Information & Timeline Assumptions

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

- Add or Remove Activity from Baseline? Add

- Activity Location

County: El Paso
Regulatory Area(s): Colorado Springs, CO

- Activity Title: Cadets and staff

- Activity Description:

training staff

- Activity Start Date

Start Month: 5
Start Year: 2024

- Activity End Date

Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.016436
SO _x	0.000113
NO _x	0.014892
CO	0.183405
PM 10	0.000455

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000410
Pb	0.000000
NH ₃	0.001039
CO _{2e}	16.4

3.2 Personnel Assumptions

- Number of Personnel

Active Duty Personnel: 30
Civilian Personnel: 0
Support Contractor Personnel: 0
Air National Guard (ANG) Personnel: 0
Reserve Personnel: 0

- Default Settings Used: No

- Average Personnel Round Trip Commute (mile): 5

- Personnel Work Schedule

Active Duty Personnel: 5 Days Per Week
Civilian Personnel: 5 Days Per Week
Support Contractor Personnel: 5 Days Per Week
Air National Guard (ANG) Personnel: 4 Days Per Week
Reserve Personnel: 4 Days Per Month

3.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HdGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9

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GOVs	54.49	37.73	4.67	0	0	3.11	0
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3.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

3.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

$$VMT_p = NP * WD * AC$$

VMT_p: Personnel Vehicle Miles Travel (miles/year)

NP: Number of Personnel

WD: Work Days per Year

AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

$$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$$

VMT_{Total}: Total Vehicle Miles Travel (miles)

VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)

VMT_C: Civilian Personnel Vehicle Miles Travel (miles)

VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)

VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)

VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

$$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{Total}: Total Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Personnel On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

4. Aircraft (Helicopter emissions were calculated using AFCEC June 2021 Guide)

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: El Paso

Regulatory Area(s): Colorado Springs, CO

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- Activity Title: Helicopter

- Activity Description:

- Activity Start Date

Start Month: 5
Start Year: 2024

- Activity End Date

Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.065410
SO _x	0.152605
NO _x	2.431980
CO	0.895103
PM 10	0.218868

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.200422
Pb	0.000000
NH ₃	0.000000
CO ₂ e	449.47307

- Activity Emissions [Flight Operations (includes Trim Test & APU) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.003271
SO _x	0.137678
NO _x	1.398717
CO	0.717728
PM 10	0.163450

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.146599
Pb	0.000000
NH ₃	0.000000
CO ₂ e	413.6240

- Activity Emissions [Aerospace Ground Equipment (AGE) part]:

Pollutant	Emissions Per Year (TONs)
VOC	0.062139
SO _x	0.014927
NO _x	1.033263
CO	0.177375
PM 10	0.055418

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.053823
Pb	0.000000
NH ₃	0.000000
CO ₂ e	35.84911

4.2 Aircraft & Engines

4.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine

Aircraft Designation: Blackhawk UH-60
Engine Model: GE T700
Primary Function: Various Training
Aircraft has After burn: No
Number of Engines: 2

- Aircraft & Engine Surrogate

Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

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4.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}
Ground Idle	134	0.5	1.07	3.36	46.24	1.48	1.33	3214.59
Flight Idle	469	0.02	1.07	10.95	5.12	1.26	1.13	3214.59
Flight Max	626	0.01	1.07	11.87	3.51	2.22	2	3214.59
Overspeed	725	0.01	1.07	11.43	2.81	2.61	2.33	3214.59

4.3 Flight Operations

4.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:	1
Number of Annual LTOs (Landing and Take-off) cycles for all Aircraft:	44
Number of Annual TGOs (Touch-and-Go) cycles for all Aircraft:	0
Number of Annual Trim Test(s) per Aircraft:	0

- Default Settings Used: No

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out [Idle] (mins):	8
Takeoff [Military] (mins):	2.27
Takeoff [After Burn] (mins):	0
Climb Out [Intermediate] (mins):	4.53
Approach [Approach] (mins):	6.80
Taxi/Idle In [Idle] (mins):	7

Per the Air Emissions Guide for Air Force Mobile Sources, the defaults values for military aircraft equipped with after burner for takeoff is 50% military power and 50% afterburner. (Exception made for F-35 where KARNES 3.2 flight profile was used)

- Trim Test

Idle (mins):	360
Approach (mins):	0
Intermediate (mins):	0
Military (mins):	0
AfterBurn (mins):	0

4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * LTO / 2000$$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

LTO: Number of Landing and Take-off Cycles (for all aircraft)

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2000: Conversion Factor pounds to TONS

- Aircraft Emissions for LTOs per Year

$$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{LTO} : Aircraft Emissions (TONs)

AEM_{IDLE_IN} : Aircraft Emissions for Idle-In Mode (TONs)

AEM_{IDLE_OUT} : Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * TGO / 2000$$

AEM_{POL} : Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

TGO: Number of Touch-and-Go Cycles (for all aircraft)

2000: Conversion Factor pounds to TONS

- Aircraft Emissions for TGOs per Year

$$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$$

AE_{TGO} : Aircraft Emissions (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)

$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)

TD: Test Duration (min)

60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds

EF: Emission Factor (lb/1000lb fuel)

NE: Number of Engines

NA: Number of Aircraft

NTT: Number of Trim Test

2000: Conversion Factor pounds to TONS

- Aircraft Emissions for Trim per Year

$$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$$

AE_{TRIM} : Aircraft Emissions (TONs)

$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)

$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)

$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)

$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)

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AEPS_{AFTERBURN}: Aircraft Emissions for After Burner Power Setting (TONs)

4.4 Auxiliary Power Unit (APU)

4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
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4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}
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4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$$APU_{POL} = APU * OH * LTO * EF_{POL} / 2000$$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)

APU: Number of Auxiliary Power Units

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

4.5 Aerospace Ground Equipment (AGE)

4.5.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage

Number of Annual LTO (Landing and Take-off) cycles for AGE: 1

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
1	5	No	Generator Set	A/M32A-86D
1	0.5	No	Start Cart	A/M32A-95
1	2	No	Air Conditioner	MA-3D
1	2	No	Heater	H1
1	2.5	No	Hydraulic Test Stand	MJ-1-1
1	1	No		MJ-2/TTU-228
1	4	No	Light Cart	FL-1D
1	1	No	Air Compressor	MC-1A
1	2.5	No		MC-2A

4.5.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/Sortie)

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Designation	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CO _{2e}
A/M32A-86D	0.294	0.047	6.102	0.457	0.091	0.089	146.08
A/M32A-95	0.074	0.264	1.47	5.86	0.11	0.107	205.14
MA-3D	0.053	0.052	4.167	0.317	0.167	0.162	160.76
H1	0.105	0.003	0.16	0.18	0.006	0.006	8.81
MJ-1-1	0.026	0.018	0.757	0.043	0.167	0.162	56.9
MJ-2/TTU-228	0.195	0.054	3.396	0.794	0.089	0.086	167.76
FL-1D	0.008	0.018	0.03	0.025	0.167	0.162	13.9
MC-1A	0.267	0.008	0.419	0.267	0.071	0.068	24.61
MC-2A	0.177	0.009	0.496	0.234	0.167	0.162	26.87

4.5.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year

$$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$$

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)

AGE: Total Number of Aerospace Ground Equipment

OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)

2000: Conversion Factor pounds to tons

5. Construction / Demolition

5.1 General Information & Timeline Assumptions

- Activity Location

County: El Paso

Regulatory Area(s): Colorado Springs, CO

- Activity Title: Water Survival Training Building

- Activity Description:

Water Survival Training Support Facilities Construction

- Activity Start Date

Start Month: 3

Start Month: 2023

- Activity End Date

Indefinite: False

End Month: 6

End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.030641
SO _x	0.000612
NO _x	0.154921
CO	0.255304
PM 10	0.005177

Pollutant	Total Emissions (TONs)
PM 2.5	0.005161
Pb	0.000000
NH ₃	0.000187
CO _{2e}	59.0

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

5.1 Building Construction Phase

5.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 4
Start Quarter: 1
Start Year: 2024

- Phase Duration

Number of Month: 3
Number of Days: 0

5.1.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft²): 960
Height of Building (ft): 40
Number of Units: N/A

- Building Construction Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

5.1.3 Building Construction Phase Emission Factor(s)

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

5.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)
 NE: Number of Equipment
 WD: Number of Total Work Days (days)
 H: Hours Worked per Day (hours)
 EF_{POL}: Emission Factor for Pollutant (lb/hour)
 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 BA: Area of Building (ft²)
 BH: Height of Building (ft)
 (0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)
 HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
 VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
 0.002205: Conversion Factor grams to pounds
 EF_{POL}: Emission Factor for Pollutant (grams/mile)
 VM: Worker Trips On Road Vehicle Mixture (%)
 2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

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VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

6. Construction / Demolition

6.1 General Information & Timeline Assumptions

- Activity Location

County: El Paso
Regulatory Area(s): Colorado Springs, CO

- Activity Title: Emergency Parachute Training Building

- Activity Description:

Emergency Parachute Training Building Construction

- Activity Start Date

Start Month: 3
Start Month: 2024

- Activity End Date

Indefinite: False

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End Month: 6
End Month: 2024

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.040676
SO _x	0.000811
NO _x	0.204672
CO	0.339771
PM 10	0.006840

Pollutant	Total Emissions (TONs)
PM 2.5	0.006824
Pb	0.000000
NH ₃	0.000239
CO ₂ e	78.1

6.1 Building Construction Phase

6.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date

Start Month: 3
Start Quarter: 1
Start Year: 2024

- Phase Duration

Number of Month: 4
Number of Days: 0

6.1.2 Building Construction Phase Assumptions

- General Building Construction Information

Building Category: Office or Industrial
Area of Building (ft²): 1000
Height of Building (ft): 30
Number of Units: N/A

- Building Construction Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HdGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

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	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

6.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

6.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

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$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{VE} : Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$$

VMT_{VT} : Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft²)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)
 VMT_{VT} : Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
 EF_{POL} : Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

7. Construction / Demolition

7.1 General Information & Timeline Assumptions

- Activity Location

County: El Paso
Regulatory Area(s): Colorado Springs, CO

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

- **Activity Title:** Warehouse

- **Activity Description:**
Warehouse Construction

- **Activity Start Date**
Start Month: 3
Start Month: 2024

- **Activity End Date**
Indefinite: False
End Month: 6
End Month: 2024

- **Activity Emissions:**

Pollutant	Total Emissions (TONs)
VOC	0.042115
SO _x	0.000850
NO _x	0.219822
CO	0.344859
PM 10	0.007344

Pollutant	Total Emissions (TONs)
PM 2.5	0.007289
Pb	0.000000
NH ₃	0.000323
CO _{2e}	82.6

7.1 Building Construction Phase

7.1.1 Building Construction Phase Timeline Assumptions

- **Phase Start Date**
Start Month: 3
Start Quarter: 1
Start Year: 2024

- **Phase Duration**
Number of Month: 4
Number of Days: 0

7.1.2 Building Construction Phase Assumptions

- **General Building Construction Information**
Building Category: Office or Industrial
Area of Building (ft²): 10000
Height of Building (ft): 20
Number of Units: N/A

- **Building Construction Default Settings**
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- **Construction Exhaust (default)**

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

- Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

7.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.301	000.002	000.232	003.362	000.009	000.008		000.023	00323.384
LDGT	000.363	000.003	000.402	004.534	000.011	000.010		000.024	00417.507
HDGV	000.719	000.005	001.095	015.968	000.026	000.023		000.045	00767.415
LDDV	000.125	000.003	000.135	002.442	000.004	000.004		000.008	00312.138
LDDT	000.268	000.004	000.390	004.199	000.007	000.006		000.008	00443.722
HDDV	000.480	000.013	005.052	001.697	000.168	000.155		000.028	01480.669
MC	002.615	000.003	000.838	013.632	000.029	000.025		000.054	00399.467

7.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.42 / 1000): Conversion Factor ft³ to trips (0.42 trip / 1000 ft³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)

BA: Area of Building (ft²)

BH: Height of Building (ft)

(0.38 / 1000): Conversion Factor ft³ to trips (0.38 trip / 1000 ft³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

8. Emergency Generator

8.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: El Paso

Regulatory Area(s): Colorado Springs, CO

- Activity Title: Emergency Generator

- Activity Description:

Emergency generator use at the Water Survival Training Building

- Activity Start Date

Start Month: 5

Start Year: 2025

- Activity End Date

Indefinite: Yes

End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.005650
SO _x	0.004759
NO _x	0.023288
CO	0.015552
PM 10	0.005083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005083
Pb	0.000000
NH ₃	0.000000
CO _{2e}	2.7

8.2 Emergency Generator Assumptions

- Emergency Generator

Type of Fuel used in Emergency Generator: Diesel

Number of Emergency Generators: 1

- Default Settings Used: Yes

- Emergency Generators Consumption

Emergency Generator's Horsepower: 135 (default)

Average Operating Hours Per Year (hours): 30 (default)

8.3 Emergency Generator Emission Factor(s)

- Emergency Generators Emission Factor (lb/hp-hr)

VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251			1.33

8.4 Emergency Generator Formula(s)

- Emergency Generator Emissions per Year

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF CONFORMITY ANALYSIS (ROCA)

$$AE_{POL} = (NGEN * HP * OT * EF_{POL}) / 2000$$

AE_{POL} : Activity Emissions (TONs per Year)

NGEN: Number of Emergency Generators

HP: Emergency Generator's Horsepower (hp)

OT: Average Operating Hours Per Year (hours)

EF_{POL} : Emission Factor for Pollutant (lb/hp-hr)