WK Kellogg Airport
Michigan Air National Guard
Battle Creek, Michigan

Construct Main Base Entrance

Project no. MBMV099170
Type B-3

Submittal Book

February 17, 2021

Mead & Hunt

Project No. 3141900-113782.01

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WK Kellogg Airport
Michigan Air National Guard
Battle Creek, Michigan

Construct Main Base Entrance

Project no. MBMV099170

Basis of Design

Part I – Design Intent

Authorizing Signatures:

Air Commander: _____ **Date:** _____

Base Civil Engineer: _____ **Date:** _____

Using Organization Rep: _____ **Date:** _____

Environmental Manager: _____ **Date:** _____

Fire Chief: _____ **Date:** _____

Security Chief: _____ **Date:** _____

Safety Officer: _____ **Date:** _____

Communication Chief: _____ **Date:** _____

Mead & Hunt

Project No. 3141900-113782.01

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Mead & Hunt
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Middleton, Wisconsin 53562
608-273-6380
meadhunt.com

October 8, 2019

Maj Nathan Finfrock
Deputy Base Civil Engineer, 110 CES
3585 Mustang Avenue
Battle Creek, MI 49015-5512

Subject: Type A2 Submittal, Construct Main Base Entrance
Battle Creek ANGB, W.K. Kellogg Airport, Michigan
Project Number: MBMV099170

Dear Maj Finfrock:

Mead & Hunt, Inc. is pleased to present the Type A2 Concept Development Submittal for the Construct Main Base Entrance project at Battle Creek Air National Guard, Battle Creek, Michigan.

If there is anything else you require, please contact us.

Sincerely,

MEAD & HUNT, Inc.

Jeremy Bluhm, PE
Project Manager

Cc: MSgt Steven Stocking, Contracting Officer

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1.1 TAB A – PROJECT DESCRIPTION

1.1.1. Project Number and Title

Project number: MBMV099170
Project name: Construct Main Base Entrance

1.1.2. Project Scope

The 110th Attack Wing at Battle Creek Air National Guard Base requires an adequately sized, properly sited, appropriately configured installation entrance to support day-to-day mission objectives. The entrance must meet the Unified Facilities Criteria and anti-terrorism and force protection measures for a primary entry control facility. Leased land adjacent to the existing main Base must be properly lit and secured to allow for this expansion. The entry complex requires a properly sized gate within the controlled area that can withstand an attack, including attacks from a ballistic impact by a vehicle, small arms fire, or an explosion. Access roads must be capable of controlling peak traffic flows while safely rejecting unauthorized vehicles and pedestrians. The site must have vehicle entrapment areas, control gates, fencing, and other security measures. A properly sited final denial barrier and overwatch position is required on the newly designed entry road. Finally, a commercial vehicle inspection area is required to maximize personnel safety and minimize damage caused by a potential explosion or attack. The commercial vehicle access must be able to control the entry and inspection of commercial vehicles while safely rejecting unauthorized visitors and provide adequate queuing space.

The current Base entrance is split between a primary gate and a geographically separated contractor gate. Both gates have limited vehicle queuing space, inadequate vehicle barrier siting, and require rejected vehicles to enter the Base to turn around for exiting. A new main gate is proposed to be located off vacated Skyline Drive area along the west side of the Base. The new gate will incorporate requirements from the current Unified Facilities Criteria for Entry Control Facilities, and will include new access drives, gate house with canopies, commercial vehicle inspection facility, security fencing, vehicle barriers, and parking for visitors.

The intent of this project is to design a new main Base entry control facility on the west side of the Base. The project should comply with facility design– and construction-related provisions of the Energy Policy Act of 2005 (EPAct 05), section 109; Energy Independence and Security Act of 2007 (EISA 07); and Executive Order 13423, all as applicable by the project scope.

The project will clear and grub the site along vacated Skyline Drive and install AT/FP compliant perimeter fence, vehicle and personnel gates as needed. Sections of fence will be security fence/barriers as needed to provide a secure safety zone around the entry control facility.

A new gatehouse with overhead protection at inbound vehicle lanes will be located within the access control zone. The gatehouse will conform to existing architectural standards, including brick exterior and standing seam metal roof. The new gatehouse will have a restroom and appropriate ballistic/impact protection.

The project will provide new roadway for the approach zone and response zone including curbing, signage and drainage, active vehicle barriers (AVBs) at the end of the response zone, and security forces parking space before the barrier location for sufficient security overwatch. Area lighting and other site utilities including electrical, water, sewer, and communication service will be provided.

A new roadway from the intersection of Skyline Drive and Hill Brady Road will be required. A Military Construction Cooperative Agreement will be needed for the roadway and intersection modifications and improvements immediately adjoining the public intersection. Work is to be coordinated with the City of Battle Creek.

The main gate receives vehicles of various sizes, ranging from personal automobiles to full size semi-trailers with trailer lengths of 53 feet and overall length of 73.5 feet (AASHTO WB-67) daily. During construction projects on Base, the main gate area additionally serves as an entry point for trucks hauling materials to project sites. A traffic study was completed in advance of this project (Battle Creek Air National Guard Base, *Entry Control Facilities Study*, April 2017). This project will utilize the traffic data collected with that study for the development of alternatives.

The overall design will be in accordance with UFC 4-022-01, 27 July 2017, Security Engineering: Entry Control Facilities / Access Control Points. According to UFC 4-022-01, the protective design elements to mitigate the effects of an explosive device as identified in UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings are not mandatory for guardhouse facilities. Other standards from UFC 4-010-01 will be incorporated into the design and layout as practical within the constraints of the project scope and budget.

The project does not meet the minimum requirements of buildings greater than 1,000 square feet of floor space as established by USGBC for consideration for LEED certification and, thus, cannot pursue LEED certification. The project designs, however, in order to minimize energy use and recurring utility bills, will strive to achieve optimum resource efficiency, constructability, sustainability, and energy conservation within the limits provided by the scope and budget. The project will be designed in accordance with ANGETL 15-01-01, Sustainable Design, Development, and Resource Conservation, and design elements will be tracked via the ANG Sustainable Design and Energy Conservation Score Sheet. The project is classified as “Vertical” construction ANG Category of Work, with a sustainable design goal of ANG Meritable.

1.1.3. Maximum Construction Cost (MCC)

REMOVED FOR PUBLIC

1.1.4. ANG Definitives/Facility Design Guides

This project is required to meet the criteria/scope specified in Air National Guard Handbook 32-1084, “Facility Requirements.” There is minimal threat for this facility and the level of protection is low, so minimum construction standards have been applied.

The following codes and guidelines are utilized in the development of this project scope:

DoD Design Requirements

Unified Facilities Criteria (UFC)

- UFC 1-200-01: DoD Building Code (General Building Requirements); Change 2, 1 November 2018
- UFC 1-200-02: High Performance and Sustainable Building Requirements; Change 3, 7 July 2018
- UFC 3-101-01: Architecture; Change 4, 03 June 2019
- UFC 3-110-03: Roofing; Change 3, 03 June 2019
- UFC 3-120-01: Design: Sign Standards; Change 3, 12 December 2017
- UFC 3-201-01: Civil Engineering; Change 2, 19 June 2019
- UFC 3-201-02: Landscape Architecture; Change 1, 1 November 2009
- UFC 3-210-10: Low Impact Development; Change 1, 1 February 2016
- UFC 3-220-01: Geotechnical Engineering; 1 November 2012
- UFC 3-230-01: Water Storage and Distribution; Change 1, 01 October 2018
- UFC 3-240-01: Wastewater Collection; Change with Change 2, 01 January 2019
- UFC 3-250-01: Pavement Design for Roads and Parking Areas; 14 November 2016
- UFC 3-250-03: Standard Practice Manual for Flexible Pavements; 30 May 2018
- UFC 3-250-04: Standard Practice for Concrete Pavements; Change 2, 29 July 2009
- UFC 3-250-07: Standard Practice for Pavement Recycling; 16 January 2004
- PCASE, “Pavement-Transportation Computer Assisted Structural Engineering” design software
- UFC 3-301-01: Structural Engineering; Change 4, 1 November 2018
- UFC 3-410-01: Heating, Ventilating, and Air Conditioning Systems; Change 4, 1 November 2017
- UFC 3-420-01: Plumbing Systems; Change 10, 26 October 2015
- UFC 3-501-01: Electrical Engineering; 6 October 2015
- UFC 3-520-01: Interior Electrical Systems; with Change 1, 20 March 2019
- UFC 3-530-01: Interior and Exterior Lighting Systems and Controls; Change 3, 1 June 2016
- UFC 3-550-01: Exterior Electrical Power Distribution; Change 1, 23 March 2017
- UFC 3-560-01: Operation and Maintenance: Electrical Safety; Change 2, 13 March 2019
- UFC 3-580-01: Telecommunications Interior Infrastructure Planning and Design; Change 1, 1 June 2016
- UFC 3-600-01: Fire Protection Engineering for Facilities; Change 3, 10 May 2019
- UFC 4-010-01: DoD Minimum Antiterrorism Standards for Buildings; 12 December 2018
- UFC 4-020-01: DoD Security Engineering Facilities Planning Manual; 9 November 2008
- UFC 4-020-02FA: Security Engineering: Concept Design (FOUO); March 1, 2005
- UFC 4-020-03FA: Security Engineering: Facilities Design (FOUO); March 1, 2005
- UFC 4-021-01: Design and O&M: Mass Notification Systems; Change 1, 1 January 2010
- UFC 4-022-01: Security Engineering: Entry Control Facilities/Access Control Points; 27 July 2017
- SDDCTEA Pamphlet 55-15, Traffic and Safety Engineering for Better Entry Control Facilities; 2014
- UFC 4-022-02: Selection and Application of Vehicle Barriers; Change 1, 9 August 2010
- UFC 4-022-03: Security Fences and Gates; 1 October 2013

Public Law

- Public Law 1095-58: Energy Policy Act (EPAct) of 2005; 8 August 2005

Accessibility for DoD Facilities

- ABA Accessibility Standard for Department of Defense Facilities; 31 October 2008

Air National Guard Requirements

Air National Guard Handbooks (ANGH)

- ANGH 32-1084: Facility Space Standards; 27 January 2015
- ANGH 32-1084: 730-839 Traffic Check House

Air National Guard Technical Letters (ANG-ETL)

- ANG ETL 10-3: Air National Guard Design Objectives and Procedures; 16 April 2010
- ANG-ETL 15-01: Air National Guard Design Policy; 1 May 2015
- ANG ETL 15-01-01: Sustainable Design, Development, and Resource Conservation; 1 May 2015
- ANG ETL 15-01-02: SCIF & AT/FP Guidance; 1 May 2015
- ANG ETL 15-01-03: Fire Protection Design Guidance; 1 May 2015
- ANG ETL 15-01-04: Mechanical Engineering; 1 May 2015
- ANG ETL 15-01-05: Electrical and Communications Engineering; 1 May 2015
- ANG ETL 15-01-06: Roof Design Guidance; 1 May 2015
- ANG ETL 15-01-07: Airfield Vehicle Pavements; 1 May 2015
- ANG ETL 15-01-08: ANG Generators; 1 May 2015

Public Codes

International Code Council (ICC)

- International Building Code (IBC); 2015
- International Plumbing Code (IPC); 2015
- International Mechanical Code (IMC); 2015
- International Electrical Code (IEC); 2015

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

- ASHRAE Standard 55: Thermal Environmental Conditions for Human Occupancy; 2013
- ASHRAE Standard 62.1: Ventilation for Acceptable Indoor Air Quality; 2010
- ASHRAE Standard 90.1: Energy Standard for Buildings Except Low-Rise Residential Buildings (IP); 2013

National Fire Protection Association (NFPA)

- NFPA 13: Standard for the Installation of Sprinkler Systems; 2013
- NFPA 25: Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems; 2014
- NFPA 70: National Electrical Code; 2014
- NFPA 72: National Fire Alarm Code and Signaling Code; 2013
- NFPA 75: Standard for the Fire Protection of Information Technology Equipment; 2013
- NFPA 90A: Standard for the Installation of Air-Conditioning Ventilating Systems; 2015
- NFPA 101: Life Safety Code; 2015
- NFPA 170: Standard for Fire Safety and Emergency Symbols; 2015
- NFPA 241: Standard for Safeguarding Construction, Alteration and Demolition Operations; 2013
- NFPA 780: Standard for the Installation of Lightning Protection Systems; 2014

1.1.5. Floor Plan

See attached architectural drawing in A-2 submittal set. This is a new facility; there are no existing floor plans.

1.1.6. Number of Occupants

Cat-Code	Name	**Daily**	**UTA**
730-839	Traffic Check House (Gate House)	4	8
145-921	Overhead Protection		

1.1.7. Hours of Operation

Main Gate: This facility operates 7 days a week, 24 hours a day.

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INDIVIDUAL SPACE CRITERIA DATA SHEET

Space: Guard Station – Room
Size (s.f.): 175 Occupancy: 1-2 Function: Guard House
Size (s.m.):

ARCHITECTURAL

Finishes:	Flooring, Paint
Floor:	LVT
Walls:	Gypsum Board (painted), CMU (painted)
Ceiling:	New ACT
Clear Ceiling Height:	
Windows:	Bullet resistant glazing system.
Doors:	Exterior: Bullet Resistant steel doors and frames. Interior: Flush Wood w/ Hollow Metal Frames
Adjacencies	Badging Area, Toilet Room
Features:	
Furnishing:	

STRUCTURAL

Floor:	Concrete slab on grade
Walls:	
Ceiling:	
Features:	

HVAC

Heating: X Air Conditioning: X Ventilation: ☐
Temperature:
Special Requirements:

PLUMBING

Fixtures:
Shop Air: ☐ Equipment Air: ☐ Floor Drains: ☐
Natural Gas: ☐ Other:

FIRE PROTECTION

System Type:	N/A
Hazard Classification:	
Detection:	Smoke and Heat Detection

ELECTRICAL

Telephone: X LAN: X PA: X

Lighting:	LED light fixtures. Lighting controls to be in compliance with UFC and current energy codes.
Special Requirements:	Voice and Data locations will need to be provided.
Security:	Access control system, duress alarm system, CCTV system, intrusion detection system
Power:	Access vehicle control barrier system
Grounding:	

EQUIPMENT

Cranes & Hoists:	
Other:	
GFGI:	

OTHER COMMENTS (Add Continuation Sheets)

INDIVIDUAL SPACE CRITERIA DATA SHEET

Space: Badging Area – Room
Size (s.f.): 38 Occupancy: 1-2 Function: Guard House
Size (s.m.):

ARCHITECTURAL

Finishes:	Flooring, Paint
Floor:	LVT
Walls:	Bullet Resistant Gypsum Board (painted), CMU (painted)
Ceiling:	Gypsum Board
Clear Ceiling Height:	
Windows:	Bullet resistant transaction window
Doors:	HM steel doors and frames.
Adjacencies	Guard Work Area
Features:	
Furnishing:	

STRUCTURAL

Floor:	Concrete slab on grade
Walls:	
Ceiling:	
Features:	

HVAC

Heating: X Air Conditioning: X Ventilation: ☐
Temperature:
Special Requirements:

PLUMBING

Fixtures:
Shop Air: ☐ Equipment Air: ☐ Floor Drains: ☐
Natural Gas: ☐ Other:

FIRE PROTECTION

System Type:	N/A
Hazard Classification:	
Detection:	Smoke and Heat Detection

ELECTRICAL

Telephone: X LAN: X PA: X
Lighting: LED light fixtures. Lighting controls to be in compliance with UFC and current energy codes.

Special Requirements:	Voice and Data locations will need to be provided.
Security:	
Power:	
Grounding:	

EQUIPMENT

Cranes & Hoists:	
Other:	
GFGI:	

OTHER COMMENTS (Add Continuation Sheets)

INDIVIDUAL SPACE CRITERIA DATA SHEET

Space: Guard Station – Toilet
Size (s.f.): 30 Occupancy: Function: Guard House Restroom
Size (s.m.):

ARCHITECTURAL	
Finishes:	Flooring, Paint
Floor:	Porcelain Tile
Walls:	Gypsum Board (painted), CMU (painted)
Ceiling:	New ACT
Clear Ceiling Height:	
Windows:	
Doors:	Flush Wood w/ Hollow Metal Frames
Adjacencies	Front Entry / Office
Features:	
Furnishing:	
STRUCTURAL	
Floor:	Concrete slab on grade
Walls:	
Ceiling:	
Features:	
HVAC	
Heating:	X Air Conditioning: X Ventilation: X
Temperature:	
Special Requirements:	
PLUMBING	
Fixtures:	Water closet, lavatory
Shop Air:	☐ Equipment Air: ☐ Floor Drains: ☐
Natural Gas:	☐ Other:
FIRE PROTECTION	
System Type:	N/A
Hazard Classification:	
Detection:	Smoke and Heat Detection
ELECTRICAL	
Telephone:	X LAN: X PA: X
Lighting:	LED light fixtures. Lighting controls to be in compliance with UFC and current energy codes.
Special Requirements:	
Security:	
Power:	
Grounding:	
EQUIPMENT	
Cranes & Hoists:	
Other:	
GFGI:	
OTHER COMMENTS (Add Continuation Sheets)	

INDIVIDUAL SPACE CRITERIA DATA SHEET

Space: Guard Station –Fire Alarm Room
Size (s.f.): 5 Occupancy: Function: Guard House Fire Alarm
Size (s.m.):

ARCHITECTURAL	
Finishes:	Paint
Floor:	Sealed concrete
Walls:	Gypsum Board (painted), CMU (painted)
Ceiling:	
Clear Ceiling Height:	
Windows:	
Doors:	Steel door w/ Hollow Metal Frames
Adjacencies	Storage Yard
Features:	
Furnishing:	
STRUCTURAL	
Floor:	Concrete slab on grade
Walls:	
Ceiling:	
Features:	
HVAC	
Heating:	X Air Conditioning: X Ventilation: ☐
Temperature:	
Special Requirements:	
PLUMBING	
Fixtures:	
Shop Air:	☐ Equipment Air: ☐ Floor Drains: ☐
Natural Gas:	☐ Other:
FIRE PROTECTION	
System Type:	N/A
Hazard Classification:	
Detection:	Smoke and Heat Detection
ELECTRICAL	
Telephone:	X LAN: X PA: X
Lighting:	LED light fixtures. Lighting controls to be in compliance with UFC and current energy codes.
Special Requirements:	Voice and Data locations will need to be provided.
Security:	
Power:	
Grounding:	
EQUIPMENT	
Cranes & Hoists:	
Other:	
GFGI:	Uninterruptable power supply
OTHER COMMENTS (Add Continuation Sheets)	

1.2 TAB B – PROJECT SITE REQUIREMENTS

1.2.1. Project Number and Title

Project number: MBMV099170
Project name: Construct Main Base Entrance

1.2.2. Location of Project

The Battle Creek Air National Guard Base is located at a joint-use airport, W.K. Kellogg Airport (BTL). The Base is located on the north and west sides of the Airport south of West Dickman Road. The Canadian National Railway divides the Base. The new entry control facility project site will be located on the west side of the Base off vacated Skyline Drive on lands to be leased from the City of Battle Creek.

1.2.3. Site Plan

The site plan layout utilizes the criteria as stated in UFC 4-022-01 “Security Engineering: Entry Control Facilities/Access Control Points,” SDDCTEA Pamphlet 55-15, and ANGH 32-1084 ANG “Standard Facility Requirements” for security, safety, and traffic flow.

The north, west, and east sides of the Guard Base are enclosed by a perimeter fence. The airport runways, which are shared with BTL, are located immediately adjacent to the south and southeast sides of the Base. Currently there are two access gates located on West Dickman Road. The existing main gate is situated on two north-south–oriented one-way paired streets that approximately bisect the Guard Base (Sabre Street and Phantom Avenue) and intersects with Thunderbolt Avenue. There is an auxiliary access gate approximately 780-feet east of the existing main gate that also intersects with Thunderbolt Avenue. The site generally drains toward the west and northwest, where the flow is eventually intercepted by a creek that flows northeast into the North Branch Kalamazoo River.

The new main gate will be located on the west side of the Base, west of the railroad tracks bisecting the Base. Access to the east side of the Base, across the railroad tracks, will be via the existing overpass on Sentry Avenue. The existing gate entrances on West Dickman Road will be maintained as auxiliary access points.

The main gate access to the local roadway network is planned to occur near the intersection of Skyline Drive and Hill Brady Road – both under the jurisdiction of the City of Battle Creek. The access point is west of BTL and southwest of the Guard Base. Prior to 2015, Skyline Drive continued northeasterly from Hill Brady Road for 5,000 feet to its then intersection with Dickman Road. In 2015, Skyline Drive was vacated by Michigan DOT between Hill Brady Road and Dickman Road. At that time, jurisdiction was transferred to the City of Battle Creek.

The current intersection configuration includes Skyline Drive terminating at Hill Brady Road in a “T” intersection. The predominant traffic movement involves Skyline Drive traffic turning left onto Hill Brady Road and the corresponding and opposing movement of Hill Brady Road traffic turning right onto Skyline

Drive. The intersection received minor improvements in 2015 and is currently signalized. Hill Brady Road also continues easterly for approximately 200 feet to its intersection with Logistics Drive, another local street.

The ECF project site is located along vacated Skyline Drive between Hill Brady Road and its intersection with Sentry Drive. A gate at Sentry Drive is currently unused. There is a munitions storage area located south of Sentry Drive. The project site is a vacated roadbed with partially wooded and open grassy areas adjacent to the roadway.

The site landscaping design will employ a combination of hardscape and softscape areas to provide a sense of entry and place, as well as reduce noise, incorporate stormwater management, improve energy efficiency, and screen light and glare. Care must be taken to discourage nesting and foraging of birds around the airport and to create a low-maintenance and attractive face to the surrounding community.

The project will necessitate improvements to the intersection of Skyline Drive and Hill Brady Road/Logistics Drive as well as improvements to the vacated portion of Skyline Drive between the intersection and the new entrance location. The work shall be coordinated with the City of Battle Creek to meet requirements of Private Improvement Agreements.

1.2.4. Utilities

A description of the existing utilities and utility needs within the site are as follows:

Water: There is an existing watermain running along the west side of vacated Skyline Drive. From that watermain there is a water service line crossing vacated Skyline Drive into the Base property approximately 290 feet southwest of the intersection with Sentry Avenue. This water service line then heads south and branches out to serve the buildings in the munitions storage area. There are several hydrants within the munitions storage area. Water service for the new gatehouse facility will be able to connect into the existing watermain along vacated Skyline Drive.

Sanitary sewer: There is a gravity sanitary sewer lateral connection crossing vacated Skyline Drive approximately 980 feet southwest of the intersection with Sentry Avenue and sanitary sewer along the west side of vacated Skyline Drive. Sanitary connections for the new gatehouse will be able connect to the sanitary sewer along Skyline Drive.

Storm drain: There are no existing storm sewer facilities in this area of the Base. There are two existing culverts crossing Sentry Avenue that discharge toward the northeast. One of the culverts is located at the ditch line of vacated Skyline Drive and the other is approximately 300 feet southeast of the vacated Skyline Drive. An existing wetland area is located approximately 570 feet northeast of the intersection of vacated Skyline Drive with Sentry Avenue on Base property. This low area may serve as the destination for the storm water runoff from the new main gate area. Storm water can be conveyed to this low area via graded swales, ditches and storm sewer piping. Storm water management practices will be required to manage stormwater for the site improvements. The Guard Base maintains a Storm Water Pollution Prevention Plan

(dated July 2018) in conformance with the Michigan Department of Environmental Quality (MDEQ) Michigan Pollutant Discharge Elimination System (NPDES) program.

Gas: There are existing gas facilities located east of vacated Skyline Drive and a service lateral serving the munitions storage area approximately 375 feet to the south of Sentry Drive. Investigation of the location of existing gas facilities that may service the project site is ongoing.

Electrical: There is an existing buried electric facility running down the northeast side of Sentry Avenue. Electric service to the new main gate facility can be provided from this facility.

Lighting: There are existing light poles along the south side of Sentry Ave. Refer to Part II, Item 2.1.6 for the planned lighting work.

Communication lines: There are no existing communication lines near the project site according to the existing data. Investigation of the existence and/or location of existing communication facilities that may service the project site is ongoing. Refer to Part II, Item 2.1.7 for the planned site communications work.

Hazardous Area: There are no known hazardous material sites in the vicinity of the new main gate.

1.2.5. Architectural Treatment

The new primary ECF guardhouse and canopies will match the style and look of other existing facilities on the Guard Base.

1.2.6. Special Siting Criteria

The ECF is divided into four zones, each encompassing specific functions and operations. Beginning at the Base's property boundary, the zones include the approach zone, access control zone, response zone, and safety zone. Each zone is more fully described in the following sections.

Approach Zone

The approach zone lies from the existing Base's property boundary to the ECF ID checkpoint. The approach zone consists of an area that vehicles must transverse before reaching the checkpoint. This area should include design elements to support the following functions and operations:

1) Reduce the speed of incoming vehicles to, or below, the design speed of the ECF.
2) Perform sorting of traffic by vehicle type prior to each vehicle reaching the checkpoint.
3) Provide adequate queuing distance for vehicles waiting for entry.
4) Provide the first opportunity to identify potential threat vehicles, including those attempting entry through the outbound lane of traffic.
5) Provide an area for traffic calming techniques to mitigate high-speed threats.

The existing approach zone layout at the existing facility located west of the train trestle does not conform to the current requirements stated within UFC 4-022-01 "Security Engineering: Entry Control Facilities/Access Control Points." The current configuration does not provide the following:

1) A designated commercial/large vehicle inspection lane. Currently, accommodating large trucks severely limits the space available at the main gate or contractor gate.
2) A rejection point prior to the ID checkpoint in which vehicles can exit without reaching the inspection point.
3) The minimum required 50-foot-long raised primary channelization gatehouse island for either the primary or secondary inspection areas.
4) Curbing of sufficient height is not present to keep vehicles from leaving the roadways to bypass the security checkpoints. The current calming devices are non-existent.
5) Adequate lighting of the area.
6) Standard required pavement markings and signage in accordance with SDDCTEA Pamphlet 55-15.

Facility containment is necessary to prevent inbound vehicles from unauthorized access and leaving the containment area to bypass security and must extend from the Base's perimeter to the final barrier to be effective. The current layout provided shows passive barriers consisting of 7-foot-high chain-link fencing with integral double cable barriers.

Access Control Zone

The access control zone is the main body of the ECF and includes the guard facilities and traffic management equipment used by the security forces manning the facility. The design of the access control zone should be flexible enough to ensure the infrastructure can support future inspection demands, access control equipment, and technologies. Design of the access control zone should consider the requirements to process all varieties of vehicles entering the Base. These vehicles should consist of POVs of authorized personnel; Government and visitor vehicles; military convoys; and delivery and construction vehicles consisting of vans, trucks, buses, and semi-trailers.

Typical operations in the access control zone consist of the verification of vehicle decals and personnel identification, general surveillance of the vehicles and their contents, and random inspections of the vehicles and contents.

Response Zone

The response zone is the area extending from the end of the access control area to the final denial barrier. This zone defines the end of the ECF. The design of the response zone requires that security forces have enough time to react to a threat, operate the final denial barriers, and close the ECF if necessary.

Safety Zone

The safety zone is an area that extends from the passive and active barriers in all directions to protect installation personnel, buildings, and assets from a possible explosion at the vehicle barriers. The limits of this area are defined by UFC 4-022-02.

Site Conditions

Pavements and perimeter fencing shall be constructed to meet the AT/FP classifications. For the existing and proposed buildings within the project area, a description of each building and the associated AT/FP setback is described as follows:

- The munitions admin building is a concrete, masonry, and steel structure with brick exterior. Although presently it has a low occupancy, the Guard Base may modify its function to primary. Therefore, consideration will be given to locating the controlled perimeter 186 feet from the building.
- The gatehouse constructed as part of this project will not be regularly occupied by more than 10 personnel and is considered uninhabited. Therefore, no setback is required.

The munitions storage area has quantity distance (QD) arcs of 500 feet and 1250 feet. The concept design falls outside the 500-foot arc but is within the 1250-foot arc.

1.2.7. Environmental Requirements

The project is to incorporate Leadership in Energy and Environmental Design (LEED) and sustainable development concepts to achieve optimum resource efficiency, constructability, sustainability, and energy conservations, while minimizing adverse impacts to the built and natural environments through all phases of its life cycle. The project will not be registered with the US Green Building Council. The project will comply with the ANG Sustainable Design and Energy Conservation 2009 Edition and provide score sheet v2010(1).

The project shall comply with facility design and construction related provisions of the Energy Policy Act of 2005 and Executive Order EO 13423, as applicable by project scope, with the exception of the Energy Policy Act of 2005, Section 109 energy consumption reduction requirements, which is not required to be met. Subject project shall also comply with the Energy Independence and Security Act of 2007 including, but not limited to Section 438 (EISA 438), as applicable by project scope. EISA 438 specifically calls for federal developments that exceed 5,000 square feet to maintain or restore pre-development hydrology.

Erosion Control Plan

An erosion control plan will be prepared to cover the disturbed area of the project site and include best management practices to address construction runoff at the site. The plans shall comply with Calhoun County and Michigan Department of Environmental Quality (MDEQ) standards. A permit is required when greater than 1 acre of land is disturbed. The MDEQ and County permit applications will be filled out and submitted with final plans.

Stormwater Management Plan

A stormwater management plan will be prepared to address stormwater peak flows and volume, stormwater quality, and channel protection to address the requirements of MEGLE.

The following design standards will be utilized:

- FAA AC 150/5320-5B.
- FAA AC 150/5200-33B.
- UFC 03-210-10 Low Impact Development (> 5,000 SF of impervious surface is added).

- Technical Reference Manual for the City of Battle Creek's Stormwater Management Program
- MDEQ

Michigan EGLE

MEGLE erosion control standards will be utilized when creating the erosion control plan.

Calhoun County

The plan will be prepared in accordance with County Ordinance No. 02-1.

City of Battle Creek

The stormwater design will take into consideration the City's ordinance.

1.3 TAB C – ANG DESIGN OBJECTIVES AND PROCEDURES

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AIR NATIONAL GUARD
DESIGN OBJECTIVES AND PROCEDURES
(TAB C)

16 APRIL 2010

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1.4 TAB D – ANG DESIGN POLICY

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS MD 20762-5157

1 May 2015

MEMORANDUM FOR SEE DISTRIBUTION

FROM: NGB/A7

SUBJECT: Air National Guard Engineering Technical Letter (ANGETL) 15-01, Air National Guard Design Policy

1. **PURPOSE:** This ANGETL provides design policies for the Air National Guard.

2. **APPLICABILITY:** Mandatory requirements are defined in specific paragraphs and in referenced publications.

   2.1. Effective date: Immediately.

   2.2. Intended Users: Base Civil Engineers (BCE) and architect-engineering (A-E) consultants

   2.3. This ANGETL shall be applicable for all new designs, designs for which NGB/A7O formal approval of the Type A-2 Concept Development Submittal has not yet been issued and for all code and criteria review. For projects that have obtained formal approval of the Type A-2 Submittal, this ANGETL shall be applicable on a case-by-case basis and as directed by the NGB/A7O Project Manager.

3. **REFERENCES:** Air National Guard Instruction (ANGI) 32-1023, Criteria and Standards for Air National Guard Construction.

4. **DESCRIPTION AND IMPLEMENTATION**

   4.1. ANG policy follows the Unified Facility Criteria. This ANGETL includes guidance, clarifications, and preferences for issues specific to Air National Guard facilities.

   4.2. The ANG design policy applies to all ANG design and construction projects regardless of size or funding source. The A-E shall follow the ANG design policy unless directed otherwise in a design instruction (DI) or statement of work (SOW) issued by NGB/A7O.

   4.3. The current ANG design policy is attached.

5. **POINT OF CONTACT**: The point of contact for this ANGETL is Mr. Doug Rowand, NGB/A7OU, at (240) 612-8112, DSN 612-8112, or email douglas.s.rowand.civ@mail.mil.

MICHAEL E. MCDONALD, P.E., Colonel, USAF
Director of Installations and Mission Support

Attachments:
1. ANG Design Policy
2. Current ANGETL Index

Distribution:
Each USPFO
Each BCE

1.5 TAB E – PROJECT APPROVAL PACKAGE

Contents:
DD Form 1391
MCP Certificate of Compliance
MCP Checklist
AF Form 813, Request for Environmental Impact Analysis

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Attachment 2

CERTIFICATE OF COMPLIANCE

Certificate of Compliance For Critical Planning Actions.

Command: ANG, project supports Air Combat Command
Base, State, Country (if Overseas): W.K. Kellogg ANGB, MI
Project Title: Construct Main Base Entrance
Project (Automated Civil Engineering System) Number: MBMV099170

I. INSTRUCTIONS:
Place one X in the most appropriate response for each topic area to show status of compliance. When responding to a statement requiring additional data, fill in the blank with appropriate information. If none of the printed statements are appropriate, add or attach an appropriate comment. For MILCON projects, the BCE and installation commander shall sign the certificate and submit it to the MAJCOM where it will be updated and readily available to HQ USAF.

II. PLANNING:

1. Environmental Impact Analysis Process (AFI 32-7061):
   - ☐ Categorical exclusion (CATEX) number_____applies. (See AF Form 813)
   - ☐ Environmental Assessment/Finding of No Significant Impact: Expected completion date is_____.
   - ☐ Environmental Assessment/Finding of No Significant Impact: Signed _____(date).
   - ☐ Final EIS/Record of Decision: Expected completed date is_____.
   - ☐ Record of Decision signed on_____(date).
   - ☐ Foreign nation or protected global resource exemption number _____ applies.
   - ☑ Environmental study (or review underway) under preparation. Expected completion date is Feb 19.
   - ☐ Environmental study (or review) completed on_____(date).

2. Wetlands (AFI 32-7064):
   - ☐ Project is not sited in or adjacent to a wetland.
   - ☑ Requirements of Clean Water Act, Section 404 & 401 in progress. Estimated completion date is.
   - ☐ Section 401 Certification completed_____(date).
   - ☐ Section 404 Permits issued_____(date).
   - ☐ Finding of No Practicable Alternative approved via EA/FONSI or EIS/ROD on: _____(date).

3. Floodplains (AFI 32-7064 and UFC 3-201-01):

☑ Project is not sited in a 100-year flood plain.
☐ Project is sited in a 100-year flood plain. Requirements of EO 11988 and EO 13653 completed via Finding of No Practicable Alternative approved via EA/FONSI or EIS/ROD on:_____(date).
☐ Project is sited in a 100-year flood plain. 100-year flood plain and flood mitigation design features comply with UFC 301-201-01, *Civil Engineering*.
☐ Renovation of facility is greater than $7.5M and is on a facility already located in a 100-year flood plain. The vulnerability of the mechanical and electrical subsystems was evaluated and necessary measures are incorporated into the project to mitigate the vulnerabilities.

4. Coastal Zone Management (AFI 32-7064):
☑ Project does not directly affect a state coastal zone.
☐ Consistency determination is being developed. Estimated completion date is ☐ _____.
☐ Consistency determination completed on_____(date).

5. Coastal Barrier Resources (AFI 32-7064):
☑ Project is not sited within the Coastal Barrier Resources System.
☐ Project exempt from the Coastal Barrier Resources Act (CBRA).
☐ Consultation with the Regional Director, United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) in progress. Estimated completion date is___. Consultation with the Regional Director, USFWS, concluded_____(date).

6. Threatened and Endangered Species (AFI 32-7064):
☑ Project has no potential for affecting threatened or endangered species or critical habitats.
☐ Based on consultation with USFWS/NMFS or host nation liaison on _____ (date), threatened or endangered species in the vicinity of the project will not be affected.
☐ Consultation with USFWS/NMFS underway in accordance with the Endangered Species Act.
☐ Formal consultation with the Regional Director, USFWS completed on ☐ _____(date).
☐ Biological Assessment is required. Estimated completion date is_____.
☐ Biological opinion issued by USFWS on_____(date).

7. Cultural Resources Management (AFI 32-7065):
☐ Properties affected by project are addressed in a Programmatic Agreement that was fully executed with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) on_____(date).
☑ Project area has not been surveyed for historic properties. Survey requirements are identified in the A-106 system and the estimated completion date is February 2019.

☐ Project area has been surveyed and no historic properties were identified; the SHPO was notified by letter dated_____.

☐ Survey identified historic properties but the project will have no effect on them; written concurrence by the SHPO is dated_____.

☐ After consultation, SHPO concurred the project will have no adverse effect on historic properties by written correspondence dated_____.

☐ Project will have an adverse effect on historic properties. A Memorandum of Agreement (MOA) mitigating the adverse effect was executed on _____ (date).

☐ Estimated date to execute the MOA is_____(date) or no MOA was developed and the formal comments of the Council were sought in a memo dated _____.

☐ Project will affect a site or property of interest to Native Americans. Appropriate Native American Tribe or Group contacted on_____(date).

8. Interagency and Intergovernmental Coordination for Environmental Planning :

☑ Coordination of proposed project with the state Single Point of Contact or other agencies is not required.

☐ Coordination with the state Single Point of Contact is in progress. Expected date of completion is_____(date).

☐ Proposed project was coordinated with the state Single Point of Contact or other agencies on_____(date). (Specify any other agencies.)

9. Environmental Permits (AFIs 32-7040, 7041, 7042, 7044):

☑ No permits are required.

☐ No permits required, but regulatory agency notification required prior to construction (e.g., underground storage tank removals)

☐ The following permits are required prior to construction: (List the construction and operating permits).

10. Potentially Regulated Substances at Existing Sites (AFIs 32-1052, 7042)

a. Asbestos:

☑ Not present

☐ Survey underway

☐ Present (Describe mitigation, or state why mitigation is not necessary.)

b. Lead-Based Paint:

☑ Not present

☐ Survey underway

☐ Present (Describe mitigation, or state why mitigation is not necessary.)

c. Ozone depleting substance:

☑ Not present

☐ Survey underway

☐ Present (Describe mitigation, or state why mitigation is not necessary.)

d. Polychlorinated biphenyls (PCBs):

☑ Not present

☐ Survey underway

☐ Present (Describe mitigation, or state why mitigation is not necessary.)

e. Radon:
- ☑ Not present
- ☐ Survey underway
- ☐ Present (Describe mitigation, or state why mitigation is not necessary.)

f. Other known hazardous or toxic substances and pollutants (e.g., contaminated soils):
- ☑ Not present
- ☐ Survey underway
- ☐ Present (Describe mitigation, or state why mitigation is not necessary.)

11. Radon at New Construction Sites:
- ☑ Not Present
- ☐ Present (Describe mitigation, or state why mitigation is not necessary.)

12. Environmental Restoration Program:
- ☑ Facility is not sited on or near an ERP site.
- ☐ Facility is sited near an ERP site approximately_____feet away.
- ☐ Facility is on an ERP site.
- ☐ The site is projected to be remediated and/or closed out on_____(date), prior to commencement of construction activities.
- ☐ The nature of the site contamination does not preclude the type of construction activity proposed.
- ☐ There is a Compliance Agreement (CA) associated with this site and this project does not hinder the ability to meet the requirements of the CA.
- ☐ A Remedial Investigation Feasibility Study was completed on_____(date) to accurately delineate the extent of the contamination.
- ☐ Cost of remedial action is included as part of MILCON project.

13. Air Pollutants (AFI 32-7040):

a. Generation:
- ☑ Will not be generated by the operation or construction of this facility.
- ☐ Will be generated by the operation or construction of this facility. Describe type and amount of substances expected to be generated, existing control systems, and the need for additional controls.

b. Conformity:
- ☐ Conformity analysis required.
- ☑ Conformity analysis not required.

14. Water Pollutants (AFI 32-7041):
- ☐ Facility will not generate water pollutants.
- ☐ Facility construction will not cause soil erosion.
- ☐ Facility will generate water pollutants. Describe type and amount along with minimization, treatment, and disposal plan.
- ☑ Facility construction will cause erosion and require an erosion control plan.

15. Solid and Hazardous Wastes (AFIs 32-7042):

☑ Facility will not be used for managing solid or hazardous wastes.
☐ Facility will be for managing solid or hazardous wastes.

16. Underground Storage Tanks (AFI 32-7044) (Check all that apply):
☑ No underground storage tanks are involved.
☐ New underground storage tanks will be installed.
☐ Existing tanks on the project site will be removed.
  ☐ Regulatory agency was notified on_____(date).
  ☐ Contamination exists.
  ☐ Cost of contamination clean-up is included as part of MILCON project.
  ☐ Contamination does not exist.
  ☐ Contamination unknown.
☐ Existing tanks on the project site will be retained.
  ☐ Contamination exists.
  ☐ Contamination does not exist.
  ☐ Contamination unknown.

17. Air Installation Compatible Use Zone (AFI 32-7063):
☑ Facility is sited within acceptable noise level according to the Air Installation Compatible Use Zone Study. No noise level reduction is required.
☐ Facility is not sited in compliance with Air Installation Compatible Use Zone Study. Noise level reduction of _____ will be provided in design and construction.

18. Installation Development Plan (AFI 32-7062):
☑ Facility is sited in accordance with the Installation Development Plan and is within a compatible land use area.
☐ Facility is not sited in accordance with the Installation Development Plan and is not within a compatible land use area for the following reason:
_____.

19. Airfield Clearance Criteria (UFC 03-260-01):
☑ Facility is in compliance with airfield clearance criteria, including clear zone, accident potential zones, frangibility requirements, and airfield airspace (height obstruction) criteria and poses no potential threat to flight safety.
☐ A request for waiver to airfield/air space clearance criteria is being prepared. Expected completion date is_____.
☐ A temporary waiver for construction activity in the airfield vicinity was approved on_____(date).
☐ A permanent waiver of airfield/air space clearance criteria was obtained on _____(date).

20. Air Space Use:
☑ Project does not affect air space use and does not require submittal of FAA Form 7460-1 to the Regional Office of the FAA.
☐ Project sent to Regional FAA on_____(date). Obstruction marking and

lighting recommendations are included in the project.

21. Explosives Quantity/Distance Siting and Safety Clearance Criteria:
a. Projects (new construction, facility modification, or change in use) involving explosives storage or handling.
☐ Explosives safety siting approval obtained on_____(date).
☐ Request for explosive safety siting approval sent to MAJCOM on _____(date). Expected approval date is_____.
☐ Request for Waiver/Exemption sent to MAJCOM on_____(date). Expected approval date is_____.
b. Projects not involving explosives (new construction, facility modification, or change in use).
☑ Project is not sited within explosives clear zones.
☐ Explosives safety siting approval obtained on_____(date).
☐ Request for explosive safety siting approval sent to MAJCOM on _____(date). Expected approval date is_____.
☐ Request for Waiver/Exemption sent to MAJCOM on (date). Expected approval date is_____.

22. Air Base Survivability, Conventional Hardening, Chemical Protection Levels and Priorities, Camouflage, Concealment and Deception:
☑ Project does not affect air base operability
☐ Facility is sited or constructed in compliance with criteria contained in WMP-1 Waiver or exemption required; request submitted to MAJCOM Civil Engineering Readiness Office, in accordance with WMP-1 on_____(date).
☐ Waiver or exemption granted on_____(date).

23. Allowance for the Physically Handicapped:
☑ Project provides all design features for handicapped.
☐ Project provides access and limited features.
☐ Project provides access but no other features.
☐ Design features for handicapped are not required.
☐ Design features will not be provided for the following reason:_____.

24. Real Estate Requirements (AFI 32-9001, 32-9005 and UFC 1-300-08):
☐ Project does not require acquisition of real estate interest.
☐ Project requires acquisition of a real estate interest over $750,000.
☑ Land interest is to be acquired through minor land authority.
☐ Other (explain):_____.

25. Antiterrorism measures included in this project are based on a facility and asset specific threat analysis performed to determine the Design Basis Threat (DBT) IAW UFC 4-020-01 and a valid Installation AT Plan which addresses the local installation threat assessment and Installation Vulnerability Assessment findings. Both items below must be certified.
☑ Antiterrorism design criteria for this project was determined using the DBT risk and vulnerability procedure in UFC 4-020-01, Security Engineering Facility Planning Manual and project requirements meet or exceed the UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings.

☐ Antiterrorism measures included in this project satisfy requirements established in the installation Antiterrorism Plan (DoDI 2000.16. Standard 7).

26. Excess Space:
☑ Excess space is not available to satisfy the requirement.

27. Temporary Facilities Incident to Construction:
☑ Temporary facilities are not required for this project.
☐ Temporary facilities are required for this project and will be demolished or removed upon completion.

28. Communications and Information Support:
☑ The communications equipment, information technology systems, pre-wiring costs, and other requirements for this project have been identified and are included in the project cost estimate and all other applicable project documents. A copy of the communication cost estimate is attached to the DD Form 1391.

29. Sustainable Design and Development:
☑ Project meets the requirements of UFC 1-200-02.
☑ Project meets the requirements of UFC 3-210-10.
☑ Project will qualify for third-party green building certification (Leadership in Energy and Environmental Design (LEED) or equivalent).

30. Seismic Considerations:
☑ Seismic planning and design complies with UFC 03-310-04.
☐ Seismic evaluations performed for existing facilities.
☐ Seismic deficiencies identified by the seismic evaluations are mitigated by project completion.

31. Joint Use Certification (include selection on DD Form 1391):
☑ Mission requirements, operational considerations, and location are incompatible with use by other components.
☐ This is an installation utility/infrastructure project, and does not qualify for joint use at this location. However, all tenants on this installation are benefited by this project.
☐ This facility can be used by other components on an as available basis; however, the scope of the project is based on Air Force requirements.
☐ This facility is programmed for joint use with_____(identify the component the facility is jointly used with); however, it is fully funded by the Air Force.

☐ The facility is programmed for joint use with_____(identify the component(s) the facility is jointly used with) and is conjunctively funded by_____(identify the participating component(s)).

I concur with the above statements.

Base Civil Engineer (date)

KRISTOF.RYAN.A.1235332236 Digitally signed by KRISTOF.RYAN.A.1235332236 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USAF, cn=KRISTOF.RYAN.A.1235332236 Date: 2017.08.29 12:31:06 -04'00'

Installation Commander (date)

21 Aug 2017
Bryan J. Teff, Col, MIANG

MILCON Project Checklist

Project Title: *(Indicate new mission or current mission)*	Upgrade Main Base Entrance				
Project Number:	MBMV099170	Building Number:		New Footprint	Yes
Is Project in ACES	Yes	Facilities Board approval date:	23 May 11	Base Priority:	1

Is the requirement/need/driving issue identified in the Base Comprehensive Activity Management Plan	Yes
Is the project in accordance with the Installation Development Plan (IDP)?	
Does this project achieve physical consolidation (e.g. result in demolition, reuse or greater mission efficiency)? Facilities that are to be demolished/consolidated should be shown on the 7115. (Submit AF Form 300 for demolition projects)	Yes
Building number(s):	
Amount to be demolished (SF):	
Amount to be consolidated (SF):	
Footprint growth/decrease (SF)	
Will this project terminate a lease, dispose of temporary facilities or provide other cost avoidance?	No
Has project been coordinated with NGB/A7AM on environmental impact analysis process actions?	Yes
Will this project require coordination with NGB/A7AR for a lease amendment or purchase of additional land?	Yes
Does this project achieve Joint or Total Force use?	No
Does this project correct a Life, Health or Safety deficiency? (e.g. base perimeter/first line of defense as identified by JSIVA or similar; officially documented FSD I or II, RAC I or II or facility waiver per applicable AFIs)	RAC II
Have all requirements been coordinated with and budgeted for by the organizations listed below?	

Installation Communications and/or NGB/A6	**(Specifically comm equipment/wiring)**	Yes
Installation Security Forces	**(Security requirements)**	Yes
Installation Logistics (furniture and equipment)	**(MILCON does not buy furniture)**	Yes
NGB/A2/3	**Specific mission needs**	NA
NGB/A4	**Logistics considerations/material handling**	NA
NGB/A8	**New Mission Advocacy**	NA

Has the scope/cost been developed based on ANG/CETSC recommendation or calculated using the UFC cost guidance? (Submit justification)	Yes
How will this project be executed? (Design-bid-build, Design-build, etc.)	Design-bid-build
Is a Military Construction Cooperative Agreement (MCCA) required for this project?	Yes
Does the project qualify as minor military construction (P-341)?	No

Forms to be Included in Package: (other forms may be requested by your Programmer for clarification)

Required	AF Form 1391	*Required*	Scope/Cost Guidance	*Required*	7115
Required	FUB Minutes	*Optional*	RAC Documentation	*Optional*	Facility Waivers
Required	Certificate of Compliance	*Optional*	FSD Documentation	*Optional*	Photos
Required	Economic Analysis	*Optional*	AF Form 300 (as required)	*Optional*	Floor Plans
Optional	ACES Snapshot	*Optional*	JSIVA Documentation	*Required*	Site Plans
Required	Environmental Clearance	*Optional*	MCCA (as required)	*Optional*	Facility Conditon

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REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS

Report Control Symbol RCS:

INSTRUCTIONS: Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on separate sheets as necessary. Reference appropriate item number(s).

SECTION I - PROPONENT INFORMATION

1. TO (Environmental Planning Function)	2. FROM (Proponent organization and functional address symbol)	2a. TELEPHONE NO.
110 MSG/CEV	110 CES/CEC	(269)969-3346 DSN 580-3346

3. TITLE OF PROPOSED ACTION
MBMV099170 Construct Main Base Entrance ANG/A7 Funded?: No MILCON Project

4. PURPOSE AND NEED FOR ACTION (Identify decision to be made and need date)
Upgrade the main entrance to the base to be compliant with Anti-Terrorism/Force Protection requirements as well as those listed in UFC 4-022-01 and 04-022-2.

5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DOPAA) (Provide sufficient details for evaluation of the total action.)
Upgrade the main base entrance consolidating the current main entrance and contractor's entrance into one facility.

6. PROPONENT APPROVAL (Name and Grade)	6a. SIGNATURE	6b. DATE
Nathan D. Finfrock, Maj 110 CES/CEC	Nath Finfrock	20170801

SECTION II - PRELIMINARY ENVIRONMENTAL SURVEY (Check appropriate box and describe potential environmental effects including cumulative effects.) (+ = positive effect; 0 = no effect; - = adverse effect; U= unknown effect)

	+	0	-	U
7. AIR INSTALLATION COMPATIBLE USE ZONE/LAND USE (Noise, accident potential, encroachment, etc.)	☐	☒	☐	☐
8. AIR QUALITY (Emissions, attainment status, state implementation plan, etc.)	☐	☒	☐	☐
9. WATER RESOURCES (Quality, quantity, source, etc.)	☐	☐	☐	☒
10. SAFETY AND OCCUPATIONAL HEALTH (Asbestos/radiation/chemical exposure, explosives safety quantity-distance, bird/wildlife aircraft hazard, etc.)	☐	☐	☐	☒
11. HAZARDOUS MATERIALS/WASTE (Use/storage/generation, solid waste, etc.)	☐	☒	☐	☐
12. BIOLOGICAL RESOURCES (Wetlands/floodplains, threatened or endangered species, etc.)	☐	☐	☐	☒
13. CULTURAL RESOURCES (Native American burial sites, archaeological, historical, etc.)	☐	☒	☐	☐
14. GEOLOGY AND SOILS (Topography, minerals, geothermal, Installation Restoration Program, seismicity, etc.)	☐	☒	☐	☐
15. SOCIOECONOMIC (Employment/population projections, school and local fiscal impacts, etc.)	☒	☐	☐	☐
16. OTHER (Potential impacts not addressed above.)	☐	☒	☐	☐

SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION

17. ☐ PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) # _____ ; OR
☒ PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED.

18. REMARKS
1. [USE THESE LINES FOR ANY NECESSARY REMARKS FOR CHECKED BOXES, ITEMS 7-16 ABOVE]
2.
3.
[KEEP THIS COMMENT]: (See additional 110 CES/CEVNEPA/EIAP/Cultural Resource Survey, CATEX Remarks, and Air Conformity Statement, ...next page----->).

19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION (Name and Grade)	19a. SIGNATURE	19b. DATE
MARK SITTERLY, MAJ, MIANG 110 CES/CEV		20170822

AF IMT 813, 19990901, V1

THIS FORM CONSOLIDATES AF FORMS 813 AND 814.
PREVIOUS EDITIONS OF BOTH FORMS ARE OBSOLETE.

PAGE 1 OF PAGE(S)

AF IMT 813, SEP 99, CONTINUATION SHEET

Section 1, Box 5. Description of Proposed Action and Alternatives DOPAA (CONTINUED.)

Option 1 - Status Quo/(Do Nothing Alternative) :
This option is not feasible.
Reason: By not upgrading the base main entrance, base personnel will be put at a continued risk to gate runners and attacks due to the inadequate stand-off distances of the current gates. Further, no ability of a final denial anti-vehicle barrier exists.

Option 2 - Proposed Option: Construct a new main entrance to include a gatehouse, visitor control center, anti-vehicle barrier systems, pavements, parking spaces, utility upgrades, stand-by power, and covered vehicle inspection areas. Construct utilities as required to support the operation of the main entrance. The Main entrance would be sited on Parcel 4 near the Munitions Storage Area at the existing secondary gate.
Cost- Approximately $9,800,000.00
Benefit - The gate will be upgraded and reconfigured to meet UFC criteria and provide proper explosive stand off and final vehicle denial barrier. Base security will be increased.

Option 3 – Construct a new main entrance to include a gatehouse, visitor control center, anti-vehicle barrier systems, pavements, parking spaces, utility upgrades, stand-by power, and covered vehicle inspection areas. Construct utilities as required to support the operation of the main entrance. The Main entrance will be sited on new property to be acquired along the closed section of Martin Luther King, Jr. Drive (Skyline Dr.) near the intersection of Hill-Brady Road.
Cost - Approximately $9,800,000.00
Benefit - The gate will be upgraded and reconfigured to meet UFC criteria and provide proper explosive stand off and final vehicle denial barrier. Base security will be increased.

DO NOT REMOVE ANY THING BELOW THIS LINE - FOR EM USE ONLY

110 CES EMO NEPA EIAP (Cont).
Cultural Resources Statement:
A Cultural Resource Survey for the 110 ATKW was completed in September of 2013. This survey concluded that the building(s) affected by this project [7010, 7011, 7012, 7013, and 7015] DO NOT meet general National Historical Preservation Act criteria, and ARE NOT eligible as (a) Cold War Era asset(s). The date of construction for building(s) affected by this project [7010, 7011, 7012, 7013, and 7015]was: [2002 - From 2013 Cult Resource Survey]

Air Quality Conformity Statement:
The 110th ATKW is located in Battle Creek, MI, which is in attainment for all criteria and hazardous air pollutants with the EPA and Michigan Department of Environmental Quality. While in attainment status, Calhoun County, which includes the 110 ATKW, was re-designated to Maintenance Status, from Non-Attainment Status, for 8 hour ozone, in 2007. This status has not changed since that time. Source: http://www.epa.gov/oaqps001/greenbk/anay_mi.html . The proposed action [WILL NOT] cause or contribute to any new violation of any standard in any area, will not increase the frequency or severity of any existing violation of any standard in any area, nor will it delay timely attainment of any standard or required interim emission reduction or other milestone in any area.

The proposed project DOES NOT qualify for Categorical Exclusion (CATEX)

V1

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1.6 TAB F – PROJECT APPENDICES

Contents: Real Estate Appendix
Environmental Restoration Program (ERP) Appendix

Asbestos Appendix: The project plan is to construct all new facilities. No existing facilities will be demolished under this project. The Asbestos Appendix is not applicable.

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DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P. O. BOX 59
LOUISVILLE KY 40201-0059

http://www.lrl.usace.army.mil/

CELRL-RE-M (405-80a)

2 July 2007

MEMORANDUM FOR Air Force Real Estate Agency, ATTN: AFRPA/COO (Zannetta Williams), 1700 N. Moore St., Ste 2300, Arlington, VA 22209-2802

SUBJECT: Department of the Air Force License No. DACA27-3-07-297, superseding License No. DACA27-3-87-11, W.K. Kellogg Air National Guard Base, Michigan

1. Enclosed is a fully executed copy of subject license which grants the State of Michigan, Air National Guard, use of 228.848 acres of land located at the W. K. Kellogg Airport, MI. The termination date of the license has been extended to run concurrently with Lease No. DACA27-5-06-733, ending 17 September 2086.

2. Point of contact for this action is Ms. Jennifer Perry, (502) 315-6975 or Jennifer.D.Perry@lrl02.usace.army.mil. Thank you for your cooperation with this matter.

FOR THE COMMANDER:

ORIGINAL SIGNED

MICHAEL G. BARTER
Chief, Real Estate Division

Encl

CF:
NGB/A7CPR (P. Henry)
USPFO MI (COL Barner)
110th FW CES/CE (R. Chism)

LICENSE NO. DACA27-3-07-297
SUPERSEDING LICENSE DACA27-3-87-11

DEPARTMENT OF THE AIR FORCE
LICENSE FOR
NATIONAL GUARD PURPOSES
W. K. KELLOGG AIRPORT
CALHOUN COUNTY, MI

THE SECRETARY OF THE AIR FORCE, hereinafter referred to as the Secretary, under the authority of Title 32, United States Code, Section 503, hereby grants to the **State of Michigan**, hereinafter referred to as the grantee, a license to use and occupy of approximately 228.848 acres of land, more particularly described as Parcel 3 (44.61 acres), Parcel 4 (159.43 acres), Parcel 5 (21.30 acres), and Taxiway F (3.508 acres) for use and benefit of the air units of the Michigan Air National Guard/Air Force and/or in the event air units of the Michigan Air National Guard are inducted in the federal military service, for military aviation purpose of the Federal Governments, hereinafter referred to as the premises, as shown identified in Exhibits A and B, attached hereto and made a part hereof.

THIS LICENSE is granted subject to the following conditions:

1. TERM

This license is granted for a term beginning on 8 May 2007 and ending 17 September 2086, to run concurrently with the term of the Land Lease from the City of Battle Creek, Michigan to the Department of the Air Force and identified as Land Lease No. DACA27-5-06-733, but revocable at will by the Secretary of the Air Force.

2. NOTICES

All notices and correspondence to be given pursuant to this license shall be addressed, if to the grantee, to the **STATE OF MICHIGAN**, The Adjutant General of Michigan, 3411 N. Martin Luther King Blvd, Lansing, MI 48906-2934; and if to the **UNITED STATES**, to the District Engineer, Attention Chief, Real Estate Division, P.O. Box 59, Louisville, Kentucky 40201-0059; or as may from time to time otherwise be directed by the parties. Notice shall be deemed to have been duly given if and when enclosed in a properly sealed envelope addressed as aforesaid, and deposited, postage prepaid, in a post office regularly maintained by the United States Postal Service.

3. SUPERVISION BY THE INSTALLATION COMMANDER

The use and occupancy of the premises shall be without cost to the regular establishment of the military departments of the Department of Defense and shall be under the general supervision of the Installation Commander, W.K. Kellogg Airport, hereinafter referred to as said officer, and subject to such rules and regulations as may be prescribed from time to time by said officer.

LICENSE NO. DACA27-3-07-297
SUPERSEDING LICENSE DACA27-3-87-11
W.K. KELLOGG AIRPORT, MI

4. APPLICABLE LAWS AND REGULATIONS

The grantee shall comply with all applicable Federal, state, county, and municipal laws, ordinances, and regulations wherein the premises are located.

5. FACILITY MAINTENANCE

The grantee shall maintain and keep the premises in good repair and condition and all costs of operation, maintenance, and restoration shall be paid for from funds available to the grantee, or from funds other than those appropriated for the regular establishment of the military departments.

6. RIGHT TO USE

The United States, hereinafter referred to as the Government, reserves the right to use the premises, or any part thereof, including all buildings and improvements situated thereon, for such purposes as said officer deems necessary in the interest of national defense.

7. COST OF UTILITIES

The grantee shall pay the cost, as determined by the officer having immediate jurisdiction over the premises, of producing and/or supplying any utilities or other services furnished by the Government or through Government-owned facilities for the use of the grantee, including the grantee's proportionate share of the cost of operation and maintenance of the Government-owned facilities by which such utilities or services are produced and supplied. The Government shall be under no obligation to furnish utilities or services. Payment shall be made in the manner prescribed by the officer having such jurisdiction.

8. USE RESTRICTIONS

The buildings and improvements included in this license shall not be used for the quartering of personnel engaged in the national guard activities except when such personnel are in the federal service or are participating in authorized training.

9. IMPROVEMENTS AND ALTERATIONS

Additions to or alteration or improvement of the premises shall not be made without prior written approval of the District Engineer. All such additions, alterations or improvements shall be maintained by the grantee in good repair and condition. All such work designated as permanent by said officer shall, upon completion, become property of the Government.

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SUPERSEDING LICENSE DACA27-3-87-11
W.K. KELLOGG AIRPORT, MI

10. CONDITION OF PREMISES

The grantee acknowledges that it has inspected the premises, knows its condition, and understands that the same is granted without any representations or warranties whatsoever and without any obligation on the part of the Government.

11. TERMINATION

This license may be terminated by the grantee at any time by giving the District Engineer at least thirty (30) days notice in writing.

12. RESTORATION

On or before the expiration of this license or its termination by the grantee, the grantee shall vacate the premises, remove its property (except those permanent additions, alterations, and improvements which have become property of the Government under provision of the condition on **IMPROVEMENTS AND ALTERATIONS**) and restore the premises to a condition satisfactory to said officer, ordinary wear and tear and damage beyond the control of the grantee excepted. If, however, this license is revoked, the grantee shall vacate the premises, remove said property and restore the premises within such time as the District Engineer may designate. In either event, if the grantee fails to remove said property and restore the premises, then, at the option of said officer, the property shall either become the property of the Government without compensation therefore, or said officer may cause the property to be removed at the expense of the grantee, and no claim for damages against the Government shall be created on account of such action.

13. USE BY OTHERS

The grantee shall not transfer or assign this license, or any interest in the premises, however, upon concurrence of the Director, Air National Guard, National Guard Bureau, the grantee may (1) permit the temporary or intermittent use of the premises by elements of the Department of Defense for joint use or individual training purposes, provided such use will not interfere with the National Guard use; or (2) issue licenses for nonprofit, community service-type activities under the same conditions as those allowed by active installation commanders by existing Air Force regulations.

14. PROTECTION OF PROPERTY

a. The grantee shall keep the premises in good order and in a clean, safe condition by and at the expense of the grantee. The grantee shall be responsible for any damage that may be caused to property of the United States by the activities of the grantee under this license, and shall exercise due diligence in the protection of all property located on the premises against fire or damage from any and all other causes. Any property of the United States damaged or destroyed by the grantee

incident to the exercise of the privileges herein granted shall be promptly repaired or replaced by the grantee to a condition satisfactory to said officer, or at the election of said officer, reimbursement made therefore by the grantee in an amount necessary to restore or replace the property to a condition satisfactory to said officer, in both instances taking into account the prior condition of the property.

b. Upon termination of the grantee's requirement for the premises, the grantee shall remain responsible to protect and maintain the premises until transfer to and acceptance by another accountability officer is accomplished or in accordance with applicable laws, rules and regulations.

15. ENVIRONMENTAL PROTECTION

a. Within the limits of their respective legal powers, the parties to this license shall protect the premises against pollution of its air, ground and water. The grantee shall comply with any laws, regulations, conditions or instructions affecting the activity hereby authorized if and when issued by the Environmental Protection Agency, or any Federal, state, interstate or local governmental agency having jurisdiction to abate or prevent pollution. The disposal of any toxic or hazardous materials within the premises is specifically prohibited. Such regulations, conditions or instructions in effect or prescribed by said Environmental Protection Agency, or any Federal, state, interstate or local governmental agency are hereby made a condition of this license. The grantee shall not discharge waste or effluent from the premises in such a manner that the discharge will contaminate streams or other bodies of water or otherwise become a public nuisance.

b. The grantee will use all reasonable means available to protect the environment and natural resources, and where damage nonetheless occurs from the grantee's activities, the grantee shall be liable to restore the damaged resources.

c. The grantee must obtain approval in writing from said officer before any pesticides or herbicides are applied to the premises.

16. ENVIRONMENTAL BASELINE SURVEY

An Environmental Baseline Survey (EBS) documenting the known history of the property with regard to the storage, release or disposal of hazardous substances thereon, is attached hereto and made a part hereof as Exhibit C. Upon expiration, revocation or relinquishment of this license, another EBS shall be prepared which will document the environmental condition of the property at that time. A comparison of the two assessments will assist the said officer in determining any environmental restoration requirements. Any such requirements will be completed by the grantee to the satisfaction of the said officer.

LICENSE NO. DACA27-3-07-297
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W.K. KELLOGG AIRPORT, MI

17. HISTORICAL PRESERVATION

The grantee shall not remove or disturb, or cause or permit to be removed or disturbed, any historical, archeological, architectural, or other cultural artifacts, relics, or objects of antiquity. In the event such items are discovered on the premises, the grantee shall immediately notify said officer and protect the site and material from further disturbance until the said officer gives clearance to proceed.

18. SUBJECT TO THE TERMS AND CONDITIONS OF DEPARTMENT OF THE AIR FORCE LAND LEASE

This license is subject to the conditions of the Land Lease from the City of Battle Creek, Michigan to the Department of the Air Force and identified as Land Lease No. DACA27-5-06-733.

19. NON-DISCRIMINATION

The grantee shall not discriminate against any person or persons or exclude them from participation in the grantee's operations, programs or activities conducted on the licensed premises because of race, color, religion, sex, age, handicap or national origin. The grantee by acceptance of this license, hereby gives assurance that it will comply with the provisions of Title VI of the Civil Rights Act of 1964 as amended (42 U.S.C. 2000d); the Age Discrimination Act of 1975 (42 U.S.C 6102); the Rehabilitation Act of 1973 as amended (29 U.S.C. 794); and all requirements imposed by or pursuant to the Department of Defense Directive 5500.11 (32 CFR Part 300) issued on December 28, 1964.

THIS LICENSE is not subject to Title 10, United States Code, Section 2662, as amended.

LICENSE NO. DACA27-3-07-297
SUPERSEDING LICENSE DACA27-3-87-11
W.K. KELLOGG AIRPORT, MI

IN WITNESS WHEREOF, I have hereunto set my hand by authority of the Secretary of the Air Force, this 8th day of May, 2007.

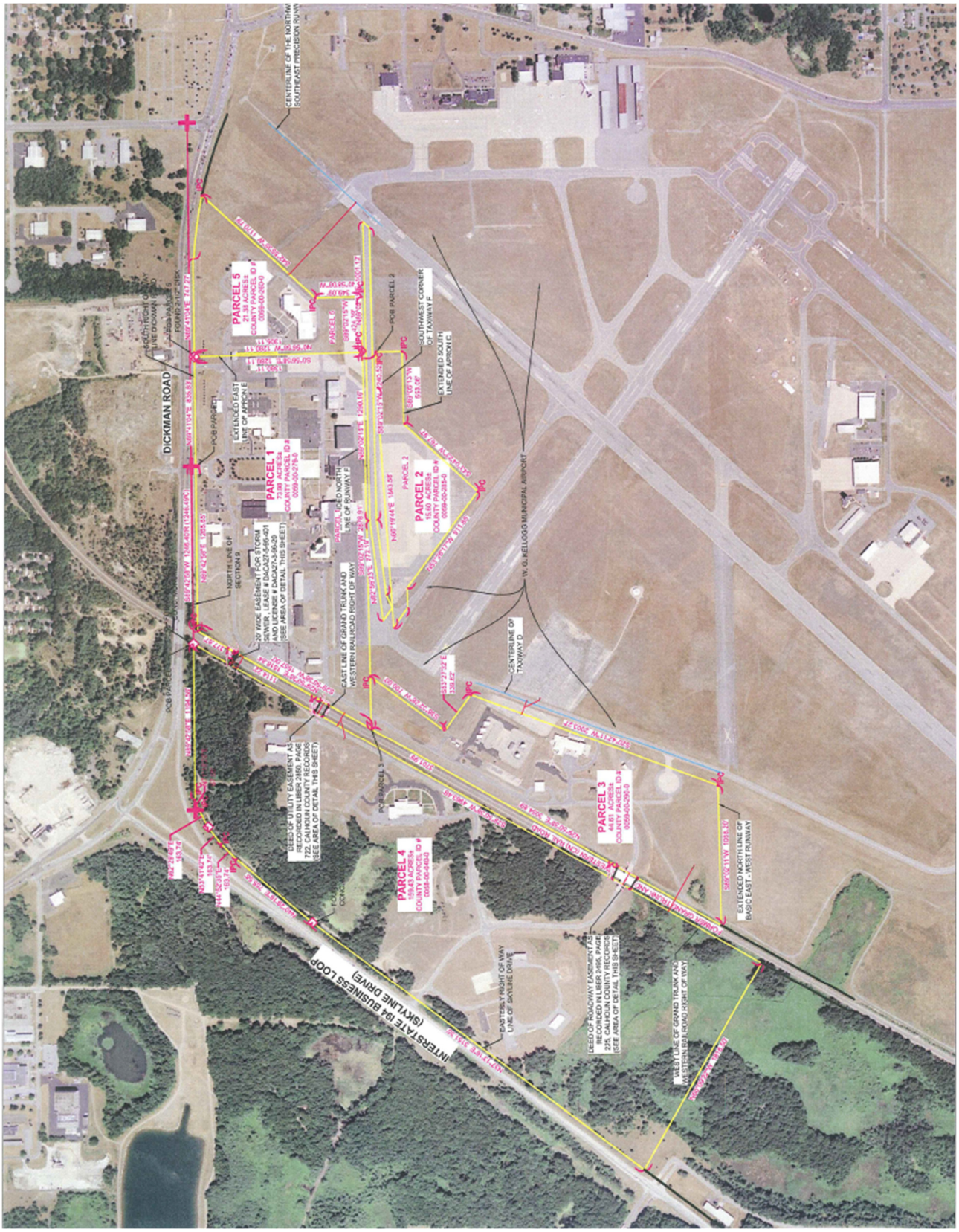
DEPARTMENT OF THE AIR FORCE

GERALD R. JOHNSON
Chief Operations Officer
Air Force Real Property Agency

THIS LICENSE is also executed by the grantee this 20th day of June, 2007.

STATE OF MICHIGAN
By Michigan Department of Military and Veterans Affairs

MG Thomas G. Cutler
Adjutant General


DICKMAN ROAD
PARCEL 1
PARCEL 2
PARCEL 3
PARCEL 4
PARCEL 5
W. K. KELLOGG MUNICIPAL AIRPORT
INTERSTATE 94 BUSINESS LOOP
(SKYLINE DRIVE)
CENTERLINE OF TAXIWAY D
EASTERLY RIGHT OF WAY LINE OF SKYLINE DRIVE
EAST LINE OF GRAND TRUNK AND WESTERN RAILROAD RIGHT OF WAY
NORTH LINE OF SECTION 9
EXTENDED EAST LINE OF APRON E
EXTENDED NORTH LINE OF BASIC EAST - WEST RUNWAY
SOUTHWEST CORNER OF TAXIWAY F
POB PARCEL 1
POB PARCEL 2
POB PARCEL 3
POB PARCEL 4
POB PARCEL 5

Draft Proposed Plan for Installation Restoration Program Sites 1 through 6 110th Airlift Wing Michigan Air National Guard W.K. Kellogg Airport – Battle Creek, Michigan

Air National Guard Announces Proposed Plan

This Proposed Plan presents the Preferred Alternative of No Further Action (NFA) for the assessment of potential soil and groundwater contamination at the following Installation Restoration Program (IRP) sites located at the 110th Airlift Wing (AW), Michigan Air National Guard Base (Base), W.K. Kellogg Airport, Battle Creek, Michigan:

- IRP Site 1 – Fuel Tank Farm
- IRP Site 2 – Drainage Swale
- IRP Site 3 – Former Fire Training Area (FTA)
- IRP Site 4 – Abandoned Landfill
- IRP Site 5 – Former Coal Storage Area
- IRP Site 6 – Fuel Spill Site

This Proposed Plan provides the rationale for selection of NFA as the Preferred Alternative for IRP Sites 1, 2, 3, 4, 5, and 6. In addition, this Proposed Plan includes a summary of investigation and cleanup activities conducted at the above-listed IRP sites.

The Air National Guard (ANG) is issuing the Proposed Plan. The Michigan Department of Environmental Quality (MDEQ) is the lead regulatory agency for IRP Sites 1 through 6. Subsequent to various assessment, investigation, and clean-up activities at the IRP sites, detailed below, the ANG, in consultation with the MDEQ, has concluded no further actions are required at IRP Sites 1 through 6.

MARK YOUR CALENDARS

PUBLIC COMMENT PERIOD:
Month Date, 2013 – Month Date, 2013
The Air National Guard (ANG) will accept written comments on the Proposed Plan during the public comment period. Comment letters must be postmarked by Month Date, 2013 and should be submitted to:

Major James Shay, Environmental Manager
110th Airlift Wing
Battle Creek Air National Base
50 Sabre Avenue
Battle Creek, Michigan 49015-5508

Email: james.shay@ang.af.mil
Phone: (269) 969-3233

To request an extension, send a request in writing to Major James Shay by 5 p.m., Month Date, 2013.

PUBLIC MEETING:
If there is interest from the public, the ANG will provide an opportunity to explain the Proposed Plan and the preferred alternative for IRP Sites 1 through 6. The public are encouraged to contact the ANG by Month Date, 2013 if they have an interest in having a public meeting. The ANG will issue additional public notices to announce a date, time, and location of a meeting. Additional oral or written comments will also be accepted at the meeting.

For more information, see the Information Repository at the following location:
Willard Library
7 West Van Buren Street
Battle Creek, Michigan
(269) 968-8166
Monday through Thursday: 9 a.m.-9 p.m.
Friday 9 a.m.-6 p.m.; Saturday: 9 a.m.-5 p.m.
Sunday: 1 p.m.-5 p.m.

Although this Proposed Plan recommends NFA as the Preferred Alternative for IRP Sites 1 through 6, a final determination will not be made until the public comment period ends and all comments are reviewed and addressed. The NFA decision may be reviewed and modified in the future if new information becomes available, which

indicates the presence of contamination or exposure routes that cause an unacceptable risk to human health or the environment. Therefore, the public is encouraged to review and comment on information presented in this Proposed Plan. For reference, a list of acronyms and glossary of terms is provided at the end of the Proposed Plan

The ANG is issuing this Proposed Plan as part of its public participation responsibilities under Section 117 (a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 United States Code § 9617(a) and Section 300.430 (f)(3) of the National Oil and Hazardous Substances Pollution Contingency Plan. This Proposed Plan summarizes information, including sample results and associated regulatory screening criteria, which can be found in greater detail in the various investigation study reports for the above-listed IRP sites, included as part of the Information Repository file for IRP Sites 1 through 6. The Information Repository is available for review at the Willard Library, located at 7 West Van Buren Street, in Battle Creek, Michigan.

The ANG and the MDEQ encourage the public to review these documents, to gain an understanding of the IRP sites and the assessment and investigation activities that have been conducted.

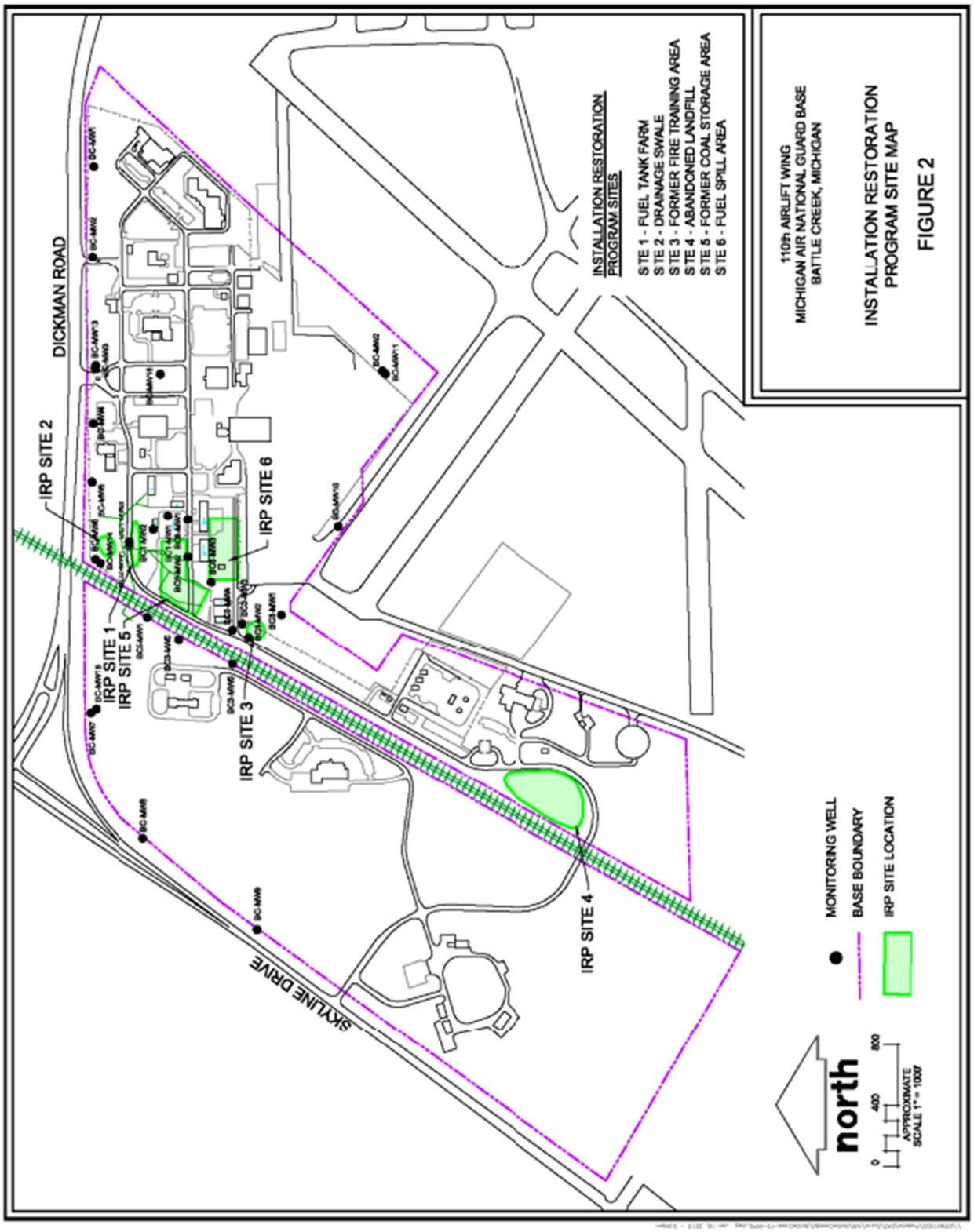
Figure 1
110th AW, Michigan ANGB
Battle Creek, Michigan

Site History and Background

The 110th AW Base is located at the W.K. Kellogg Airport (WKKA) in the northwest portion of Calhoun County, Michigan, approximately 3 miles west of downtown Battle Creek, Michigan (Figure 1). The 110th AW facilities are located primarily in the northwestern portion of WKKA, occupying 89 acres, while actually leasing a total of 319 acres from the City of Battle Creek, including 230 acres that are intended for future development.

Construction of WKKA began in 1928; it was used as an Army Air Corps Base from 1942 to 1946. In 1946, the 172nd Fighter Squadron of the Michigan ANG was formed at Kellogg Field. In 1951, the unit was re-designated the 172nd Fighter Bomber Squadron. From 1955 through 1971, the unit underwent a number of changes, ultimately becoming the 110th Air Support Group in 1971. The unit was reorganized as the 110th Fighter Group in 1992, and changed to the 110th Fighter Wing in 1995. In 2009, the unit was re-designated as the 110th AW, changing from an air combat command unit to an air mobility command unit. In 1986, the Base was expanded from 90 to 319 acres. The 110th AW's mission is aeromedical transport. In addition, AW personnel train with C-27J aircraft, designated to carry cargo and passengers in support of a variety of State and Federal missions.

A total of six IRP sites, as described on Page 1 of this Proposed Plan, have been identified and investigated. The locations of the IRP sites are depicted in Figure 2. As part of the Department of Defense's IRP, the ANG initiated activities at IRP Sites 1 through 6 to identify, evaluate, and remediate former disposal or spill sites containing hazardous substances, and assess the potential impact on human health and the environment.


DICKMAN ROAD
IRP SITE 2
IRP SITE 6
IRP SITE 1
IRP SITE 5
IRP SITE 3
IRP SITE 4
SKYLINE DRIVE
INSTALLATION RESTORATION PROGRAM SITES
SITE 1 - FUEL TANK FARM
SITE 2 - DRAINAGE SWALE
SITE 3 - FORMER FIRE TRAINING AREA
SITE 4 - ABANDONED LANDFILL
SITE 5 - FORMER COAL STORAGE AREA
SITE 6 - FUEL SPILL AREA
110th AIRLIFT WING
MICHIGAN AIR NATIONAL GUARD BASE
BATTLE CREEK, MICHIGAN
INSTALLATION RESTORATION PROGRAM SITE MAP
FIGURE 2
MONITORING WELL
BASE BOUNDARY
IRP SITE LOCATION
north
0
400
800
APPROXIMATE SCALE 1" = 1000'

IRP Site 1 – Fuel Tank Farm

IRP Site 1 is the Fuel Tank Farm located in the northwest portion of the installation, northwest of the motor pool parking lot (Figure 3). IRP Site 1 consisted of four 25,000-gallon aboveground storage tanks (ASTs) that were removed in 1988. Prior to 1949, the ASTs stored gasoline, and between 1973 and 1974 they stored #4 heating fuel for use by the City of Battle Creek. The ASTs were never used by the ANG. The tanks were patched before being used again in 1973, but heating fuel reportedly leaked from some of the tanks at the patched areas.

Activities completed at IRP Site 1 include a Preliminary Assessment (PA)/Records Search in 1987, tank removal in 1988, a Site Investigation (SI) from 1988 to 1991, an RI and site-specific preliminary risk evaluation from 1994 to 1995, a Feasibility Study (FS) in 1996, a remedial activities Decision Document (DD) in 1997, Remedial Action (RA) activities in 1997, groundwater sampling from 1997 through 1999, a DD submitted in 2003, and Project Closeout (PCO) activities in 2003.

Preliminary Assessment/Records Search – 1987

The PA/Records Search identified IRP Site 1 as an area that could potentially be contaminated. The PA/Records Search reported soil tests conducted in 1985 confirmed the presence of petroleum contamination at IRP Site 1. The PA recommended soil and groundwater sampling be conducted to confirm the presence or absence of contamination.

Aboveground Storage Tank Removal – 1988

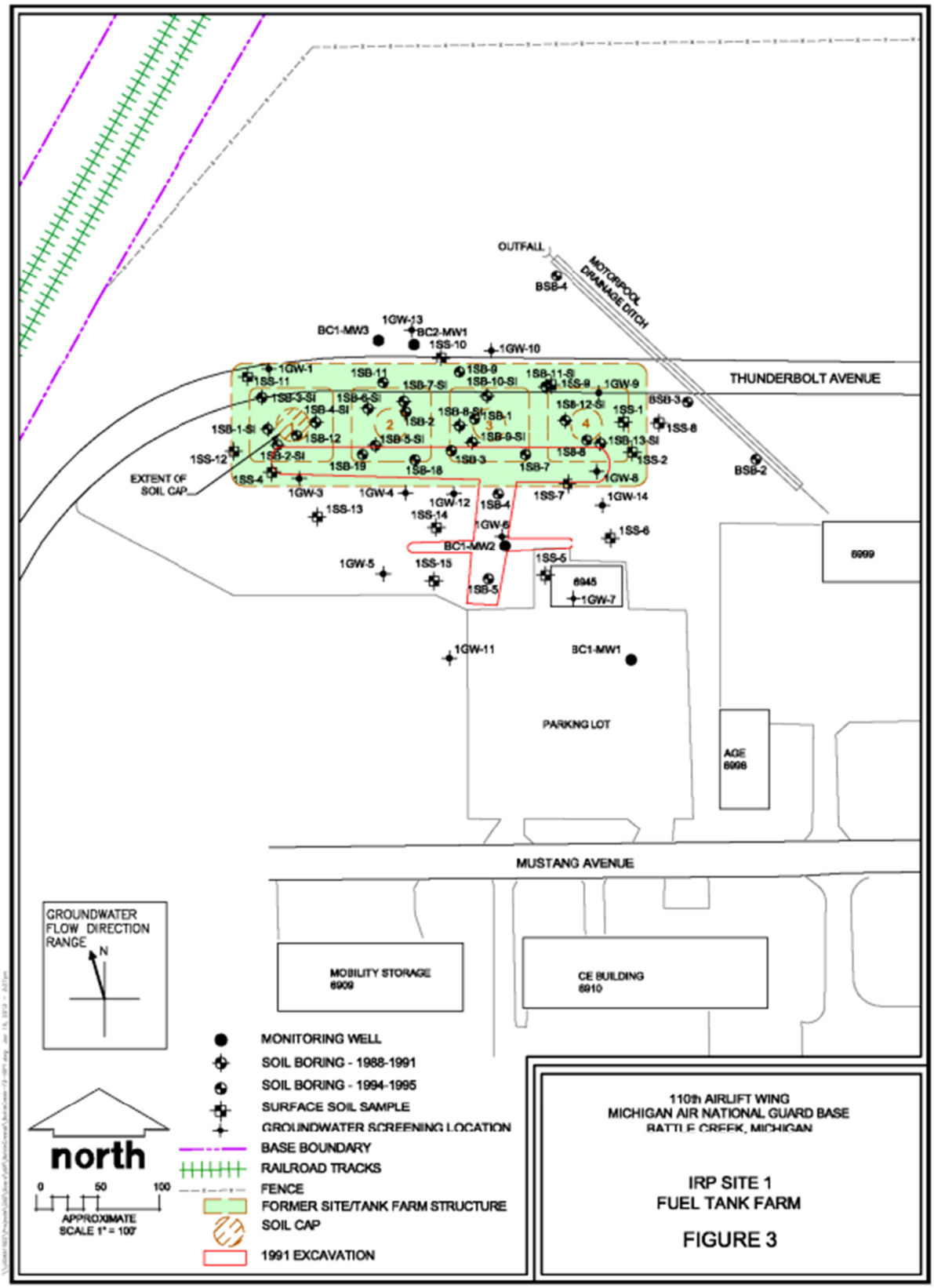
The four 25,000-gallon ASTs were dismantled and removed from IRP Site 1. No known sampling or removal actions were conducted during this effort.

Site Investigation – 1988-1991

An SI was completed in 1991, which included the completion of thirteen soil borings. Soil samples were collected, but accurate contaminant levels were not reported due to poor data quality and lack of laboratory quality assurance/quality control procedures. However, soil staining and petroleum odors were observed in the soil boring samples. Monitoring wells were installed north and west of IRP Site 1 along the Base boundary and sampled for volatile organic compounds (VOCs) and metals. No VOCs were detected in groundwater samples collected from monitoring well MW-1, located hydraulically downgradient (north) of IRP Site 1. Zinc was detected in groundwater in MW-1, but did not have an established applicable or relevant and appropriate requirement (ARAR). Groundwater at IRP Site 1 itself was not sampled or analyzed during SI activities. The SI Report recommended no further response action for groundwater at IRP Site 1, but did recommend fuel-contaminated soil be removed. Sampling and analysis of soil underlying and surrounding the excavation was also recommended to verify complete removal of all contaminated soil.

Remedial Investigation and Preliminary Risk Evaluation – 1994-1995

An RI was conducted at IRP Site 1 from October 1994 through May 1995. Fifteen surface samples, and fifteen soil borings, were completed, with samples analyzed for VOCs, semivolatile organic compounds (SVOCs), and lead. Five background soil samples were also collected and analyzed for SVOCs and metals. Groundwater samples were also collected from thirteen soil borings, one temporary monitoring well, and four monitoring wells; and analyzed for VOCs, SVOCs, and Priority Pollutant Metals. Based on results of the sampling activities, the RI identified lead as a chemical of concern for soil; while arsenic, phenanthrene, and tetrachloroethene (PCE) were identified as chemicals of concern for groundwater.



January 2013 Draft Proposed Plan for IRP Sites 1 through 6 – Battle Creek ANGB, Battle Creek, MI Page 5

The RI Report included a site-specific preliminary risk evaluation for a future excavation worker exposure scenario. The soil exposure results indicated lead in the surface soils exceeded the Michigan generic industrial direct contact criteria, suggesting the need for exposure mitigation for Base personnel. Additionally, the risk evaluation stated future on-site use of groundwater contained within the surficial aquifer beneath IRP Site 1 should be prohibited based on the concentrations of arsenic and iron above the generic industrial health-based criteria.

The RI Report recommended an FS to evaluate surface soils at IRP Site 1 around AST 1 (soil boring location 1SB-12); and evaluate future impacts contaminated surface and subsurface soils may have on site groundwater. The RI also recommended; prohibiting Base personnel from using site groundwater as a future source of potable water; periodically monitor groundwater concentrations for SVOCs and metals, to determine if contaminants are being transported off site in concentrations above residential health-based drinking water values; and include Base boundary wells in the future monitoring program.

Feasibility Study – 1996

An FS was completed to evaluate and screen remedial alternatives for IRP Site 1. The FS recommended a soil cap to prevent contact with soil, and natural attenuation for groundwater, as the remediation alternative for IRP Site 1. The FS noted no sources were identified in previous reports for the groundwater contaminants. It was anticipated the concentrations of these contaminants would naturally decrease over time and no longer pose a threat to human health or the environment.

Remedial Activities Decision Document – 1997

A DD was completed for IRP Site 1 in October 1997, recommending installation of a soil cap to prevent contact with lead contamination and natural attenuation for the groundwater contamination.

Remedial Action – 1997

During RA activities conducted from October to December 1997, a 2-foot thick soil cap covering a 30-foot circular area was constructed over IRP Site 1 to eliminate the threat of exposure to soil contamination, one groundwater monitoring well was installed downgradient of IRP Site 1 (BC1-MW4), and five wells were sampled (both new and previously existing). The groundwater samples were analyzed for arsenic, PCE, and phenanthrene. Samples from three of the wells were all non-detects for the three constituents. Arsenic and phenanthrene were detected in wells BC1-MW2 and BC1-MW3, but at levels below MDEQ Industrial Drinking Water Values. PCE was not detected in any of the wells during the sampling event.

As groundwater sampling results at IRP Site 1 indicate all contaminants of concern are below MDEQ Industrial Drinking Water Values, it was recommended closure of IRP Site 1 may be achievable if three more rounds of sampling produced similar results.

Natural Attenuation Sampling – 1997-1999

Five rounds of natural attenuation groundwater samples were collected from the five IRP Site 1 wells associated with IRP Site 1 and analyzed for PCE, phenanthrene, and arsenic. PCE and phenanthrene were not detected during any of the sampling rounds. Arsenic was detected above the MDEQ Residential Drinking Water Criteria in one monitoring well during each of the five rounds of sampling. Arsenic was not detected above criteria in the other four wells at IRP Site 1 during the five rounds of sampling. As PCE and phenanthrene were not detected during the 1½ years of natural attenuation sampling, it was concluded the VOCs detected in the groundwater at IRP Site 1 during the PA, SI, and RI had naturally attenuated.

Boundary Groundwater Monitoring Activities – 1998

Four groundwater monitoring wells were installed at the Base boundary in 1998 to provide better delineation of contaminants historically detected along the boundary of the installation and in residential wells northwest of IRP Site 1. During boring advancement, discrete groundwater samples were collected at 10-foot intervals. The groundwater samples were analyzed by an on-site mobile laboratory for VOCs and SVOCs. Additional samples were sent to a fixed laboratory and analyzed for Resource, Conservation, and Recovery Act (RCRA) metals, copper, and zinc. Permanent monitoring wells were then installed in the borings.

During the discrete sampling, groundwater from two Base boundary wells exceeded MDEQ criteria for lead. Upon completion of the discrete sampling, two rounds of groundwater samples were collected from the wells. Lead was not detected in either round of sampling. During the second round of groundwater sampling, one Base boundary well exceeded the criteria for silver in groundwater. No VOCs or SVOCs were detected in any of the Base boundary wells during either round of sampling.

The 1999 Final Long-Term Monitoring Report concluded the exceedance of silver in one well could be treated as an anomaly, as there is no known source of silver, and in all previous soil and groundwater samples collected at the Base boundary, silver was not detected. The Final Long-Term Monitoring Report noted groundwater monitoring activities at wells along the installation boundary indicated contamination is sufficiently contained on IRP Site 1.

No Further Action Decision Document – 2003

A DD, completed in May 2003, presented rationale for the NFA decision proposed for IRP Site 1. The DD summarized the previous site activities and contaminant detections, and noted a soil cap had been constructed over the contaminated soil at IRP Site 1 to eliminate stormwater infiltration and leaching into groundwater. Phenanthrene and PCE were not detected in the groundwater during five rounds of sampling from 1997 to 1999, indicating natural attenuation has been successful. Based on these results, the DD recommended NFA be granted by the MDEQ for IRP Site 1.

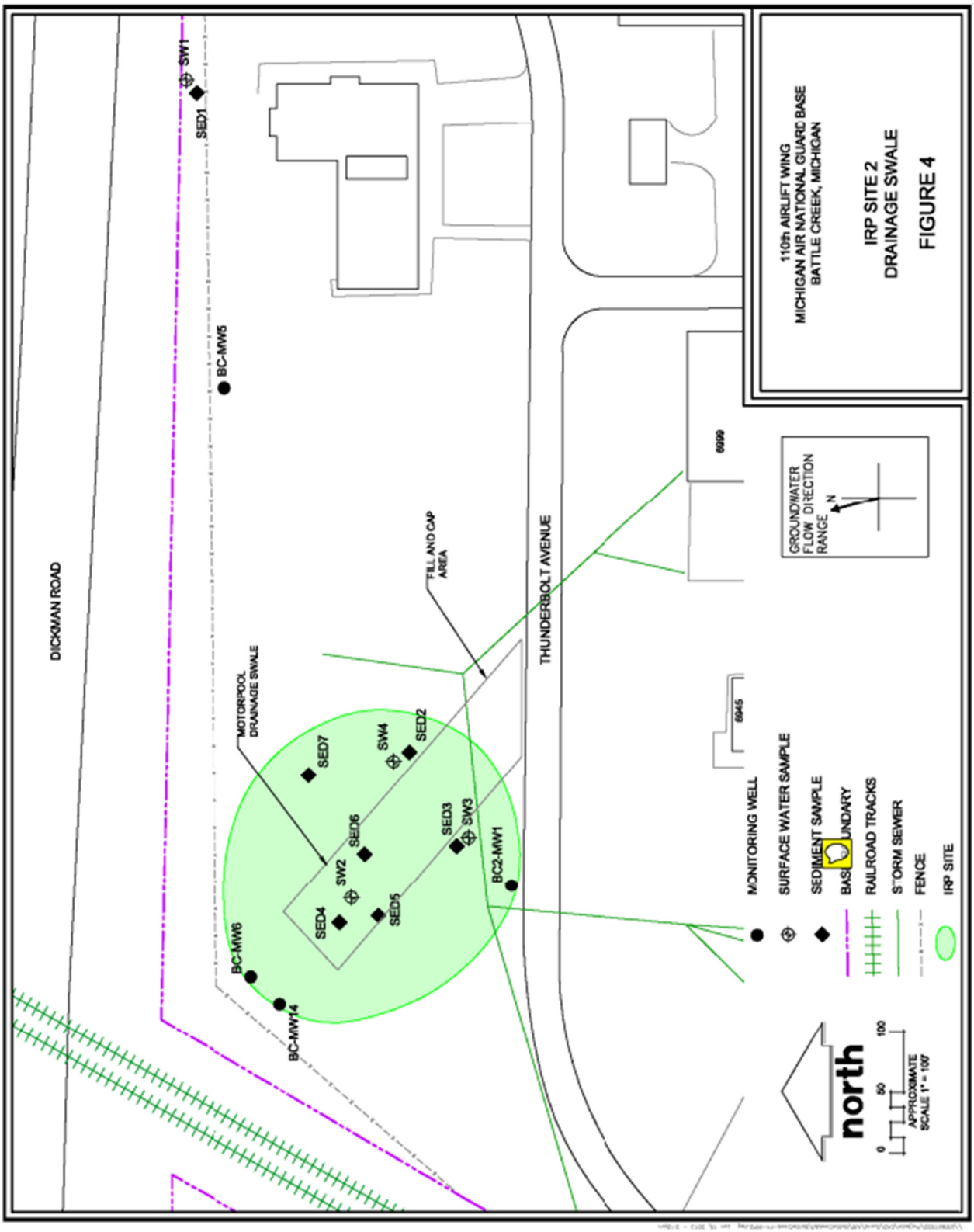
In a January 8, 2003 letter, the MDEQ found the IRP Site 1 remedy of capped contaminated soils, controlled access via implementation of the Base Management Action Plan, and demonstration that groundwater contamination above residential criteria was not moving off Base sufficiently restricts access to impacted media. The MDEQ concurred with the conclusion that there is no evidence of significant environmental contamination and no further remedial action is warranted at IRP Site 1, as proposed in the Final NFA DD.

Project Closeout – 2003

PCO activities were completed at IRP Site 1 in November 2003, including proper abandonment of monitoring wells BC1-MW2, BC1-MW3, and a previously unidentified well (SD1).

IRP Site 2 – Drainage Swale

IRP Site 2 is the Drainage Swale located in a low-lying depression on the northwestern portion of the IRP Site 2 (Figure 4). The Drainage Swale received stormwater runoff from the northern portion of the installation that either evaporated or percolated into the ground. Contaminants may have been transported to IRP Site 2 from areas where hazardous materials may have been used or stored before disposal. Fuels, oils, and lubricants in runoff from paved areas may also have been transported to IRP Site 2.


110th AIRLIFT WING
MICHIGAN AIR NATIONAL GUARD BASE
BATTLE CREEK, MICHIGAN
IRP SITE 2
DRAINAGE SWALE
FIGURE 4
DICKMAN ROAD
THUNDERBOLT AVENUE
FILL AND CAP AREA
MOTORPOOL DRAINAGE SWALE
GROUNDWATER FLOW DIRECTION RANGE
N
6999
6945
SW1
SED1
BC-MW5
SED7
SW4
SED2
SED6
SW2
SED3
SW3
BC2-MW1
SED4
SED5
BC-MW6
BC-MW14
MONITORING WELL
SURFACE WATER SAMPLE
SEDIMENT SAMPLE
BASE BOUNDARY
RAILROAD TRACKS
STORM SEWER
FENCE
IRP SITE
north
0
50
100
APPROXIMATE SCALE 1" = 100'

Activities completed at IRP Site 2 include a PA/Records Search in 1987, an SI from 1988 to 1991, a Soil Characterization Study conducted in 1993, a Source Removal Action Plan (SRAP) and source removal activities in 1994, boundary groundwater monitoring activities in 1998, a NFA DD in 2003, and PCO activities in 2003.

Preliminary Assessment/Records Search – 1987

The PA/Records Search identified IRP Site 2 as an area that could potentially be contaminated. The PA/Records Search reported this depressed area received surface water runoff from an area of confirmed soil contamination as well as three other storm drainage systems, which could carry chemicals. Sampling was recommended to determine whether any impacts were present.

Site Investigation – 1988-1991

During the SI, sediment, surface water, and groundwater samples were collected and analyzed for VOCs, SVOCs, and metals. A number of metals and SVOCs were detected in Drainage Swale sediment, which were above the ARARs in effect at the time of the SI (MDEQ Act 307 Criteria). Mercury and zinc were detected in surface water from the swale and associated drainages above ARARs; however, only one SVOC and no VOCs were detected in surface water. TCE and 1,1,2,2-tetrachloroethane were detected in groundwater from well BC-MW6, located directly downgradient of the Drainage Swale. The SI Report recommended an FS be conducted at IRP Site 2 to evaluate the need for an RA of the site sediment and groundwater, and to develop RA alternatives.

Soil Characterization Study – 1993

Because soil samples were not collected and analyzed during the SI, a Soil Characterization Study was conducted at IRP Site 2 during August 1993. Thirteen soil samples were collected from four borings to characterize the depth of contamination at IRP Site 2. Total petroleum hydrocarbons (TPH) were detected in all soil samples collected. These results supported the need for source removal action.

Source Removal Action – 1994

In 1994 an SRAP was developed, which assessed various remedial action alternatives for surface soil and sediment at IRP Site 2. The SRAP required the filling and capping of the depressed area at the Drainage Swale to deal with surface soils/sediments contaminated with SVOCs and metals. The SRAP was implemented and completed by 1997 by closing the Drainage Swale and covering it with sand, and installing 800 feet of storm sewer piping.

Boundary Groundwater Monitoring Activities – 1998

Four groundwater monitoring wells (BC-MW1 through BC-MW4) installed at the Base boundary in 1998, located downgradient of IRP Site 2, were sampled in October and December 1998. VOCs or SVOCs were not detected in the samples collected. Silver was detected in one well, which exceeded MDEQ Act 307 criteria during the second round of sampling, but was determined to be an anomaly. The 1999 Final Long-Term Monitoring Report noted groundwater monitoring activities at wells along the installation boundary indicated contamination is sufficiently contained on site.

No Further Action Decision Document – 2003

A DD was completed in July 2003, presenting rationale for the NFA decision proposed for IRP Site 2. The DD noted that in 1994, the MDEQ Act 307 Criteria was replaced with MDEQ Part 201 Criteria to evaluate soil and groundwater. When comparing the analytical data collected from IRP Site 2 during the SI to the newer criteria for surface water, only mercury exceeded the Part 201 Residential Groundwater/Surface Water Criteria. When comparing the analytical data collected from IRP Site 2 during the SI to the newer criteria for surface soils/sediments, phenanthrene,

di-n-butylphthalate, fluoranthene, benzo(b) fluoranthene, benzo(a)pyrene, arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc exceeded at least one of the Part 201 Residential Soil Criteria. TCE and 1,1,2,2-tricholoroethane were detected in the groundwater at concentrations below the MDEQ Part 201 Residential Groundwater Criteria. No VOCs or SVOCs were in detected in any of the Base boundary wells during either round of sampling in 1998. Therefore, the NFA DD for IRP Site 2 concluded there were no contaminants in site groundwater exceeding the established ARARs and the soil contamination at IRP Site 2 has been covered to prevent against direct contact with contaminants. Additionally, implementation of the Base Management Action Plan will prevent disturbance of the cap, and contaminated groundwater is not moving off the Base. Therefore, the DD recommended that NFA for IRP Site 2 be granted by the MDEQ.

In a letter dated September 17, 2003, the MDEQ found that the site remedy of capped contaminated soils, controlled access via implementation of the Base Management Action Plan, and demonstration that groundwater contamination above residential criteria was not moving off Base sufficiently restricts access to impacted media. Therefore, the MDEQ concurred with the conclusion that no further remedial action is warranted at IRP Site 2, as proposed in the July 2003 Final NFA DD.

Project Closeout – 2003
In November 2003, PCO activities were completed at IRP Site 2. These activities included proper abandonment of monitoring well BC2-MW1 and a previously unidentified well (SD2).

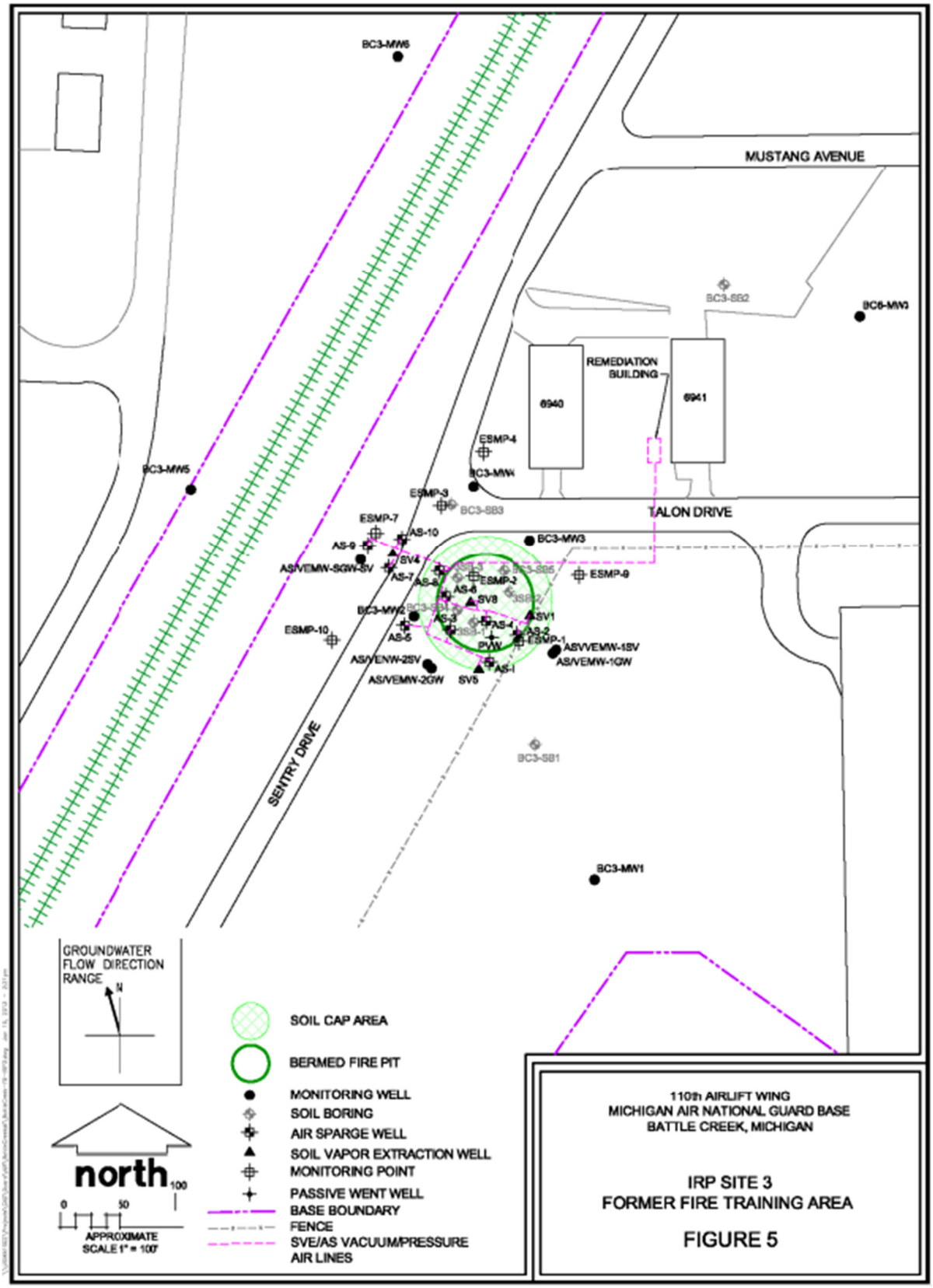
IRP Site 3 – Former Fire Training Area

IRP Site 3 is the Former FTA located in the west-central portion of the Base, just north of Runway 13/31 (Figure 5). Fire training exercises were conducted at IRP Site 3 from 1977 to 1986 in an area surrounded by an earthen berm. During this time, approximately 54,000 to 74,000 gallons of a mixture consisting of jet propulsion fuel #4 (JP-4), waste oils, waste hydraulic fluid, and spent cleaning solvents were reportedly burned during fire training exercises.

Activities completed at IRP Site 3 include a PA/Records Search in 1987; an SI in 1991; installation and operation of a bioventing system from 1992 to 1993; an RI in 1995; a Treatability Study (TS) in 1995; an FS in 1996; creation of a DD for further action in 1997, RA activities in 1997; remediation and monitoring activities in 2000 and 2001; a DD in 2003; and PCO activities in 2003.

Preliminary Assessment/Records Search – 1987
The PA/Records Search identified IRP Site 3 as an area that could potentially be contaminated. The PA/Records Search reported soil tests conducted in 1987 confirmed the presence of petroleum products, petroleum additives, and 1,1,1-trichloroethane at IRP Site 3.

Site Investigation – 1991
During the SI, five soil borings were advanced, six monitoring wells were installed, and groundwater samples were collected from the wells during three separate events. Soil samples were analyzed for VOCs and TPH, while groundwater samples were analyzed for VOCs and priority pollutant metals. Soil in the burn area at IRP Site 3 was visibly contaminated, and fuel odors were observed during the SI field events. Due to quality control issues, data from the first field event was rejected, although utilized to indicate contaminants were present. Benzene, toluene, ethylbenzene, and total xylenes (BTEX); and metals barium, cadmium, chromium, lead, and zinc were detected in soil. In downgradient groundwater samples, BTEX and 1,2-dichloroethene (1,2-DCE) were detected.


BC3-MW6
MUSTANG AVENUE
BC3-SB2
BC3-MW4
REMEDIATION BUILDING
6940
6941
ESMP-4
BC3-MW5
BC3-MW4
ESMP-3
BC3-SB3
TALON DRIVE
ESMP-7
AS-10
AS-9
BC3-MW3
SV4
AS/VEMW-5GW-5V
AS-7
AS-8
ESMP-2
BC3-SB5
ESMP-9
AS-6
SV8
BC3-MW2
BC3-SB4
AS-3
SV1
ESMP-10
AS-5
AS-4
AS-2
PVMW
ESMP-1
AS/VEMW-1SV
AS/VEMW-1GW
AS/VEMW-2SV
AS/VEMW-2GW
SV5
AS-1
BC3-SB1
SENTRY DRIVE
BC3-MW1
GROUNDWATER FLOW DIRECTION RANGE
N
north
100
0
50
APPROXIMATE SCALE 1" = 100'
SOIL CAP AREA
BERMED FIRE PIT
MONITORING WELL
SOIL BORING
AIR SPARGE WELL
SOIL VAPOR EXTRACTION WELL
MONITORING POINT
PASSIVE WENT WELL
BASE BOUNDARY
FENCE
SVE/AS VACUUM/PRESSURE AIR LINES
110th AIRLIFT WING
MICHIGAN AIR NATIONAL GUARD BASE
BATTLE CREEK, MICHIGAN
IRP SITE 3
FORMER FIRE TRAINING AREA
FIGURE 5

Analyses showed contamination in the soil column from the surface to the water table (30 to 35 feet bgs). The horizontal extent of contaminated soils was generally limited to the burn pit and the area immediately outside the pit. The SI Report recommended an FS be conducted at IRP Site 3 to evaluate the need and alternatives for, groundwater remediation.

Bioventing – 1992-1993
A bioventing system was installed at IRP Site 3 in 1992 as petroleum-contaminated soil at the IRP Site 3 was expected to be amenable to biodegradation, and the system was operated for approximately one year. Monitoring of the system indicated VOC degradation rates increased with time and BTEX compounds in the soil were significantly reduced. It was recommended full-scale soil sampling be conducted in accordance with Michigan Department of Natural Resources (MDNR) (now the MDEQ) requirements for closure of IRP Site 3.

Remedial Investigation – 1995
An RI conducted at IRP Site 3 collected and analyzed surface and subsurface soils for Priority Pollutant Metals plus barium. In addition, groundwater samples collected from existing wells were sampled and analyzed for VOCs, SVOCs, and Priority Pollutant Metals plus barium. Barium, cadmium, chromium, lead, and zinc were detected in surface soil samples at concentrations above background and ARARs. There were no exceedances of ARARs for metals in the subsurface soil samples. Benzene was detected in groundwater samples above ARARs; antimony was detected in groundwater samples above background; and arsenic was detected above background but below ARARs. The RI Report recommended determining the nature and extent of metals in the surface and near-surface soils at IRP Site 3.

Treatability Study – 1995
A TS was performed at IRP Site 3 to determine the potential effectiveness of an air sparging (AS)/soil vapor extraction (SVE) system to remediate contaminated groundwater at IRP Site 3. Soil and groundwater samples were collected during the TS. In soil, lead, PCE, and 3,3',5,5'-tetramethylbenzidine (TMB) were reported at concentrations exceeding ARARs.

Feasibility Study – 1996
An FS was completed to evaluate and screen remedial alternatives for IRP Site 3, recommending a clay cap to prevent contact with soil, *in situ* soil treatment by way of an SVE system, and *in situ* groundwater treatment by way of an AS system.

Further Action Decision Document – 1997
A DD was completed for IRP Site 3 in October 1997, acknowledging evidence of environmental contamination; recommending installation of a clay cap to prevent contact with soil contaminants and to prevent leaching of soil contamination to the groundwater; and recommending installation of an *in situ* treatment system to address contaminated soil and groundwater. In a letter dated September 4, 1997, the MDEQ agreed with the additional activities proposed for IRP Site 3.

Remedial Action – 1997-2000
RA activities included construction of a clay cap over the Former FTA, installation of wells and other components for AS and SVE systems, and sampling of new and existing monitoring wells at IRP Site 3. A 105-foot-diameter clay cap was constructed over IRP Site 3, to eliminate the threat of exposure to soil contaminated by metals. The cap was constructed of 12 inches of clay overlain by approximately 6 inches of topsoil. An AS/SVE system was constructed and began operation in April 1998. Baseline soil and groundwater sampling was completed prior to startup of the system. The system was shutdown in December 2000.

Remediation and Monitoring Activities – 2000-2001
Quarterly groundwater monitoring of wells at IRP Site 3 was conducted in 2000 and

2001, to determine whether VOC levels rebounded after remediation system shutdown. No VOCs were detected in groundwater during the four consecutive quarterly monitoring events.

Follow-up soil and groundwater verification sampling was conducted in late 2001. Analyses of 26 soil and 10 groundwater samples collected during verification sampling detected no VOCs in soil or groundwater, and no TPH in soil, above applicable MDEQ Part 201 Criteria.

No Further Action Decision Document – 2003

In a letter dated July 2, 2002, the MDEQ stated if the ANG implemented the Base Management Action Plan, the interim remedial remedy would be protective for the 110th AW. A Final DD presented the rationale for the NFA decision proposed for IRP Site 3, and described the institutional controls currently in place to limit human contact with the sources of contamination. In a letter dated March 31, 2003, the MDEQ gave concurrence of NFA at IRP Site 3.

Project Closeout – 2003

PCO activities at IRP Site 3 were conducted in November 2003, including proper abandonment of the six monitoring wells and AS/SVE wells, and decommissioning of the AS/SVE remediation system.

IRP Site 4 – Abandoned Landfill

IRP Site 4 is the Abandoned Landfill (Landfill) in the southwest portion of the 110th AW near Building 6956, located east of the Munitions Maintenance Complex and railroad tracks, and southwest of the Former FTA (IRP Site 3) (Figure 6). The Landfill was used for the disposal of concrete and asphalt during runway repairs, but also contained empty 55-gallon drums and 1-gallon paint cans. The empty drums, paint cans, concrete, asphalt, and other debris have since been removed from the Landfill and properly disposed of off site.

Activities completed at IRP Site 4 include a PA/Records Search in 1987, an SI in 1991, a No Further Response Action Planned (NFRAP) DD in 1992, PCO activities in 1997, and a DD in 2003.

Preliminary Assessment/Records Search – 1987

The PA/Records Search identified IRP Site 4 as an area that could potentially be contaminated. Soil and groundwater sampling was recommended to determine whether contamination was present at IRP Site 4.

Site Investigation – 1988-1991

During the SI, four monitoring wells were installed, with groundwater samples collected over three events for analysis of VOCs, SVOCs, and total Priority Pollutant Metals. During well installation, soil samples were continuously screened with a photoionization detector and visually inspected for any signs of contamination. No soil samples were collected from IRP Site 4 during the SI. No contaminants were detected in groundwater samples collected at IRP Site 4, and the SI concluded no evidence of soil contamination existed.

No Further Response Action Planned Decision Document – 1992

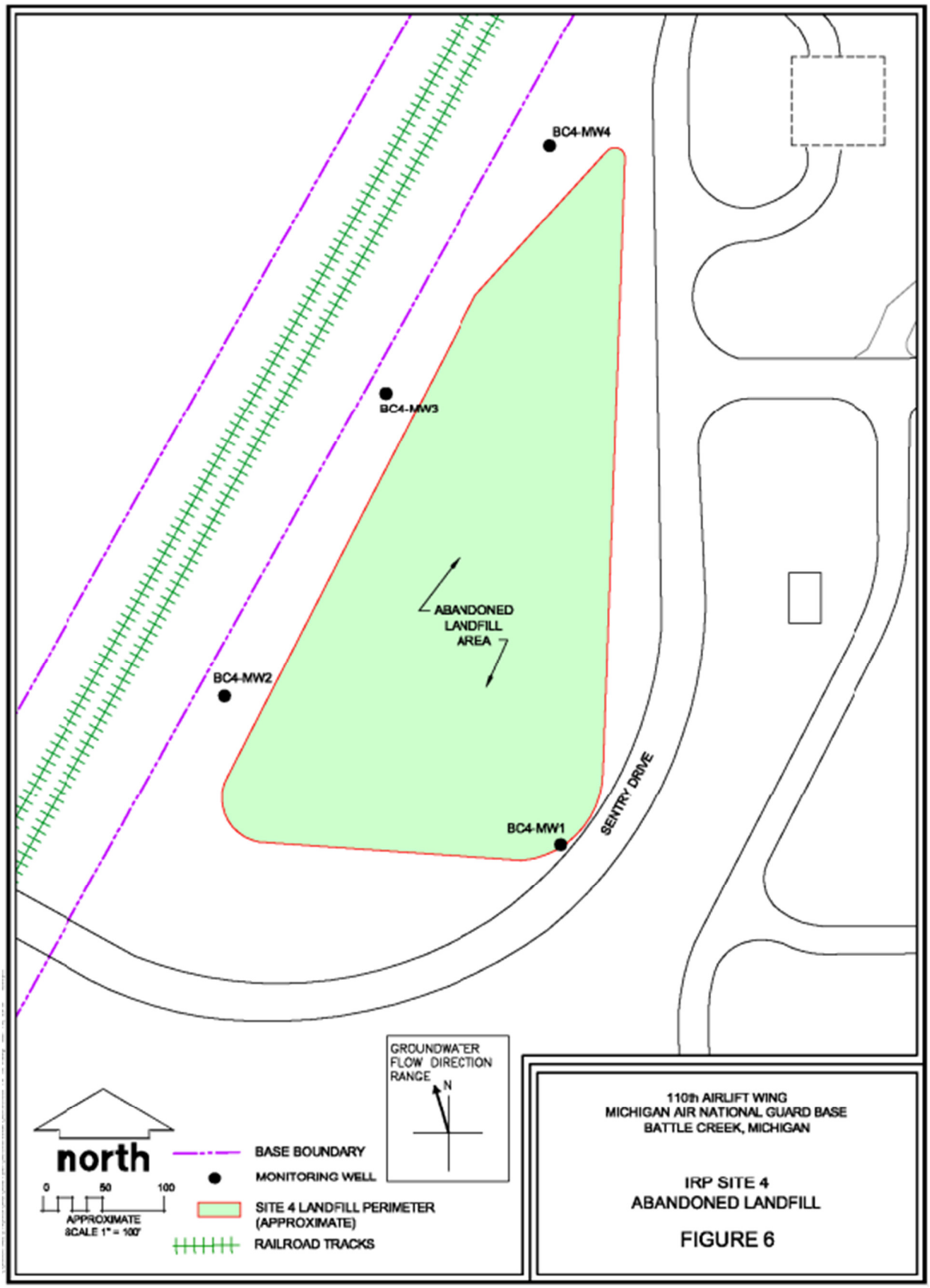
A DD supporting NFRAP was completed for IRP Site 4 in March 1992. The DD was not signed by the MDEQ.

Project Closeout Activities – 1997

Monitoring wells BC4-MW1 through BC4-MW4 were properly closed in 1997.

No Further Action Decision Document – 2003

A DD was completed in May 2003, presenting the rationale for the NFA decision proposed for IRP Site 4. In a letter dated March 31, 2003, the MDEQ concurred with the conclusion that no further remedial action is warranted at IRP Site 4.



January 2013 Draft Proposed Plan for IRP Sites 1 through 6 – Battle Creek ANGB, Battle Creek, MI Page 14

IRP Site 5 – Former Coal Storage Area

IRP Site 5 is the Former Coal Storage Area in the western portion of the 110th AW, located at the northwestern border of Taxiway F and east of the railroad tracks, between IRP Sites 1 and 3 (Figure 7). A rail spur was used to transport coal into the Storage Area. Coal was stored here when the airfield was occupied by the U.S. Army Air Corps, and was discontinued sometime in the 1950s. After that, the area was used to store miscellaneous pieces of equipment utilized by civil engineering personnel. In 1972, the southwestern portion of the Coal Storage Yard site was reportedly used once or twice as a fire training area.

Activities completed at IRP Site 5 include a PA/Records Search in 1987, an SI in 1991, additional SI activities in 1992, an SRAP and source removal activities from 1994 to 1996, an NFA DD in 2003, and PCO activities in 2003.

Preliminary Assessment/Records Search – 1987

The PA/Records Search identified IRP Site 5 as an area that could potentially be contaminated. Soil and groundwater sampling were recommended to determine whether contamination was present.

Site Investigation – 1991

During the SI, six soil borings and one monitoring well were installed and sampled for VOCs and total Priority Pollutant metals. No usable soil data from the SI was available for IRP Site 5 due to problems encountered during laboratory analysis of the samples. Total xylenes and 1,1,1-trichloroethane were detected in groundwater at concentrations below MDEQ Part 201 Residential Groundwater Criteria. No metals were detected in groundwater.

Results from the first field event indicated the soils at IRP Site 5 did not appear to contain significant levels of contaminants associated with coal storage, and site groundwater had not been impacted. VOC impacts detected in groundwater were attributed to IRP Site 3, the Former FTA. The SI Report recommended removal of the surface soil that contained coal particles, sampling and analysis of the underlying soil to verify coal removal, and placement of clean backfill over the excavation. NFA was recommended for groundwater at IRP Site 5.

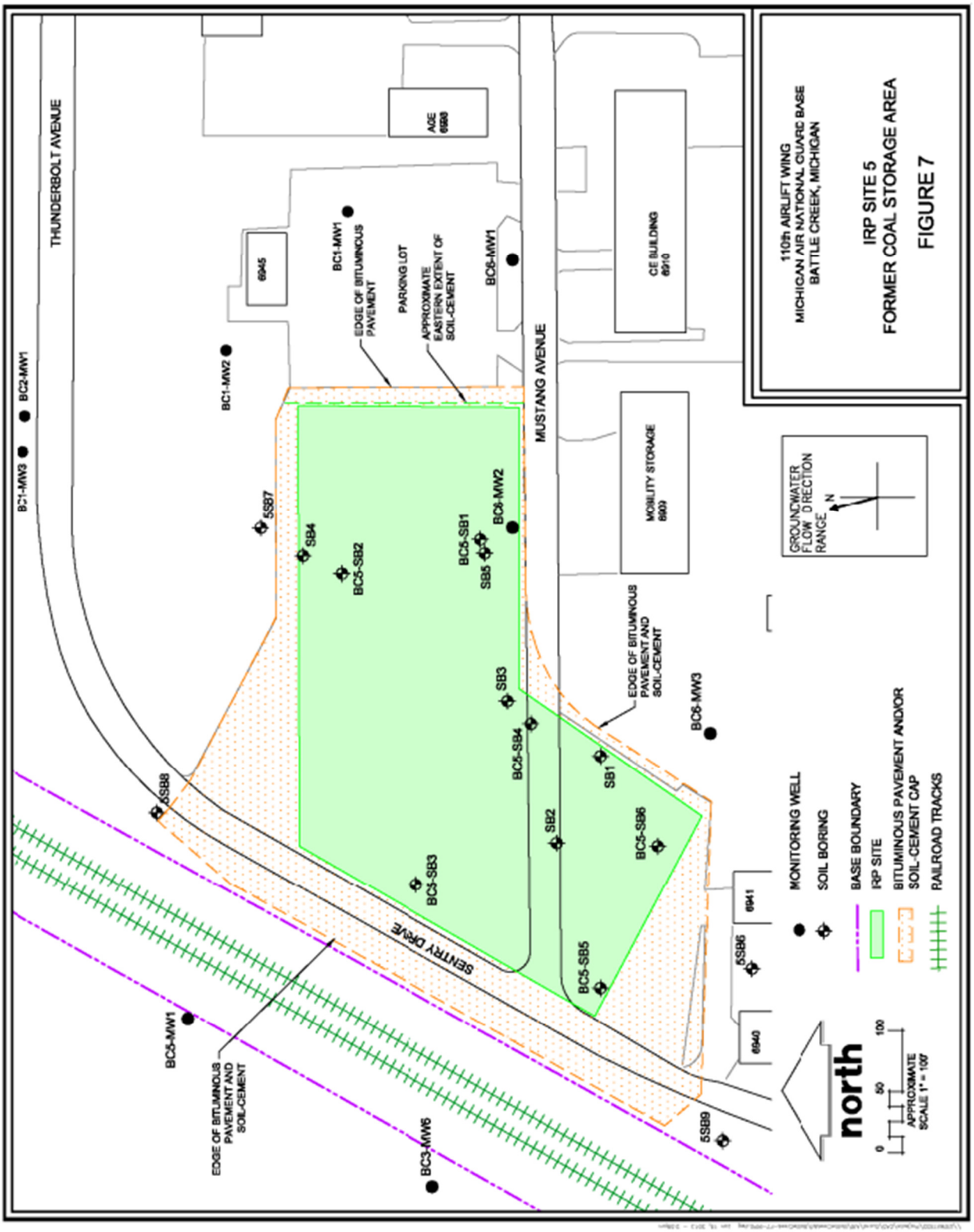
Additional Site Investigation – 1992

Due to the problems with the original SI soil data, an additional investigation of soil at IRP Site 5 was conducted. Fifteen soil samples were collected from five boring locations and analyzed for SVOCs and Priority Pollutant Metals. The soil samples were found to contain concentrations of SVOCs phenanthrene, benzo(k) fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene; and metals arsenic, cadmium, chromium, lead, mercury, selenium, and zinc, exceeding applicable MDNR Act 307 cleanup criteria. The SVOC and heavy metal impacts were concentrated in the upper 6 inches of soil. It was recommended removal of the surficial soil that contained coal particles and backfilling of the area with clean soil to reduce potential threats to human and environmental receptors.

Source Removal Action – 1994-1996

An SRAP was developed for IRP Site 5 in 1994, with soil stabilization and an asphalt cap recommended. The purpose of the cap was to eliminate the threat of exposure to surface soil/sediment contamination, and to prevent migration of chemicals of concern.

In 1996 the soils at IRP Site 5 were stabilized and an asphalt cap was put in place. Prior to remediation activities, IRP Site 5 was stripped of the top 1 foot of material, and storm sewer piping was installed to convey stormwater runoff from the asphalt cap to a new infiltration pond. The soil was stabilized with ferric chloride and Portland cement, covered with an aggregate base and asphalt cap, and the area


110th AIRLIFT WING
MICHIGAN AIR NATIONAL GUARD BASE
BATTLE CREEK, MICHIGAN
IRP SITE 5
FORMER COAL STORAGE AREA
FIGURE 7
THUNDERBOLT AVENUE
MUSTANG AVENUE
SENTRY DRIVE
AGE 6938
6945
CE BUILDING 6910
MOBILITY STORAGE 6903
PARKING LOT
EDGE OF BITUMINOUS PAVEMENT
APPROXIMATE EASTERN EXTENT OF SOIL-CEMENT
EDGE OF BITUMINOUS PAVEMENT AND SOIL-CEMENT
BC1-MW1
BC1-MW2
BC1-MW3
BC2-MW1
BC3-MW1
BC3-MW6
BC5-MW1
BC6-MW1
BC6-MW2
BC6-MW3
BC5-SB1
BC5-SB2
BC5-SB3
BC5-SB4
BC5-SB5
BC5-SB6
SB1
SB2
SB3
SB4
SB5
5SB7
5SB8
5SB9
5SB6
6941
6940
GROUNDWATER FLOW DIRECTION RANGE
N
MONITORING WELL
SOIL BORING
BASE BOUNDARY
IRP SITE
BITUMINOUS PAVEMENT AND/OR SOIL-CEMENT CAP
RAILROAD TRACKS
north
0
50
100
APPROXIMATE SCALE 1" = 100'

around IRP Site 5 secured with a 6-foot high fence.

No Further Action Decision Document and Site Closure – 2002-2003
As part of the requirements for regulatory closure, MDEQ requested institutional controls be implemented, including limiting access to impacted soils and protection of the asphalt cap, land use restrictions, and groundwater use restrictions. These restrictions were implemented through updates of the Base Master Plan, and detailed in a 2002 NFA DD.

In a letter dated March 31, 2003, the MDEQ concurred with the conclusion that no further action is warranted at IRP Site 5.

Project Closeout – 2003
In November 2003, PCO activities were completed at IRP Site 5. These activities included proper abandonment of site monitoring well BC5-MW1.

IRP Site 6 – Fuel Spill Site

IRP Site 6 is the location where three underground storage tanks (USTs) stored JP-4, having a combined capacity of 100,000 gallons (Figure 8). IRP Site 6 is located southwest of the current Civil Engineering facility (Building 6910) and west of the Squadron Operations facility (Building 6913). An electrical system failure resulted in a 2,000-gallon fuel spill on the ground surface. There were also reports of fuel spills from over-filling of fuel trucks at IRP Site 6. IRP Site 6 covers approximately 2.1 acres.

Activities completed at IRP Site 6 include a PA/Records Search in 1987, an SI in 1991, a NFRAP DD in 1992, PCO activities in 1997, and a DD and regulatory closure in 2003.

Preliminary Assessment/Records Search – 1987
The PA/Records Search identified IRP Site 6 as an area that could potentially be contaminated. Sampling of soil and groundwater was recommended to determine whether impacts were present.

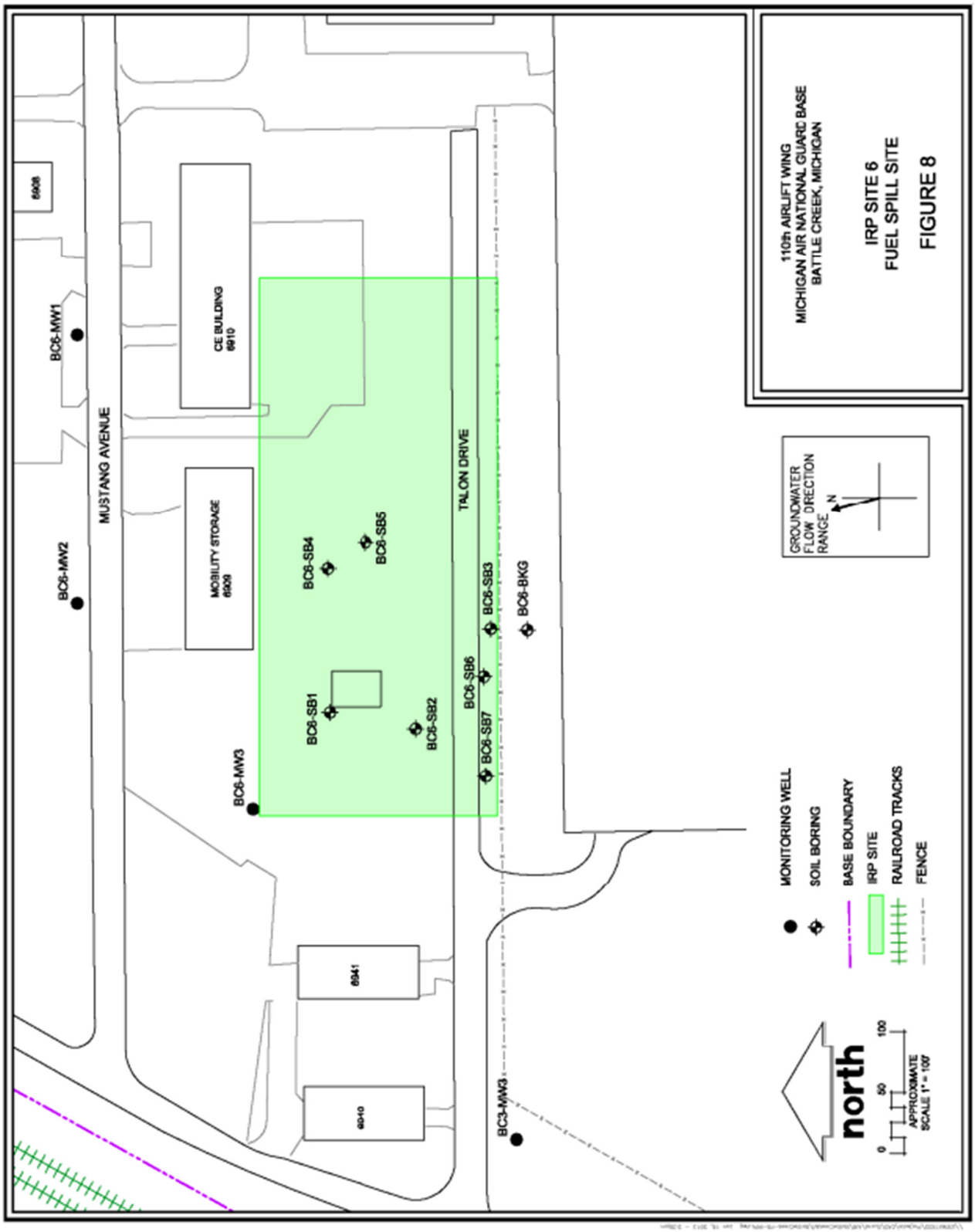
Site Investigation – 1991
During the SI, five soil borings, five hand-auger borings and one background sample boring were completed, and three monitoring wells were installed. Collected soil samples were analyzed for BTEX and TPH; and groundwater samples were analyzed for BTEX, TPH, and Priority Pollutant Metals.

Toluene was detected in three of the five soil samples collected at IRP Site 6, with one sample exceeding the applicable Michigan Act 307 Criteria. However, toluene was also detected in the background soil sample at a similar concentration. TPH were found in four soil samples. However, it was concluded the TPH detected in soils posed insignificant risks, as the area is well vegetated and access to IRP Site 6 is limited.

Groundwater samples collected from the wells at IRP Site 6 reported concentrations of benzene, TCE, tetrachloroethylene, toluene, total xylenes, and lead at concentrations less than applicable MCLs. Zinc was also detected in groundwater exceeding the health criteria based on the oral reference dose and groundwater ingestion; however, no enforceable standards have been developed for zinc. Based on the soil and groundwater sampling results, NFA was recommended.

No Further Response Action Planned Decision Document – 1992
A DD supporting NFRAP was completed in March 1992 and submitted to the MDNR. The MDNR (now the MDEQ) did not sign the document.

PCO Activities – 1997
In November 1997, IRP Site 6 monitoring wells BC6-MW1 through BC6-MW3 were properly abandoned.


110th AIRLIFT WING
MICHIGAN AIR NATIONAL GUARD BASE
BATTLE CREEK, MICHIGAN
IRP SITE 6
FUEL SPILL SITE
FIGURE 8
GROUNDWATER FLOW DIRECTION RANGE
N
MONITORING WELL
SOIL BORING
BASE BOUNDARY
IRP SITE
RAILROAD TRACKS
FENCE
north
0
50
100
APPROXIMATE SCALE 1" = 100'
MUSTANG AVENUE
TALON DRIVE
CE BUILDING 6910
MOBILITY STORAGE 6909
6926
6941
6940
BC6-MW1
BC6-MW2
BC6-MW3
BC3-MW3
BC6-SB1
BC6-SB2
BC6-SB3
BC6-SB4
BC6-SB5
BC6-SB6
BC6-SB7
BC6-BKG

No Further Action Decision Document and Site Closure – 2003

A DD presenting the rationale for the NFA decision was proposed for IRP Site 6. In a letter dated March 26, 2003, the MDEQ concurred with the conclusion that no further remedial action is warranted at IRP Site 6.

Scope and Role of the Action

NFA as the Preferred Alternative will be the final action for IRP Sites 1 through 6. NFA is appropriate at IRP Sites 1 through 6, to protect public health and welfare, and the environment because soil, groundwater, sediment, and surface water sample data gathered at these IRP sites indicate contaminant levels do not pose a threat. At IRP Sites 1, 2, 3, and 5, institutional controls are implemented to maintain the current land use, control exposures to constituents remaining in place, and restrict groundwater usage. The institutional controls are in place through the Base Master Plan. Groundwater controls include groundwater use restrictions. Land use controls include a restriction to industrial land use. Access is restricted at those sites where engineering controls have been implemented.

Summary of Site Risks

Available soil, groundwater, sediment, and surface water data from IRP Sites 1 through 6 indicate detected contaminants do not pose a risk to human health and the environment and complies with federal and state ARARs. Groundwater is used in the vicinity of the Base. The NFA decisions IRP Sites 1, 2, 3 and 5 are predicated on institutional controls to maintain the current land use and to control exposures to constituents remaining in place at the sites. Adequate groundwater and land use controls are in place through the Base Master Plan. The MIANG will confirm the controls remain in place as part of its Environmental Safety and Occupational Health Compliance Assessment and Management Program (ESOHCAMP), completed every three years. In the event this land should pass out of the control of the ANG, provisions will be implemented to ensure adequate institutional controls are maintained. Therefore, it is the ANG's and MDEQ's current judgment that the Preferred Alternative of NFA identified in this Proposed Plan, is appropriate to protect public health, welfare, and the environment.

Summary of Preferred Alternative

Based on the assessment and investigation activities conducted at the sites, the ANG believes the Preferred Alternative of NFA is appropriate. The ANG expects the NFA Preferred Alternative will satisfy the following statutory requirements of CERCLA §121(b): (1) be protective of human health and the environment; (2) comply with ARARs; (3) be cost-effective; (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and (5) satisfy the preference for treatment as a principal element.

Regulatory Participation

The MDEQ actively participated with the ANG in evaluation of IRP Sites 1 through 6 including discovery, investigation, applicable monitoring and management activities, subsequent NFA determination, and site closure activities. Following ANG notification of the discovery of the releases, the MDEQ reviewed and approved the work plans and reports associated with the assessment, investigation, and remediation activities completed at IRP Sites 1 through 6. The MDEQ provided letters or other documentation concurring with the recommendation for NFA at IRP Sites 1 through 6. In cooperation with the ANG, the MDEQ is in mutual agreement of NFA as the Preferred Alternative for IRP Sites 1 through 6.

Community Participation

The ANG provided information regarding the investigation and evaluation of IRP Sites 1 through 6 to the public through public meetings and the Information Repository file for IRP Sites 1 through 6. The ANG encourages the public to gain an understanding of IRP Sites 1 through 6, and the assessment and investigation activities that have been conducted.

The dates for the public comment period, the date, location, and time of the public meeting, and the locations of the Information Repository files, are provided on Page 1 of this Proposed Plan.

For further information on IRP Sites 1 through 6, please contact:

Major James Shay, Environmental Manager
110th Airlift Wing
Battle Creek Air National Guard Base
50 Sabre Avenue
Battle Creek, Michigan 49015-5508
Phone: (269) 969-3233
Facsimile: (269) 969-3213
Email: james.shay@ang.af.mil

Glossary of Terms

Specialized terms used in this Proposed Plan are defined below:

Air Sparging (AS): A remedial technology involving the reduction of volatile organic compounds adsorbed to soils and dissolved in groundwater by injecting contaminant-free air into the subsurface saturated zone, enabling transfer of volatile organics from a dissolved state to a vapor phase, and then venting the air through the unsaturated zone.

Applicable or Relevant and Appropriate Requirements (ARARs): The federal and state environmental laws that a selected remedy will meet. These requirements may vary among sites and alternatives.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA): A law, commonly known as Superfund, which authorizes the Federal government to respond directly to releases of hazardous substances that may endanger public health or the environment.

Decision Document (DD): A document that provides a record of the reasons for selecting a particular alternative for a site.

Information Repository: A collection of documents generated during the investigation of the site placed in a central location for public review.

Installation Restoration Program (IRP): The Department of Defense program implemented at United States military bases to identify, investigate, and cleanup contamination resulting from past operations.

Master Plan: A document which provides a long-term outline that dictates policy for the Base in terms of transportation, utilities, land use, recreation, and housing. A master plan shows all future construction projects, removals, and/or changes to the Base.

No Further Action (NFA): A determination there are no contaminants present at the site; or that any contaminants present at the site or that have migrated from the site have been remediated in accordance with applicable remediation statutes, rules and guidance such that no further action is necessary

Preliminary Assessment (PA): The process of collecting and reviewing available information about a suspected contaminated site to determine whether the site requires further study.

Proposed Plan (PP): A document that summarizes the preferred remedial action for a site and presents the rationale for the preference.

Record of Decision (ROD): A document presenting the remedial action selected under agreement with the regulatory agencies.

Remedial Action (RA): Remediation conducted to reduce or eliminate the risks to human health or the environment from exposure to contaminants.

Remedial Investigation (RI): An investigation to gather and analyze the data necessary to determine the nature and extent of contamination at a site, and to provide information for identifying and evaluating options for remedial action.

Site Investigation (SI): An investigation to confirm or deny the presence of contamination, but not necessarily delineate magnitude and extent.

Soil Vapor Extraction (SVE): A remedial technology involving the recovery of volatile organic compounds by inducing a vacuum through recovery wells into the surrounding soil.

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Mead
&Hunt

WK Kellogg Airport
Michigan Air National Guard
Battle Creek, Michigan

Construct Main Base Entrance

Project no. MBMV099170
Type B-3

Basis of Design

Part II – Design Narrative

February 17, 2021

Mead & Hunt

Project No. 3141900-113782.01

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CONTENTS

Page

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ANG Design Objectives and Procedures (Tab C) 16 APR 10

Attachment 12

TYPE B-3 – FINAL DESIGN SUBMITTAL CHECKLIST

BASE: BATTLE CREEK ANG BASE STATE: MI DATE: 17 February 2021

PROJECT NUMBER: MBMV099170

TITLE: CONSTRUCT MAIN BASE ENTRANCE

X	CORRECTED FINAL DRAWINGS FOR ALL DISCIPLINES
X	FINAL SPECIFICATIONS INCLUDING DIVISION I –GENERAL PROVISIONS, INCLUDING SUMMARY OF WORK, BID STRUCTURING, AND CONSTRUCTION PHASING PLAN (If required for this project.)
X	CORRECTED FINAL DETAILED CONSTRUCTION COST ESTIMATE INCLUDING ABI's or BID OPTIONS
X	FINAL UPDATED ANG SUSTAINABLE DESIGN AND ENERGY CONSERVATION SCORE SHEET
X	UPDATED BASIS OF DESIGN, PARTS I AND II
X	PREVIOUS REVIEW COMMENTS WITH A-E DISPOSITION

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2.1 NARRATIVES

2.1.1 STRUCTURAL DESIGN NARRATIVE

The structure of the guard house will be cold formed trusses. The trusses will bear on steel framing and masonry walls. The framing and walls will bear on piers and foundation walls. The foundation walls and piers will bear on spread concrete footings.

The canopy structure will consist of metal deck on cold formed steel trusses. The cold formed steel trusses will bear on structural steel beams. The beams will be integrated with steel columns into two-way moment frames. The columns will bear on piers. The piers will be cantilevered vertically from spread concrete footings.

The secondary check house is to be pre-engineered and will sit on a slab-on-grade system. There will also be equipment pads and stoops provided under external equipment and entryways, respectively.

Building Code

- UFC 1-200-01: DoD Building Code; Change 2, 1 November 2018

Air National Guard Engineering Technical Letters

- ANGETL 15-01: Air National Guard Design Policy (Tab D); 01 May 2015

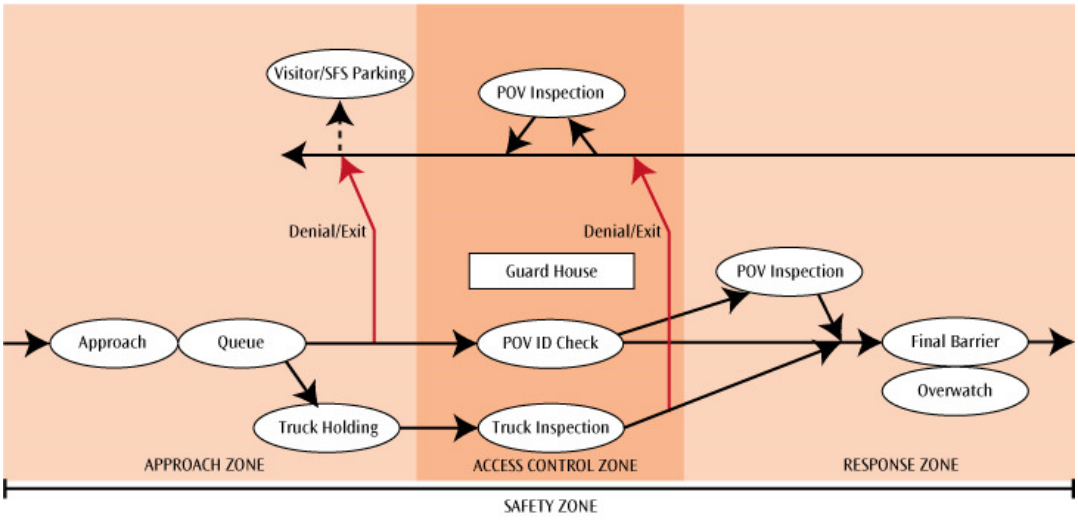
Unified Facilities Criteria

- UFC 1-200-01: DoD Building Code; Change 2,1 November 2018
- UFC 3-301-01: Structural Engineering; 1 November 2018
- UFC 4-010-01: DoD Minimum Antiterrorism Standards for Buildings; 12 December 2018

2.1.2 CIVIL DESIGN NARRATIVE

Facility Layout

The following graphic represents the functional relationships for the new main gate:



Approach Zone

Design Considerations

Within the approach zone, the design will serve to reduce speeds and prepare vehicles for the ID check point and provide sufficient queueing lengths to minimize impacts onto the public right-of-way. The design includes a total of three check lanes: one lane for commercial vehicles (truck lane), a second lane for non-CAC (Common Access Card) combined with CAC holders, and a third lane for CAC holders only. Signage will be provided to direct and inform traffic of the correct entry lane. The design is to be based on FPCON Bravo+ conditions.

Traffic Analysis

Traffic enters the entry control facility (ECF) from the south via the intersection of Hill Brady Road/Logistics Drive and Skyline Drive, an existing “T” intersection with Skyline Drive terminating at Hill Brady Road/Logistics Drive. Queuing lengths were estimated based on the traffic study (April 2017) for the worst-case scenario which would occur during UTA drill weekends with a calculated demand forecast volume of 660 vehicles per hour.

The traffic queue is allowed to spread between the Hill Brady Road access point and the ID check point. The peak hour maximum vehicle queue is 24 vehicles assuming handheld processing and single screening configuration. Handheld screening is the preferred method during normal operation. However, it is assumed that manual screening may be used during UTA drill weekends to improve processing rates.

Results and Recommendations

To provide the required queueing length during the UTA drill weekends, multiple lanes are included within the approach adjacent to the access control zone which aligns the entering vehicles with the ID check lanes. Two to three lanes of approach traffic are accommodated between the entry point and the guard house. The left lane and center lane provide access for base personnel to the primary

checking lanes; the right lane provides access for contractors to the commercial vehicle inspection bay.

To provide increased capacity needed on UTA drill weekends, the truck inspection lane and POV inspection accessory area can be utilized as additional processing lanes for a total of four ID check locations on three lanes, as no commercial vehicles are expected during this time. It is anticipated that up to three lanes will have single checkers with the potential to move to two lanes in tandem for a total of five Security Forces Staff required during peak processing time.

Traffic calming measures are utilized within the approach zone to reduce speeds of vehicles approaching the access control zone. A circular traffic loop at the entrance of the site and sharp horizontal curves in the approach zone reduce speeds and provide the necessary time for all four threat detection scenarios.

Access Control Zone

Channelization islands provide separation between the commercial vehicle inspection area and the POV inspection areas and provide safe, elevated locations for security force personnel to stand during ID checks. Two rejection lanes with turning capacity for trucks are preferred, one before and one after the ID check point. A single truck turnaround location past the ID check is provided within this site. The design vehicle for the commercial truck access is a WB-67. Parking is provided for visitors and security forces personnel. A pull-off area for vehicle inspection is included past the ID check.

The access control zone includes three canopied inspection lanes: the CAC holder only lane, the combined CAC and non-CAC holder lane, and the commercial vehicle lane. The commercial vehicle lane is a separate lane with a separate canopy from the POV lanes. A non-canopied accessory inspection area for POVs is provided adjacent to the truck lane and canopy. This area is intended to be a location for vehicles requiring a more thorough inspection to be directed to, out of the way of the incoming POV lanes and commercial vehicle lane. It also serves as an option to provide an additional inspection capacity during UTA drill weekends to improve processing rates.

The two canopied inspection stations include one guard house and three guard booths. A dedicated parking area for up to two chase vehicles is provided. Channelization islands provide separation between the truck inspection area and the POV inspection area and provide locations for security forces to safely stand during ID checks. The rejection lane for trucks is provided after the ID check point and prior to the final denial barrier.

The truck inspection area canopy is 21’-8” wide and 71-0” feet long. The canopy will be a minimum of 17.5 feet high. Manually operated barrier gates will be included to control traffic within the search area.

Response Zone

The response zone design provides adequate physical length to provide a sufficient response time to safely deploy the active vehicle barrier (AVB) system based on calculated response times and potential attack scenarios. An overwatch area is included at the end of the response zone.

The length of the response zone is dependent upon the length of time needed for personnel to react to a threat and for the activation of the AVB. This includes safety measures indicating AVB deployment, which is typically calculated at nine seconds minimum. The length of the response zone is also influenced by point of detection, velocity, and acceleration of the threat vehicle. When designing an ECF, four threat scenarios are considered to determine if adequate response time is provided. Below is a summary of the various threats and associated response times to activate the AVB. Each scenario assumes a vehicle accelerates at 11.3 ft/s^2. All threat scenarios not only verify a threat in the inbound direction but also if a vehicle utilizes the outbound lane to enter the facility. A minimum nine second deployment of the AVB was analyzed for threat scenarios 1, 2, and 3. For threat scenario 4, a minimum deployment of seven seconds was utilized. In order to provide the minimum response zone time, the route length along the existing straight, flat roadway needs to be a minimum of 445 feet prior to the AVB. If the vehicle enters the access control zone at a higher rate of speed than 31 mph as determined within the UFC, the response zone length needs to be greater. Early detection of a threat within the approach zone reduces the response length required and is factored in the design. Adequate sight lines are provided to aid in early detection. Additionally, restriction of attainable vehicle speed within the approach and response zones shortens the length of the response zone. This is accomplished with grading, geometrics, and other traffic calming features.

Routes	Threat Scenario 1	Threat Scenario 2	Threat Scenario 3	Threat Scenario 4
Inbound 1	22.9 Seconds	23.3 Seconds	11.8 Seconds	8.0 Seconds
Inbound 2	25.6 Seconds	26.0 Seconds	12.0 Seconds	9.3 Seconds
Inbound Truck Bay	20.0 Seconds	20.3 Seconds	9.4 Seconds	9.0 Seconds
Outbound	16.6 Seconds	16.8 Seconds	11.6 Seconds	10.9 Seconds
Minimum Response Time	9 Seconds	9 Seconds	9 Seconds	7 Seconds

Safety Zone

Within the safety zone, a controlled perimeter is established through passive and active vehicle barriers that provide the required setbacks for existing buildings and personnel as identified in the special siting criteria below. The passive vehicle barriers will consist of barrier (cable) fencing and knee walls at the AVB.

Sitework

Site Improvements

The project includes new asphalt and concrete pavements with associated base and subgrade preparation. Consideration has been given during design for reuse of demolished pavement materials (concrete, asphalt, and base rock). Concrete sidewalks for pedestrian access will be in compliance with ADA/ABA. Concrete curbing is provided to control vehicle maneuvering and speed. Site features such as pavement,

curb and gutter, and sidewalk have been designed in accordance with relevant the standards of the Michigan Department of Transportation (MDOT).

The preferred site location is located on the vacated roadbed of Skyline Drive north of Hill Brady Road. The site is predominantly linear in arrangement and follows the old roadbed (see Appendix A).

Pavements

Specific site information regarding existing site pavements and soil characteristics have been determined. New asphalt pavement was designed in accordance with UFC criteria and MDOT Pavement Design Standards using PCASE. The pavement section consists of 4.5-inches Hot Mix Asphalt over 9.5-inches aggregate base rock. Within the concrete paved portions of the site, 8-inches of doweled concrete pavement over 6-inches of aggregate base rock will be utilized.

The existing concrete pavement of Skyline Drive will be removed from Hill Brady Road to Sentry Drive to accommodate construction of the ECF. In other areas not requiring removal for the ECF, the existing pavement will be removed or left in place depending on cost and budget.

Grading and Drainage

The pavement is sloped to direct drainage off the roadway surface toward curb and gutter located along the roadway perimeters and separator islands. Due to the site constraints, a majority of the runoff in the approach, access, and response zones will be collected and transported via a storm sewer system. The storm sewer system has six discharge points for the collected runoff. Working from south to north, the first three discharge points adjacent to and east of the commercial vehicle inspection entry lane. The three discharges release into the site storm water facility which is defined as two basins as described below. The facility is defined as two basins to avoid impacts to a shallow existing 8-inch high pressure gas main that traverses the site. Over 70% of the curb and reconstructed site area is directed toward the basins.

The remaining three discharges accommodate the final 200 feet of curbed roadway. The roadway further north drains to roadside ditches in a rural section. The storm water runoff is directed via grass lined ditch to wetlands in the area.

The storm water facility consists of two bioretention basins that have been sized to fully retain and infiltrate runoff from the 2-year, 24-hour storm event. Initial runoff from paved surfaces contain high concentrations of pollutants that are removed by the engineered soil media and prairie grasses prior to infiltrating to groundwater. Vegetation consists of low maintenance native species that survive under fluctuating water conditions and are tolerant to salt that may be placed on adjacent roadways. Sandy native soils allow the facility to completely drain within 48 hours of the storm event, minimizing wildlife attractant. Runoff from large storm events is detained by an outlet structure to reduce peak flow rates and protect downstream channels. The outlet structure also contains an emergency overflow to direct flood waters away from the site. Outflow from each of the bioretention basins flows through a reinforced concrete pipe and is discharged to an existing grass lined ditch before flowing the wetlands in the area.

Skyline Drive was constructed in the early 1960's and it traverses a sizable drainageway. The stream branch drains a portion of the nearby airfield and conveys drainage westerly through a 6'-9" x 10' -3" steel plate pipe arch drainage structure under Skyline Drive. The pipe arch is original construction and is nearing the end of its useful life and should be replaced. Leaving the culvert in place could impact the future use of the ECF. The base bid includes replacing the existing plate arch with two 78-inch diameter corrugated metal culvert pipes. The pipe pair provides equivalent drainage capacity to the existing plate arch.

Utilities

An existing 30-inch gravity sanitary sewer main runs along the west side of the roadway, the guard house will drain to the sewer via 4-inch sanitary lateral. A 20-inch water main also runs along the west side of the roadway. The site will include new fire hydrant that is branched into the existing water main. The guard house will be served with a 1 ½-inch water supply.

An existing natural gas main runs along the east side of the project, the local gas company will provide service. New fiber optic communication lines will extend from existing facilities on the base, beginning near the intersection of Skyline Drive and Sentry Drive and running along the east side of Skyline Drive to the guardhouse. Electrical service will be extended from the existing base distribution.

The following UFC criteria have been used to design the new utilities:

- UFC 3-201-01: Civil Engineering
- UFC 3-230-01: Water Storage, Distribution, and Transmission
- UFC 3-240-01: Wastewater Collection

Site Lighting

Site lighting will include the roadways and parking areas within the approach, response, and access control zones. In accordance with UFC 4-022-01 5-9, exterior lighting will follow IESNA G-1-03 and IESNA HB-9. In addition, UFC 3-530-01, section 7-3 specifies target illuminances and uniformities for these zones. All drive entry site lighting will be powered from the electrical service feed to the new gatehouse. Pole-mounted fixtures will follow Base standard and be mounted on 25 foot poles with concrete bases that extend a minimum of 30" above finished grade. Refer to item 2.1.6 for additional exterior lighting provisions.

Signage, Fencing and Barriers

Perimeter fencing will be installed to provide a secure facility. The safety zone, which includes the approach, access and response zones, must be surrounded with a passive vehicle barrier (PVB). The PVB will include a barrier (cable) fence which is a reinforced 7-foot-high chain link fence rimmed with 1 foot of barbed wire for a total height of 8 feet. Additional fencing will traverse the western and northern sides of the lease boundary to encapsulate the lease within the existing Base perimeter, those portions of the fence accessible by vehicle will include PVB features. The existing perimeter fence may be removed where no longer needed to form a secure perimeter.

Landscaping

The landscaping design will employ a combination of hardscape and softscape areas, with native and salt-tolerant plants. Care will be taken to discourage nesting and foraging of birds around the airport and to create a low-maintenance and attractive face to the surrounding community.

Off-Site Improvements

The project will necessitate improvements to the intersection of Hill Brady Road and Skyline Drive. Improvements to the intersection will be coordinated with the City of Battle Creek as design development occurs and facilitated within a Military Construction Cooperative Agreement. Coordination is ongoing with the City of Battle Creek as to the type of intersection improvement. The intersection improvement may modify the existing signalized intersection or fully reconstruct as a roundabout. A roundabout is preferred by the City and project development is anticipate to begin in 2020.

Construction Cost and Additive Bid Items

The project will necessitate improvements to the intersection of Hill Brady Road and Skyline Drive.

The base bid will include the required construction to complete the facility in compliance with the UFCs. Additive bid items are included to provide additional benefit and facility function within the MCC. Additive bid items for the civil site work include:

1. ABI 1 & 2 – Much of the proposed pavement within the ECF is Hot Mixed Asphalt, as this is expected to be the most cost-effective option. To reduce the potential need for future roadway pavement maintenance, concrete pavement should be considered. ABI 1 and ABI 2 would convert asphaltic pavements in areas with high traffic movement to concrete pavement. ABI 1 converts the approach zone pavement areas to concrete pavement. ABI 2 converts much of the response zone pavement to concrete pavement.
2. ABI 3 – The base bid includes replacing a 6’-9” x 10’-3” steel plate pipe arch drainage structure under Skyline Drive with two 78-inch diameter corrugated metal culvert pipes. ABI 3 would modify that replacement to include two 78-inch reinforced concrete culvert pipes. While the corrugated metal option is structurally sound and will accommodate the facility lifespan, the concrete pipe will have greater durability, may require less excavation, and have improved hydraulics.

Conceptual improvements and associated costs are identified in the drawings and cost estimates.

2.1.3 ARCHITECTURAL DESIGN NARRATIVE

Architectural Layout

The floor plan is rectangular and provides a good point of view from the front glazing system. This is ideal for the site design layout because traffic approaching the ECF will be coming head-on from the roundabout. The limitations of this design would be small blind spots created at the front corners of the building, where the window system must stop for structural support columns. A side view is still provided, and the POV can be viewed as it pulls up to the ECF for presentation of documentation to the security officer.

Architectural Exterior

The exterior façade of the gatehouse will consist of a metal stud wall system with a full height CMU with brick veneer. It is intended to use a 4" precast sill at all window openings. Entries and windows will be anodized aluminum storefront systems to match Base standard. The glazing will be ballistic resistant in accordance with UL 752 Level III. The rear utility door will be a painted exterior-grade insulated hollow metal door. Enclosing the building will be a standing seam metal roof to match existing Base facilities. A preformed metal enclosure panel will be attached to the exterior back wall to cover the ductwork running up the back wall, color to match standing seam metal roof, metal soffit, and fascia.

The secondary guard booth will be a pre-engineered painted steel structure with glass infill and full lite doorways. The interior environment will only provide exposed structure.

A canopy structure will be provided overhead at the main entry traffic lane(s) and vehicle inspection lane. The structure(s) will provide a clear driving height of 17'-6". The canopy will have painted steel columns with a CMU and brick veneer base and 4" precast cap. The overarching roof will consist of a standing seam roof system over metal trusses and metal panel soffits. Color to match existing Base standard.

Architectural Interior

The gatehouse will serve as the main control center and house a main office/monitoring station. Entries and circulation will be provided within the main room and work area. A public entrance and small hold room will be provided for people to obtain pass and ID badges, and a transaction window will be provided between the main work room and the public area. The pass-through window will contain bullet resistant glazing, and the wall separating the main work area and badging area will be constructed with bullet resistant wall panels. A built-in work surface in the main room will be provided for 3 to 4 guards, along with a small solid surface break counter and cabinetry. This room will also have numerous windows to view the traffic lanes. Adjacent to the main office area, one unisex toilet room will be provided for personnel use only. A small communications room will be provided with access from the rear of the building.

The interior spaces will be enclosed with insulated metal-stud framed walls and painted gypsum board. Entry mat carpets will be placed at the main entries. The main work area will have rubber resilient flooring with rubber base. The toilet room will have ceramic tile and base. The fire alarm room will have a sealed concrete floor. Interior doorways will be painted hollow metal doors and frames. Work counters will be solid surface with plastic-laminate cabinetry. The ceilings in the main work area and toilet room will be acoustic ceiling tiles and grid. A gypsum hard ceiling will be provided in the public hold room.

Three four-foot-by-eight-foot guard booths will be provided between the traffic lanes and adjacent to the CIVF facility to provide cover for guards against weather and potential threats. This will be a pre-engineered painted steel structure with glass infill and full lite doorways. No work areas are planned for this space.

2.1.4 MECHANICAL DESIGN NARRATIVE

Introduction

A heating, ventilating, and air conditioning (HVAC) system will be provided for the Recruiting and Badging Building. The type of HVAC system will be determined by performing a Life Cycle Cost Analysis (LCCA) of three alternative systems. Ventilation air will be supplied in accordance with ASHRAE 62.1.

Local Codes

- International Building Code, 2015 Edition including Michigan 2015 amendments to the 2015 IBC.
- International Mechanical Code, 2015 Edition including Michigan 2015 amendments to the 2015 IMC.

Air National Guard Engineering Technical Letters

- ANGETL 15-01: Air National Guard Design Policy (Tab D); 01 May 2015

Unified Facilities Criteria

- UFC 1-200-01: DoD Building Code (General Building Requirements); Change 2, 01 November 2018
- UFC 1-200-02: High Performance and Sustainable Building Requirements; Change 3, 07 September 2018
- UFC 3-401-01: Mechanical Engineering; Change 1; 01 October 2015
- UFC 3-410-01: Heating, Ventilating, and Air Conditioning Systems; Change 4, 01 November 2017
- UFC 4-010-01: DoD Minimum Antiterrorism Standards for Buildings; 12 December 2018

American Society of Heating, Refrigeration, and Air Conditioning Engineers

- ASHRAE 55-2013: Thermal Environmental Conditions for Human Occupancy
- ASHRAE 62.1-2013: Ventilation for Acceptable Indoor Air Quality
- ASHRAE 90.1-2013: Energy Standard for Buildings Except Low-Rise Residential Buildings

National Fire Protection Association

- NFPA 54: National Fuel Gas Code
- NFPA 90A: Standard for the Installation of Air Conditioning and Ventilating Systems, 2009 Edition

Indoor/Outdoor Design Conditions and Criteria

Project Location: Battle Creek, MI

Elevation: Approximately 896 feet above mean sea level

Outdoor Air Conditions:

Summer: 87.8°F DB / 72.3°F WB (ASHRAE 1%)

Winter: +3°F DB (ASHRAE 99.6%)

Indoor Design Conditions:

Area	Design Temperature set point
Guard station & toilet	70ºF Heating 76ºF Cooling
Fire Alarm Room:	64ºF-90ºF (year round)

No humidity control
No cooling – ventilation only

Pressure Relationships:

Area	Relationship to Adjacent
Guard station	Positive to outdoors
Restroom	Negative

Outdoor Air Ventilation Rates
Building to comply with ASHRAE standard 62.1 and the International Mechanical Code.

Exhaust Air Ventilation Rates
Toilet Room will be exhausted to meet the higher rate of either ASHRAE standard 62.1 or the International Mechanical Code.

Design Approach
The primary goal of this project is to provide an energy efficient approach to occupant comfort as related to the HVAC system. We have approached this by first modelling the building thermally using Trace 700 to calculate the heating, cooling, and ventilation loads. Trace 700 is also used to estimate the energy usage of each of the three alternative HVAC systems as described in the Alternative Mechanical Systems section below.

The Trace 700 program gave us information to size the alternative HVAC systems and estimated energy usage for each alternative HVAC system. With equipment capacities we have provided an estimated construction cost for each of the alternative HVAC systems.

With this information the BLCC program will be used to perform a Life Cycle Cost analysis comparing the three alternative HVAC systems. From this analysis a single system will be selected.

Guard Station
The system will utilize a small, packaged horizontal discharge heating and cooling unit (rooftop unit) located on-grade adjacent to the building on the east side. This unit will utilize packaged DX air-conditioning for cooling and natural gas for heating.

The packaged rooftop unit will include a centrifugal fan, DX coil, indirect gas-fired heat exchanger, Merv 8 filters, and outside air intake for ventilation.

The supply and return ducts would extend from the unit, up the outside of the building, and through the joist space to ceiling diffusers serving the building.

The unit will be controlled by a room thermostat that will be connected to the Base-wide EMCS.

A ceiling exhaust fan will serve the restroom and discharge through the sidewall.

Electric wall heaters will be located in the badging area and in the restroom.

Fire Alarm Room

The Fire Alarm Room will be served by the packaged rooftop unit to control temperature. No humidity control will be provided.

Air Distribution

Galvanized, insulated sheet metal ductwork will deliver conditioned air to the occupied space through ceiling diffusers. Duct runouts to ceiling diffusers and return grilles will be via insulated flexible ductwork, not to exceed five feet in length.

Controls

All new direct digital control (DDC) equipment will be provided. The entire HVAC system will be monitored and controlled by a new DDC system within the building and tying the control system into the existing Trane Base-wide EMCS.

Smart meters will be installed to meter electricity, water, and natural gas usage. Data will be integrated into the DDC system for monitoring and trending of energy usage.

Miscellaneous

Air distribution ductwork will be designed to meet Sheet Metal and Air Conditioning Contractor's National Association, Inc. (SMACNA) standards.

Gas piping will be specified to be schedule 40 ASME A53 black steel.

In accordance with UFC antiterrorism criteria an emergency system shutdown switch and low leakage air intake dampers will be provided.

Exceptions to the Unified Facilities Criteria

- No humidifier is planned for the building's air handling unit.
- Trane will be specified as the only acceptable provider for the EMCS in order to seamlessly integrate into the existing Base-wide building automation system.
- In accordance with exception 1-6.1 in UFC 4-010-01 for low occupancy buildings, HVAC air intakes will not be located 10 feet above grade.

Other Mechanical Systems Considered

System 2 (Geo-Thermal Heat Pump)

This system would use a geo-thermal heat pump suspended in the building joist space. Heat would be rejected or absorbed through a well field located outside of the building.

Water would be circulated between the heat pump and the well field via a centrifugal pump. The centrifugal pump would be located on-grade adjacent to the building on the east side.

The geo-thermal heat pump would be controlled by a room thermostat that would be connected to the Base-wide EMCS.

Due to the small size of this building, the cost of this system including piping and drilling for a nearby bore field do not make this alternative viable.

System 3 (Split System Heat Pump)

This system would use a single-zone split-system heat pump located on-grade adjacent to the building on the east side and fan-coil unit suspended in the building joist space. The building would be single-zoned due to size and lack of multiple spaces.

The heat pump unit would include a condenser fan and coil, reversing valve, and all piping and accessories. The fan coil would include a supply fan, DX coil, outside air intake for ventilation air, and auxiliary electric strip heater.

The rooftop packaged heat pump would be controlled by a room thermostat that would be connected to the Base-wide EMCS.

This system utilizes a fan coil unit located within the space, above the ceiling. Additional noise created by the fan coil unit within the space, the need for maintenance personnel to disrupt operations to service the unit, and limited energy cost savings of the heat pump being offset by the necessity of electric heat backup during the coldest periods do not make this alternative a viable option.

2.1.5 PLUMBING DESIGN NARRATIVE

Design References

ANG ETL 15-01:	Air National Guard Design Policy (Tab D)
UFC 3-420-01:	Plumbing Systems
IPC:	International Plumbing Code
PEDH 1-4:	ASPE Plumbing Engineer Design Handbook, Vols. 1–4

Domestic Water Supply

A new 2” water service will extend to the new guard house. A water meter and ASSE 1013 reduced pressure zone (PRZ) backflow preventer will be provided, with a lockable full-sized bypass.

An instantaneous electric water heater will be provided beneath the lavatory in the toilet room. Based on the water quality report, the potable water supply is considered hard to very hard. An inline template-

assisted crystallization scale prevention filter will be provided on the cold water inlet to the water heater, to protect the electric water heater element from scale buildup.

Domestic solar hot water heating was considered for this project. A solar hot water system would consist of 1 solar panel, approximately 4' x 4', a double wall heat exchanger, circulating pumps, hot water storage tank, valves, piping, insulation, and controls. The solar hot water system would provide for a minimum of 30% of the building hot water needs. An electric heating element would be included in the storage tank, to meet building demand when conditions would not allow full use of the solar system. A solar hot water system is not life cycle cost effective and will not be provided for this building.

- Size: 2 SF of solar collection area
- Cost: MASKED
- Annual energy savings: 150.0 kWh
- Annual cost savings: $15.21
- Savings-Investment-Ratio: 0.42
- Simple payback: 56.6 years
- Solar fraction: 74%
- Annual greenhouse gas reduction: 1563 pounds of CO_2

Water supply pipe will be ASTM B88 Type L hard temper copper above grade, and ASTM B88 Type K soft temper copper below grade.

Drain and Vent

A new 4" sanitary sewer will extend to the new guard house. Waste and vent pipe will be CISPI 301 hubless cast iron soil pipe above grade, and ASTM A74 hub and spigot cast iron soil pipe below grade.

Plumbing Materials, Fixtures, and Equipment

- The water closet will be a floor set, 1.28 gpf, manual operated flushometer.
- The lavatory will be wall hung, with a 0.5 gpm lever handle faucet.
- The floor drain will be medium duty with heel proof nickel bronze strainer.
- The hose bibb will be exposed with integral vacuum breaker and wheel handle operation.
- The water meter will be compound with analog display and EMCS connection.
- The backflow preventer will be ASSE 1013 at the water service entrance.
- The water heater will be instantaneous electric type.

2.1.6 FIRE PROTECTION DESIGN NARRATIVE

A new fire alarm/mass notification system will be provided for the gatehouse. The design of such system will comply with the applicable codes and will be coordinated with the proposed building layout.

Codes and Standards

- ANG ETL 15-01: Air National Guard Design Policy; 01 May 2015
- ANG ETL 15-01-03: Fire Protection Design Guidance

- UFC 1-200-01: DoD Building Code (General Building Requirements); 20 June 2016
- UFC 3-600-01: Unified Facilities Criteria, Design: Fire Protection Engineering for Facilities; Change 2, 25 March 2018
- UFC 4-021-01: Unified Facilities Criteria, Design and O&M: Mass Notification Systems; Change 1, January 2010
- 2015 International Building Code (IBC)
- NFPA 70: National Electrical Code, 2017 Edition
- NFPA 72: National Fire Alarm Code, 2016 Edition
- NFPA 101: Life Safety Code, 2018 Edition

Fire Alarm and Mass Notification Systems

The fire alarm system in the gatehouse facility will be an addressable system functioning as a fire alarm and mass notification system in accordance with NFPA 72, UFC 3-600-01, and ANG ETL 15-01-03. Notification appliances consisting of speakers and strobes will be provided throughout the building. The fire alarm and mass notification system will be connected to the existing radio frequency transmitter and will transmit fire alarm signals to the Base fire alarm receiver. Power to the fire alarm control panel will be provided with a dedicated circuit breaker and painted red.

Fire Suppression Systems

The facility will not be provided with a fire suppression system.

2.1.7 ELECTRICAL DESIGN NARRATIVE

Introduction

The electrical design will be provided in accordance with the latest DOD, Air Force, and Air National Guard standards. All electrical equipment, luminaires, conduits, and wires will be provided by the contractor. All equipment will be new and UL listed. Testing of the electrical installation will be performed by the contractor prior to completion of the project.

Codes and Standards

- Building Codes
  - ANSI/IEEE C2: National Electrical Safety Code
  - ASHRAE 90.1: Energy Standard for Buildings except Low-Rise Residential Buildings
  - IECC: International Energy Conservation Code
  - NFPA 101: Life Safety Code, 2015
  - NFPA 70: National Electrical Code, 2017
  - NFPA 70E: Standard for Electrical Safety in the Workplace
  - NFPA 72: National Fire Alarm and Signaling Code, 2016
  - NFPA 780: Standard for the Installation of Lightning Protection Systems

- Standards
  - IESNA, Lighting Handbook, 10th Edition

- Government Criteria
  - AFI 32-1065: Grounding Systems
  - ETL 02-12: Communications and Information System Criteria for Air Force Facilities
  - UFC 1-200-01: General Building Requirements
  - UFC 3-501-01: Electrical Engineering
  - UFC 3-520-01: Interior Electrical Systems
  - UFC 3-530-01: Interior and Exterior Lighting Systems and Controls
  - UFC 3-540-01: Engine-Driven Generator Systems for Backup Power Applications
  - UFC 3-550-01: Exterior Electrical Power Distribution
  - UFC 3-560-01: Electrical Safety; O&M
  - UFC 3-575-01: Lightning and Static Electricity Protection Systems
  - UFC 3-580-01: Telecommunications Building Cabling Systems Planning and Design
  - UFC 3-600-01: Fire Protection Engineering for Facilities
  - UFC 4-021-01: Mass Notification Systems
  - UFC 4-021-02: Electronic Security Systems
  - UFC 4-022-01: Security Engineering Entry Control Facilities

Electrical Power Distribution System

The existing Consumer Energy overhead power line that crosses over Skyline drive will be relocated to travel under the drive. This will require the demolition of an existing utility pole and directional boring below the existing drive. This work will be coordinated with Consumers Energy.

A new 200A, 208Y/120V, 3-phase, 4-wire electrical service will be provided by Consumers Energy to the gatehouse. Consumers Energy will provide a new pad-mounted transformer. The transformer will be located a minimum of 5’ from the building in accordance with UFC 3-600-01 for Type II non-combustible construction buildings.

A generator connection plug will be provided for a base furnished temporary standby backup generator. The temporary generator will provide back-up power for the entire electrical service, which includes the guard house, commercial vehicle inspection facility (CVIF), gates, and site lighting. The connection plug will be provided on the north side of the mechanical equipment yard wall and the designated generator location will be north of the equipment yard, a minimum of 30’ away from the utility transformer.

A 200A, 3-pole, open transition manual transfer switch will be provided to switch between normal and generator power sources. The transfer switch will be service entrance rated and provided in a NEMA 3R enclosure. It will be located exterior to the guard house within the mechanical equipment yard.

The main electrical panelboard for the gatehouse facility will be 225 ampere, 208Y/120 volt and accommodate exterior roadway lighting, gatehouse power, inspection canopy power, and active vehicle barrier. The main electrical panelboard will be provided in a NEMA 3R enclosure and located exterior to the guardhouse within the mechanical equipment yard. A surge suppression device will be provided integral to the panelboard.

A rack-mounted style uninterruptable power supply (UPS) and/or batteries will be government furnished and installed to provide uninterrupted power to the following equipment:

- Primary communication system
- Duress alarm system
- Computers (desk-top style)
- CCTV System
- Intrusion Detection Systems
- Enunciator
- Access Control Equipment including AVB systems, traffic control devices and automated systems.
  - AVB controls
  - AVB Activation system for one complete operation cycle
  - Traffic arms at AVBs
  - Traffic sensors (wrong way, over speed, and presence detectors)
  - Traffic signals and warning lights

Wiring will consist of insulated copper conductors installed in metallic conduits as permitted by the UFC and the National Electrical Code. Feeders and branch circuits will be sized to limit voltage drop to a maximum of 5%. Circuit breakers will be rated to interrupt available short circuit currents.

Lighting

Interior Lighting

Lighting throughout the facility will be provided in accordance with UFC 3-530-01. Luminaires will be LED and comply with UFC, IESNA, and ASHRAE requirements and recommendations. Fixtures will be provided with solid state drivers capable of 0-10V dimming and will dim down to a level of 1%. Drivers will have a total current harmonic distortion (THD) less than or equal to 20% at full and 50% output. The driver power factor (PF) will be greater than or equal to 0.9 at full and 50% output. Interior lighting color temperature will be 4000 degrees K, typically, with a color rendering index (CRI) of 80.

Recessed direct/indirect luminaires will be provided in open office areas. Restroom will be provided with downlights for general area lighting and wall sconces at vanities. Utility areas with unfinished or exposed structural ceilings will be provided with pendant type industrial luminaires with wire guards.

Emergency lighting will be provided as required by the Life Safety Code. Office area emergency lighting will consist of unit battery equipment. Lighting levels shall be in accordance with UFC 3-520-01. The minimum emergency lighting level shall be 0.1 foot-candles or greater, with an average of 1 foot-candle or greater, and a uniformity of 40:1 or less in accordance with UFC and NFPA 101 criteria. These levels are considered as maximum levels and will not generally be exceeded.

Occupancy or vacancy sensors with dimming capability will be provided in the office area and restroom in accordance with UFC 3-530-01 and ASHRAE 90.1 requirements.

Exterior Lighting

Exterior lighting will be provided for the covered canopy, parking areas, walkways, and roadways on airport/National Guard Base property. The covered canopy will be provided with ample lighting for ID verification. The exterior of the gatehouse will be provided with wall-mounted luminaires in accordance with UFC requirements. Fixtures at egress locations will be provided with emergency battery backup units.

Exterior street luminaires will be LED, 4000k nominal color temperature with a minimum CRI of 70 in accordance with UFC requirements. Roadway lighting will be mounted on 25' square, steel pole. Pole will be rated for 100 MPH windspeed and provided with integral handhole and vibration damper. Street lighting pole and fixture finish will be bronze.

The covered canopy lighting will be 6" LED downlights mounted recessed in the underside of the canopy. Wall-mounted fixtures will be a trapezoidal style to aim light directly in the path of egress.

All exterior luminaires will be controlled via photocell based on the amount of available light. Roadway and parking lot lighting will be controlled via a dedicated Hand-Off-Automatic switch so that they can be controlled separately from canopies. The covered canopy lights will be controlled from local switching within the gatehouse and wired through dedicated photocells for separate on/off control at each canopy. All exterior lighting will be classified Nighttime Friendly with zero uplight in accordance with UFC requirements.

Special Systems

Grounding

New service entrance equipment will be grounded in accordance with NEC requirements. The grounding electrode conductor will be connected to a new exterior grounding triad, structural steel and metallic water piping to ensure the new electrical system is properly grounded. The main telecommunications equipment will be bonded to the service entrance equipment. Field testing of the grounding system will be completed by the contractor after substantial completion of the project. There are no unique requirements for grounding outside of the new electrical service entrance and telecommunications system grounding.

Active Vehicle Barrier System

Power and controls will be provided for the AVB system. The AVB system includes traffic arms at the barriers, traffic sensors, signals and warning lights, and the associated hydraulic system.

Fire Alarm and Mass Notification System

See section under FIRE PROTECTION DESIGN NARRATIVE.

Lightning Protection System

A lightning protection system analysis was performed in accordance with NFPA 780. Given the building size, construction (metal roof and frame), contents, location and lighting flash density (3 flashes/km^2/Yr) a lightning protection system is not recommended and will not be provided.

2.1.8 TELECOMMUNICATIONS DESIGN NARRATIVE

Introduction

Technology Systems for the project will consist of three sub-systems:

- Technology spaces and pathways, applicable to all low-voltage systems for the project.
- Structured cabling for voice, data and television distribution.
- Security, including access control, intrusion detection, and video surveillance.

Applicable Criteria, Standards, Guidelines

- Unified Facilities Criteria
  - UFC 3-580-01: Telecommunications Interior Infrastructure Planning and Design; Change 1, 01 June 2016
  - UFC 4-021-02: Electronic Security Systems; 01 October 2013
  - UFC 4-022-03: Security Fences and Gates; 01 October 2013
  - UFC 4-211-02: Aircraft Corrosion Control and Paint Facilities, 01 December 2012
- Telecommunications Industry Association (TIA); current versions
  - TIA-568: Commercial Building Telecommunications Infrastructure Standard
  - TIA-569: Telecommunications Pathways and Spaces
  - TIA-606: Administration Standard for Commercial Telecommunications Infrastructure
  - TIA-607: Generic Telecommunications Grounding (Earthing) and Bonding for Customer Premises
  - TIA-758: Customer-Owned Outside Plant Telecommunications Infrastructure Standard
  - TSB-162: Telecommunications Cabling Guidelines for Wireless Access Points
  - TSB-184: Guidelines for Supporting Power Delivery over Balanced Twisted-Pair Cabling

- Building Industry Consulting Services International (BiCSi)
  - Telecommunications Distribution Methods Manual; current edition

Technology Spaces and Pathways

The main telecommunications/technology (TR) entrance shall be centrally located and will serve as the telecommunications utility services entrance point and distribution point for all telecommunications cabling throughout the facility. The underground utility entrance for telecommunications shall consist of two 4" conduits stubbed into the TR entrance from a handhole five feet outside the building. Discussion with the Base during the design phases will be required to determine the location of pathways into the building, as well as the types of cables, quantities of cables, and their respective connection points on Base. From this connection point within the guard house telecommunications/technology cabling for end device connections (voice handset, computers, video monitors) shall connect to a half-size data rack that shall be located under the desktop/counter space within the main guard house. This data rack shall be of sufficient size to contain the active voice, data, and video equipment and for building wide communications and security systems throughout the facility.

The telecommunications/technology will be designed to current UFCs, telecommunications industry standards, and best practices and will have the necessary ventilation, cooling, power, and lighting, sized to accommodate day one equipment and a modest amount of future growth equipment. The telecommunications grounding and bonding system will include a wall-mounted telecommunications main grounding busbar (TMGB). A grounding conductor shall be extended in the undercabinet data rack. The data rack shall have a horizontal rack-mount bus bar in the equipment rack.

Structured Cabling System for Voice/Data/Video Communications

Cable pathways for all horizontal structured cabling will consist of conduit, J-hooks, and/or cable tray. Typical telecommunications outlet location rough-in will consist of a minimum of one 4-11/16" square x 2-

1/8” deep back box with single-gang plaster ring and a minimum 1" EMT conduit routed up to a J-hook route or cable tray above the nearest accessible ceiling.

Horizontal voice/data cabling will consist of Category 6 UTP copper cabling, fed from the appropriate TR and not exceeding 275 cable feet in length. All horizontal cabling will be designed to Category 6 standards and shall be suitable for use for traditional analog/digital PBX-based voice, IP-based voice (VoIP), and data communications (Ethernet).

Telecommunications outlet (TO) configuration(s) and locations will be determined by the UFCs as well as Base standards and requirements, equipment that requires structured cabling connection(s), and through direction from the Base. Telecommunication outlets for security equipment (e.g., IP-based surveillance cameras, access control panels) will be furnished and installed as part of the Division 27 work in coordination with the security systems equipment furnished and installed under Division 28. Telecommunications outlet locations for the Base’s wireless access points (APs) will be provided, spaced to provide AP coverage with a 30-foot radius to support 802.11ac connectivity throughout the project area and provided with plenum-rated AP enclosures in areas with plenum-rated accessible ceilings. Layout of AP locations will need to be confirmed by the Base prior to issuance of bid documents.

Structured cabling design and installation will adhere to applicable UFC, TIA, and BICSI standards and recommendations and industry standard installation practices to the greatest extent possible within the confines of the project.

Access Control System

The access control system (ACS) shall consist of headend components with systems software and field devices. The basic system design shall include a connection back to the Base access control system (if applicable), ACS panels, cabling and field devices (credential readers/keypads, credentials, door position switches, electric locking mechanisms and request-to-exit devices). The ACS panels will be located within the guard house and connected to the Base network if applicable.

The video surveillance system (VSS) shall consist of a video management server and storage array located at the Base headend. Category 6 cabling and IP-based video surveillance cameras will terminate within the main guard house and the signals extended via fiber optic cable back to the Base headend equipment. Cameras will be placed to capture pedestrian and automotive traffic entering/exiting the Base and the guard buildings and at key points as identified by the Base.

Intrusion Detection

An intrusion detection system (IDS) will be provided for the gatehouse facility. The IDS shall consist of arm/disarm keypads at selected entry doors and strategic locations within the facility, as well as perimeter detection devices such as door position switches, motion detectors, and glass-break detectors. The IDS shall communicate directly with Base security forces. Doors will be provided with balanced magnetic switches. Duress alarms will be provided at each guard booth and the guard work area.

Closed-Circuit Television System

Cameras will be provided for the closed-circuit television (CCTV) system. Cameras will generally be located on the exterior of the guard booths, exterior of the gatehouse, and on the canopy of the facility. CCTV monitors will be located within the gatehouse and mounted from ceiling brackets above the counter/work area.

Assumptions

- All telephone system and network equipment (including wireless devices) shall be furnished and installed by the Base.
- The headend equipment for the access control and video surveillance systems is existing on the Base, and this project will expand on those systems by connecting to them over the Base network.
- A distributed antenna system (DAS) is not required for the facility.

2.1.9 SUSTAINABLE DESIGN NARRATIVE

The project does not meet the minimum requirements of buildings greater than 1,000 square feet of floor space as established by USGBC for consideration for LEED certification and, thus, cannot pursue LEED certification. The project designs, however, in order to minimize energy use and recurring utility bills, will strive to achieve optimum resource efficiency, constructability, sustainability, and energy conservation within the limits provided by the scope and budget. The project will be designed in accordance with ANGETL 15-01-01, Sustainable Design, Development, and Resource Conservation, and design elements will be tracked via the ANG Sustainable Design and Energy Conservation Score Sheet. The project is classified as “Vertical” construction ANG Category of Work, with a sustainable design goal of ANG Meritable.

2.1.10 ARCHITECTURAL BARRIERS ACT (ABA)

Review of ANGETL 11-12 indicates all Public Law, Policy Memorandum and Standards that must be followed for compliancy with all government facilities. A reference to DoD Policy Memorandum dated October 31, 2008 indicates “In general, worldwide, all facilities designed, constructed, altered, leased, or funded by DoD that are open to the public, or to limited segments of the public, or that may be visited by the public, or by limited segments of the public, in the conduct of normal business, shall be designed and constructed to be accessible to persons with disabilities.”

Section 3 EXCLUSIONS provides a list of exclusions to the ABA standards. This section specifically states that "The following facilities need not comply with these DoD Standards:

a. Facilities, or portions of facilities, on military installations that are designed and constructed for use exclusively by able-bodied military personnel.
b. Reserve and National Guard facilities, or portions of such facilities, owned by or under the control of the Department of Defense, that are designed and constructed for use exclusively by able-bodied military personnel.
c. Facilities obtained in emergencies such as natural disasters or in an area where contingency operations are being conducted.”

Nevertheless, since the intended use of such excluded facilities may change with time or in emergencies, compliance with these DoD Standards is recommended to the maximum extent that is reasonable and practicable without degrading the facility's military utility.

Based on this section of the memorandum, the main gate facility will not be required to meet ABA standards as it is posted by able-bodied personnel 24 hours a day, 7 days a week. Access to the badging room will be designed to meet ABA requirements, as this room could be accessed by any of the general public coming on to the Base.

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2.2 SUSTAINABLE DESIGN AND ENERGY CONSERV. SCORESHEET

Air National Guard Sustainability Requirements Scoresheet

HPSB COMPLIANCE (2017v1) (Updated April 2017)

* required entry

General Information

Federal Requirements Complete

MBMV099170	Project Number
Construct Main Base Entrance	Project Title
TBD	Facility Number
TBD	Real Property Unique ID (RPUID)
W. K. Kellogg Airport	Installation
MBMV	Installation Code
Battle Creek	City
MI	State
Andari, Imad	NGB A4O Project Manager (Last Name, First Name)
$10,000	PA ($000)
340.00	Building Size (SF)
2023	Program Year (FY####)
2020	Design - AE
B3 100%	Project Phase
11/07/18	Design Started (MM/DD/YY)
12/20/18	BOD (MM/DD/YY)
01/01/00	Green Business Certification Incorporated (GBCI) Registration Number
	Date Project Registered (MM/DD/YY)
	Date Project Certified (MM/DD/YY)
20	Federal Requirements - Yes or N/A
5	Federal Requirements - No
74%	HPSB Compliant
6%	Energy Efficiency Achieved (% below ANSI/ASHRAE/IESNA Standard 90.1-2013)
02/17/21	Date Scoresheet completed
2017V1	Scoresheet version

Color Coding: See Instructions Tab for more detail

Drop-Down Box	Yes or N/A
No Entry Required	No
Custom Entry	Recommended not Required

90.1-2013

HPSB I: Employ Integrated Design Principles (UFC 1-200-02 para 2-2)

Total Points 1 — Possible Points 2

Yes	HPSB I.1	Integrated Design	1
No	HPSB I.2	Commissioning	1

HPSB II: Optimize Energy Performance (UFC 1-200-02 para 2-3)

Total Points 4 — Possible Points 5

HPSB II.1 — Energy Efficiency — 1

No	Reduce energy use 30% below ANSI/ASHRAE/IESNA Standard 90.1-2013 or IECC, or if not - achieve maximum energy efficiency that is lifecycle cost effective	
5.5%	Insert percentage below ANSI/ASHRAE/IESNA Standard 90.1-2013 or IECC, in terms of energy use (e.g. 32)	
	Insert building energy intensity (kBtu/yr-sqft) calculated IAW 10 CFR 433	*
No	Roof Attributes (Recommended)	
	Select roof types (Check below)	

☐ Cool roof ☐ Solar electric ☐ Solar Passive
☐ Green roof ☐ Solar thermal

Energy Efficient Products — 1

Yes

Yes — HPSB II.2 — On-site Renewable Energy — 1

Yes	Installed renewable energy elements or projects were not lifecycle cost effective	
1	Renewable energy types (check below)	

☐ Solar PV ☐ Geothermal ☐ Hydro ☐ Waste to Energy
☐ Solar CP ☐ GSHP ☐ Wind ☑ Renewables were not lifecycle cost effective
☐ Solar Thermal Electric

	Insert generation capacity (kW)	*
	Insert percentage of total building	*

Yes — HPSB II.3 — On-site Renewable Energy - Solar Hot Water Heater System — 1

Yes	Installed solar hot water heater system or found installation not lifecycle cost effective	
	Insert generation capacity (MMBtu/yr)	*
	Insert percentage of demand	*

Air National Guard Sustainability Requirements Scoresheet

HPSB COMPLIANCE (2017v1) (Updated April 2017)

* required entry

Yes	HPSB II.4	**Metering**		1
		Yes	Electric Metering: Select N/A if no service	
		Yes	Natural Gas Metering: Select N/A if no service	
		N/A	Steam Metering: Select N/A if no service	
HPSB III: Protect and Conserve Water (UFC 1-200-02 para 2-4)				
Total Points	3		Possible Points	6
Yes	HPSB III.1	**Indoor Water**		1
Yes		**Indoor Water Metering**		1
Yes	HPSB III.2	**Outdoor Water**		1
No		**Outdoor Water Metering**		1
No	HPSB III.3	**Alternative Water**		1
	HPSB III.4	**Stormwater Management (LID Documentation per UFC 3-210-10)**		1
			Change in Impervious Area (SF)	*
			Pre-Award Cost Estimate ($)	*
		Yes	Project addressed EISA 438	
		1	EISA Technical Constraints	
		☐ Retaining stormwater impact receving water flow	☐ Shallow bedrock, contaminated soil, high ground water table, underground utilities	☐ Soil infiltration capacity limited
		☐ Site too small to infiltrate significant volume	☐ Non-potable water demand to small	☐ Structural, plumbing, and other mods not feasible
		☑ State or local restrict water harvesting	☐ State or local restrict use of green infrastructure or LID	☐ Other
			Percent Increase in Stormwater Runoff for 95 Percentile Storm (%) - or- Percent Increase in Stormwater Runoff from continuous simulation model, published data, studies, or other established tools (Reference UFC 3-210-10 Figure 2-1 Implementation of EISA Section 438)	
		On-Site	LID Features Locations	
		1	Integrated Management Practices Employed	
		☐ Bio-Retention	☐ Dry Wells	☐ Filter Strips	☑ Grassed Swells
		☐ Infiltration Trench	☐ Inlet Pollution Removal Device	☐ Permeable Pavement/Pavers	☐ Rain Barrels/Cisterns
		☐ Soil Amendments	☐ Tree Box Filters	☐ Vegetated Buffers	☐ Vegetated Roof
		☐ Other			
			Final LID Construction Cost ($)	
			Post Construction Analysis (Name of DOR)	
HPSB IV: Enhance Indoor Environmental Quality (UFC 1-200-02 para 2-5)				
Total Points	8		Possible Points	8
Yes	HPSB IV.1	**Thermal Comfort**		1
Yes	HPSB IV.2	**Ventilation**		1
Yes	HPSB IV.3	**Daylighting**		1
Yes	HPSB IV.4	**Moisture Control**		1
Yes	HPSB IV.5	**Low Emitting Materials**		1
Yes	HPSB IV.6	**Protect Indoor Air Quality during Construction**		1
Yes	HPSB IV.7	**Environmental Tobacco Smoke Control**		1
Yes	HPSB IV.8	**Occupant Health and Wellness**		1
HPSB V: Reduce Environmental Impact of Materials (UFC 1-200-02 para 2-6)				
Total Points	3		Possible Points	5
Yes	HPSB V.1	**Recycled Content**		1
No	HPSB V.2	**Biologically-based Products**		1
Yes	HPSB V.3	**Ozone Depleting Substances**		1
Yes	HPSB V.4	**Waste and Materials Management - Recycling**		1
	HPSB V.5	**Waste and Materials Management - Divert 60% from Disposal**		1 *
		Yes	60% or greater diverted	
		60.0%	Insert percentage diverted from landfill	
HPSB VI: Address Climate Change Risk (UFC 1-200-02 para 2-7)				
Total Points	1		Possible Points	1
Yes	HPSB VI.1	**Address Climate Change Risk**		1
			Possible Points	**27**
20	Federal Requirements - Yes or N/A			
5	Federal Requirements - No			
74%	Percentage of Federal Requirements Met			

EPAct 2005 Scoresheet

MBMV099170	Project Number (e.g. ABCD123456)
Construct Base Entry	Project Title
BATTLE CREEK ANGB	Base Name
B-3	Project Phase
3/17/2021	Date Scoresheet Completed or Revised

Baseline Building Performance of Facility as Designed to ASHRAE 90.1-2004 Requirements:	Baseline Building Performance without Receptacle and Process Loads (BTU/Hr-SF):	**13.74**
	Energy Consumption of Receptacle and Process Loads (BTU/Hr-SF)	**3.20**
	Baseline Building Performance (BTU/Hr-SF):	**16.93**
Proposed/Estimated Energy Performance of Facility:	Proposed Building Performance without Receptacle and Process Loads (BTU/Hr-SF):	**12.98**
	Energy Consumption of Receptacle and Process Loads (BTU/Hr-SF):	**3.20**
	Proposed Building Performance (BTU/Hr-SF):	**16.17**
EPAct 2005 Percentage Improvement Formula: (Refer to UFC 3-400)	100 * (Baseline Building Performance - Proposed Building Performance) / (Baseline Building Performance - Receptacle and Process Loads):	
Percentage Improvement without Receptacle and Process loads and in accordance with EPAct 2005:		**5.54%**
Life Cycle Cost Analysis Performed? (Yes/No)		**No**
Is Project EPAct 2005 Compliant? (Yes/No)		**NO**

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APPENDIX A – Type A, B1 & B2 Review Comments with Responses

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Type B2 Government Review Comments with A/E Responses

MBMV099170 **Construct Main Base Entrance** **02/05/2021**

The comments listed below shall be incorporated in the next submittal. Design Agent shall include responses to comments in the next submittal. Responses shall be indicated in the "Will Comply" column with the following responses:

Y - Comment was incorporated.
N - Comment was not incorporated*.
P - Comment was incorporated partially. Provide written remarks indicating the extent to which the comment was incorporated*.
R - Comment requires further clarification. Indicate resolution of clarifications*.

* Provide written statement within 10 days of receipt of comments explaining how comment will be incorporated or clarification required.

Item	Reference	Government Comment	Will Comply? (Y/N/P/R)	Response
Maj Robert A. Loniewsky, 110th CES; contact Mr. Taylor at (269)-969-3347 for any clarifications or questions.				
1.	Sheet C-002:	Operations / Phasing / Traffic General Note 5. Please clarify where personal vehicles will not be allowed.	Y	Note revised: "No personal vehicles will be allowed through the base gates or perimeter fencing. Personal vehicles are not allowed in any active construction zone and shall not be parked on surrounding local roads."
2.	Sheet C-056:	Shading on Key Map is not transparent.	Y	Shading on Key Map is now transparent.
3.	Sheet C-073:	Has information but background appears to be missing. Please clarify where this information is to be implemented.	Y	Roadway edgelines and curb and gutter added to act as a reference. Note added to indicate data is for initial layout and construction staking.
4.	Sheet C-074:	Has information but background appears to be missing. Please clarify where this information is to be implemented. Carry over from B1 Review.	Y	Roadway edgelines and curb and gutter added to act as a reference. Note added to indicate data is for initial layout and construction staking.
5.	Sheet C-082:	Calls out curb cut for Maintenance Access. Please provide detail on width and style of curb cut. Carry over from B1 Review.	Y	Curb cut detail added to sheet C-545.
6.	Sheet C-602:	No Key Map provided.	Y	Key Map added to sheets 601-605.
7.	Sheet S-151:	Northwest corner post is not called out.	Y	Column tag was added.

8.	Sheet S-541:	"Single Plate Shear Connection Notes" run out of bounding box.	**Y**	Bounding box was adjusted to contain full text.
9.	Sheet A-103:	Key Notes 4.115 & 4.121 were slightly off on lower roof over Gate House.	**Y**	Note have been adjusted.
10.	Section 088000-9-3.5.A.2:	Font appear faint. No opening parenthesis.	**Y**	Text has been corrected.
11.	Section 088000-9-3.5.A.2:	Text remains highlighted. Carry over from B1Review.	**Y**	Text has been corrected. Highlight was in 3.5.B.2.
12.	Section 221313-3-3.2.B.b:	Need a space between "rigid" and "coupling".	**Y**	Space inserted.
13.	Section 230593-3-3.3.B.2:	Letter "h" appears at the end of the sentence.	**Y**	Corrected text.
14.	Section 231123-1-1.5.A:	Extra space appears in sentence.	**Y**	Corrected text.
15.	Section 260100-6-1.5.YYY:	Dash appears to have been substituted for colon.	**Y**	Revised colon to dash.
16.	Section 260923-3-2.3.A:	Misspelled "Range".	**Y**	Corrected spelling.
17.	Section 265100-4-2.5.A.2:	Seem to be instructions for specification writer.Please revise or remove.	**Y**	Specifier notes have been deleted.
18.	Section 270529-3-3.1.F:	Remove or revise highlighted text.	**Y**	Highlighting removed in spec.
19.	Section 270529-4-3.2.D.5:	Seems to be instructions for specification writer. Please revise or remove.	**Y**	Note 5 deleted. Correct that it was an editing note.
20.	Section 312000-1-1.2.A.3:	Additional lowercase "b" in sentence.	**Y**	Additional "B" character deleted.
21.	Section 321313-1-1.2.A:	Space needed between "Paving" and "Including".	**Y**	Space inserted.
22.	Section 321313-3-2.3.A:	Space needed between "drawn" and "steel".	**Y**	Space inserted.
23.				

Type B1 Government Review Comments with A/E Responses

MBMV099170 **Construct Main Base Entrance** **05/14/2020**

The comments listed below shall be incorporated in the next submittal. Design Agent shall include responses to comments in the next submittal. Responses shall be indicated in the "Will Comply" column with the following responses:

Y - Comment was incorporated.
N - Comment was not incorporated*.
P - Comment was incorporated partially. Provide written remarks indicating the extent to which the comment was incorporated*.
R - Comment requires further clarification. Indicate resolution of clarifications*.

* Provide written statement within 10 days of receipt of comments explaining how comment will be incorporated or clarification required.

Item	Reference	Government Comment	Will Comply? (Y/N/P/R)	Response
Maj Nathan Finfrock, Mr. Jamieson Taylor, 110th CES				
1.	Sheet G-011	Code Plan Legend: Text appears to be running together.	**Y**	Text has been revised.
2.	Sheet G-011	Fire Protection and Life Safety Analysis, Plumbing Fixtures calls for (1) Drinking Fountain and (1) Service Sink as part of the minimum requirements. Neither of those are to be found in the plan. Please clarify.	**Y**	Added Bottle filler to plan, Due to size of facitilty we are proposing the hose bib supplements the service sink requirement.
3.	Sheet C-002	Linetypes for “Ornamental Fence” and “Gate Fence” appear to have wandered off.	**Y**	Linetype level turned on
4.	Sheet C-012	Text conflicts along centerline of Skyline Drive.	**Y**	Text shifted
5.	Sheet C-021	Note No. 6 has yet to be identified Erosion Control Detail Sheets. Please provide.	**Y**	Information added
6.	Sheet C-074	Has information but background appears to be missing. Please clarify where this information is to implemented.	**Y**	Added road names for clarity
7.	Sheet C-082	Multiple Text overlaps. Please move text as needed so everything is as legible as possible.	**Y**	Text moved
8.	Sheet C-082	Calls out curb cut for Maintenance Access. Please provide detail on width and style of curb cut.	**Y**	Detail will be added
9.	General	All Sheets that have Match Lines. Please provide clarification on where the match lines occur with either a key or a text designation or both.	**Y**	A key has been added
10.	Sheet S-002	Text misalignments on Notes S-13, TI-10, and TI-12.F.	**Y**	Text has been aligned.

11.	Sheets A-103 & A-104	Please identify what "Roof Plam General Notes" are and where they apply.	**Y**	"Plam" has been changed to "Plan".
12.	Sheet A-121	Ceiling Plan General Notes, Note No. 2. Text misalignment.	**Y**	Aligned text
13.	Sheet A-121	Gatehouse Ceiling Plan: Single Circle with line to building is not identified in Ceiling Legend.	**Y**	Light fixture symbol
14.	Sheet A-121	Gatehouse Ceiling Plan: Circle with single slash and line to building is not identified in Ceiling Legend.	**Y**	Circle with slash removed from project
15.	Sheet A-121	Gatehouse Ceiling Plan: Single Circle between middle row of light fixtures is not identified in Ceiling Legend.	**Y**	Occupancy Sensor
16.	Sheet A-122	Ceiling Plan General Notes, Note No. 2. Text misalignment.	**Y**	Aligned text
17.	Sheet A-201	Gatehouse East Elevation: Appear to be two different types of lights on rear of Gatehouse. Please clarify.	**Y**	Plans changed to indicate same style lights
18.	Sheet A-201	Gatehouse East Elevation: Rectangles appear just below Top of Wall guideline. Please clarify what those rectangles are and how they apply.	**Y**	Added keynote
19.	Sheet A-201	Gatehouse East Elevation: Keynote 4.205 on right hand side of Gatehouse appears to be pointing at brick wall.	**Y**	Adjusted to point at wall cap
20.	Sheet A-201	Gatehouse West Elevation: Rectangles appear just below Top of Wall guideline. Please clarify what those rectangles are and how they apply.	**Y**	Added keynote
21.	Sheet A-201	Gatehouse West Elevation: Exterior Lights are appearing in mid-air underneath canopy. Please provide clarification.	**Y**	Revised plans to show lights in correct locations
22.	Sheet A-202	Gatehouse South Elevation: Space needed between the words "Gatehouse" and "South"	**Y**	Added
23.	Sheet A-202	Keynote 4.210 does not appear on Sheet.	**Y**	Added
24.	Sheet A-202	Low wall in background of left hand side of Gatehouse North Elevation is identified by Keynote 4.213. In Gatehouse South Elevation it appears that the same wall, on the right hand side, is identified by Keynote 4.217. Please clarify.	**Y**	Notes are correct due to different wall types

25.	Sheet A-311	Keyed Notes: Key Note 4.308 directs builder to "See Reflected Ceiling Plan". However, there are no plans identified as "Reflected Ceiling Plan" in entire set. There appear only "Ceiling Plan". Please clarify where the builder should look for the required information.	**Y**	Revised note
26.	Sheet A-311	Gatehouse Wall Section No. 7: Key Note 4.305 does not appear to be pointing at the isolation joint.	**Y**	Corrected to point at joint
27.	Specs – Section 064116.2.2.E.1	Text runs off of page.	**Y**	Corrected
28.	Specs - Section 088000.3.5.A.2	Text remains highlighted.	**Y**	Corrected
29.	Specs - Section 099123.3.3.A.2	Replace the word "Pain" with "Paint".	**Y**	Corrected
30.	Specs - Section 133423.2.11.A & B	Please provide the sizes of those units.	**N**	Sizes need to be determined by the manufacturer for each unit built, since these are complete building assemblies and are delegated design by the manufacturer.
31.	Specs - Section 221116.3.12.D & E	Please eliminate double comma from sentence. Also, only one option is given for both. Therefore "…one of the following:" is unnecessary.	**Y**	Specifications have been updated.
32.	Specs - Section 231123.3.3.L	Please capitalize.	**Y**	Capitalized.
33.	Specs - Section 264313.1.4.A	Please clarify what is intended by "…agrees to replace or replace SPDs that fail…"	**Y**	Removed the duplicity of "replace" in the text.
34.	Specs - Section 323113.53.2.2.A.1.a	Text remains highlighted.	**Y**	Text was unbolded.
35.	Specs - Section 323119.53.2.1.A.1	Highlighted text contradicts direction already established. Please clarify.	**Y**	Bolded text was removed.
36.	Specs - Section 323119.53.3.3.D.2.a	Space needed between the words "grade" and "to".	**Y**	Space provided.
37.	Specs - Section 329300.1.3.C	Double periods at end of sentence.	**Y**	Second period removed.
38.	Specs - Section 329300.2.1.D	Eliminate colon at beginning of passage.	**Y**	Colectomy completed.

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Type A2 Government Review Comments with A/E Responses

MBMV099170 **Construct Main Base Entrance** **01/10/2020**

The comments listed below shall be incorporated in the next submittal. Design Agent shall include responses to comments in the next submittal. Responses shall be indicated in the "Will Comply" column with the following responses:

Y - Comment was incorporated.
N - Comment was not incorporated*.
P - Comment was incorporated partially. Provide written remarks indicating the extent to which the comment was incorporated*.
R - Comment requires further clarification. Indicate resolution of clarifications*.

* Provide written statement within 10 days of receipt of comments explaining how comment will be incorporated or clarification required.

Item	Reference	Government Comment	Will Comply? (Y/N/P/R)	Response
Mr. Imad Andari, NGB/A4O				
1.		A variance for the guardhouse square footage authorization will be submitted to increase it to accommodate the badging area and an ABA bathroom.	**Y**	A variance will be submitted to increase the size to allow for the badging area and ABA compliant bathroom.
2.		The covered vehicle inspection area is over authorization for the POV lanes and the Commercial Vehicle Inspection Lane, the base will adjust these to meet the authorizations.	**Y**	The canopy sizes were reduced to stay within the square footage limitations of the 1391 authorizations.
3.		Work with the programmer to add additional SY for pavement to block 9. This is to repair the area on the existing Skyline Drive identified as ABI #1.	**Y**	Additional SY was added to allow the project to include the repair of the full length of existing Skyline Drive as part of the base bid. This was previously shown as ABI #1 in the A2 submittal.
4.		Ensure the AE submits 1354 at 95% design.	**Y**	A 1354 will be submitted with the B2 submittal.
5.		Verify that the Direct Digital Control meets cybersecurity criteria (per draft ANGETL 20-XX-2019)	**R**	No draft ANGETL was provided for review.
6.		Permits – ensure the following permits are submitted: such as Stormwater, 404B submitted to the Corps of Engineers, sewage permit, NPDES.	**Y**	Permit applications will be provided at the B1 phase.

7.		Review bridge loading criteria due to new traffic load.		Structural design of bridges is based on AASHTO truck loads which include factors for multiple vehicle arrangements. The bridge in question will have an increase in traffic volume, not necessarily traffic loading. Oversized / overweight vehicles may need to use a different gate to avoid crossing the structure.
8.		Base entry intersection need to be coordinated with the City. You must provide a complete layout for Hill Road Drive, Skyline Drive and Logistics Drive with traffic light and circle as needed.	**Y**	The City of Battle Creek will be moving forward with design of the revised intersection for Hill Brady Road, Skyline Drive and Logistics Drive. The timeframe is unknown at this point. The design of the ECF will account for this new design as best as possible.
Joshua Anderson, CETSC				
9.	2.1.3 Archetectural Design Narrative – Architectural Exterior	UFC 4-022-01Section 5-7.10.2: The minimum desirable clear height must be 17.5 feet (5.3 m) where commercial traffic at the ECF/ACP is allowed and facilitate use of the overhead canopy for signage, lighting or security equipment. Where the ECF/ACP use is limited to POVs the clear height must be 15 feet. This clear height is measured from the pavement to the lowest point on the overhead canopy, including light fixtures and other equipment.	**Y**	The canopy clearance will be raised to 17.5 feet from pavement to the lowest point on the overhead canopy.
10.	General:	Recommend Battle Creek talk to other installations with Roundabout near ECPs.	**Y**	Battle Creek ANGB talked to other installations with roundabouts near ECPs.
Eric Schmit, CETSC				

11.	Design Narrative Page 13	Provide surge protections devices (SPDs) for communication equipment and specialized electrical equipment such fire alarm and detection systems (antennas), electrical power for fire alarm control panels (FACP) and mass notifications systems (MNS) are areas of requirement of AFI 32-1065 and NFA 780. SPDs shall be UL1283 and UL1449 rated.	**Y**	SPDs will be provided for the service panelboard, as well as the fire alarm panel for B-1 submittal.
12.	Design Narrative Page 16 Interior Lighting	Computer-generated photometric plans for each area are required to verify proposed luminaires and locations meet the required performance criteria of the design using the applicable light loss factor (LLF).	**Y**	Photometric plans will be provided for B-1 submittal.
13.	Design Narrative Page 14	Add Air Force Instruction AFI 32-1065, Grounding System (2017) to list of Government Criteria.	**Y**	Reference will be added to the narrative for B-1 submittal.
14.	Design Narrative Page 15	Provide surge protections devices (SPDs) in the 225A Main Distribution Panel (MDP) as a minimum, and in all required panel boards. Panels boards with LED lighting, communication equipment and specialized electrical equipment.	**Y**	Surge protection will be provided at the gatehouse panelboard, which serves all LED Lighting, Communication equipment and specialized electrical equipment in the project.

15.	Design Narrative Page 156	Coordinate the type of back up/alternate electrical power for the entry control point (ECP). Page details a 200A, 3-pole MTS – manual transfer switch with generator connection point and page 17 details a RPIE generator with ATS – automatic transfer switch as per UFC 4-022-01 section 5-8.2.	**Y**	Per A-2 meeting, generator will be portable type as permanent generator has not been authorized. Narrative will be updated.
16.	Design Narrative Page 16 Exterior Lighting	Computer-generated photometric plans for each area are required to verify proposed luminaires and locations meet the required performance criteria of the design using the applicable light loss factor (LLF) Photometric plan submittals must include: • Horizontal illuminance (or luminance for roadways) measurements at pavement, taken at a maximum of every 10 feet (3 m). • Minimum and maximum illuminance (or luminance for roadways) levels. • Average maintained illuminance (or luminance for roadways) level. • Average to minimum and maximum to minimum ratios for horizontal illuminance (or luminance for roadways). Reference UFC 3-530-01/paragraph 5-2	**Y**	Photometrics will be provided with B-1 submittal.

17.	Design Narrative Page 16	Use a correlated color temperature (CCT) of no greater than 4100K. Reference UFC 3-530-01 paragraph 4-4.2. While a CCT of 4000 kelvin meets the UFC 3-530-01 requirements, of 4100k or less, recommend a CCT of 3000 kelvin or 3500 kelvin for exterior locations. The American Medical Association (AMA) has identified potential negative ecological and health impact of blue-rich white light. Both 4100 k and 3000 k meet the UFC. 3000k is less hash, less blue slightly more yellow and more in line with AMA recommendation.	**N**	Previous project (Repair Electrical Distribution) at Base provided CREE XSP fixtures with 5700K color temperature at the Base's request. B1 basis of design will be 5700K color temperature and this will be discussed further at the B1 meeting.
18.	Design Narrative Page 16	Ensure lighting specification includes that all LED luminaires require a 10-year warranty. Reference UFC 3-530-01 paragraph 4-4.2.1.	**Y**	Project manual will require this 10-year warranty.
19.	Design Narrative Page 17	Consider a ground ring due to installation of a lightning protection system (LPS) for bonding LPS down conductors.	**N**	An NFPA 780 assessment was completed for an LPS, and the result was 'Not Recommended". No LPS is being provided.
20.	Design Narrative Page 17 and Page 18	Provide surge protections devices (SPDs) for communication equipment and specialized electrical equipment such fire alarm and detection systems (antennas), exterior security systems (exterior cameras) and mass notifications systems (MNS) are areas of requirement of AFI 32-1065 and NFA 780. SPDs shall be UL1283 and UL1449 rated	**Y**	Surge protection will be provided at the gatehouse panelboard, which serves all LED Lighting, Communication equipment and specialized electrical equipment in the project.

David Knudsen, CETSC				
21.	Basis of Design Part II page 16	Exterior Site Lighting: Do not use fixtures with CCT of 5700k. Use a correlated color temperature (CCT) of no greater than 4100K. Reference UFC 3-530-01 paragraph 4-4.2.	**N**	Previous project (Repair Electrical Distribution) at Base provided CREE XSP fixtures with 5700K color temperature at the Base's request. B1 basis of design will be 5700K color temperature and this will be discussed further at the B1 meeting.

APPENDIX B – Minutes from Project DWG Kickoff Meeting, Design Charrette, A-1 CPM, A-2 CDM, and B-1 CDDM

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B1 Construction Documents Development Meeting Minutes

Project Name: Construct Main Base Entrance
Mead & Hunt Project No.: 3141900-113782.01
Project No.: MBMV099170
Date: 10 March 2020

Attendee	Representing	Phone	E-mail address
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The attached report represents this writer's interpretation of items discussed during the meeting. Any corrections or additional information should be brought to our attention for clarification.

Items discussed were as follows:

1. All personnel in attendance were introduced.
    a. Pat Casey is our new architect on the project, as Jason Pelletier has left Mead & Hunt. Pat has experience with Main Gate designs, recently completing the design for General Mitchell's new Entry Control Facility (ECF) in Milwaukee, WI.
2. Where are we in the project?
    a. This is the 65% Design Construction Documents Development Meeting. Mead & Hunt took the concepted option from A2 and has been building out the full constructed drawings for the project.
3. Cost estimate was reviewed.
    a. Project CWE is currently at $MASKED Base bid is at $MASKED, ABI's are MASKED and the MCCA amount is $MASKED

4. Building architectural was reviewed.
    a. Rubber floor can be added throughout the gatehouse. It is durable and will provide some comfort for standing. Color of floor requested to be Beige – same as used in the project for B6922.
    b. The guardhouse square footage is 368 SF, which is over the authorized amount on the 1391. The Base submitted a variance for the higher SF – which was rejected. A path forward was identified as pulling unused SF from Security Forces space authorization and applying it to the guardhouse. The space for visitor's badging should be looked at for this. This will need to be reflected in the narrative documents.
    c. All small, prefabricated guard booths will be installed/purchased as equipment. It will still be included as part of this project, the funding source will be different from the rest. Need to identify them as a separate cost line item in the drawings and estimate.
        i. All glazing in the small booths to be bullet proof.
        ii. Add small shelf for computers to each guard shack.
        iii. The guard booths include self-contained heating and cooling features.
        iv. M&H will provide information for the basis of design guard booth (Little Building MFG).
    d. Brick colors – Interstate Mountain Red for the main brick and Interstate Arctic White as the accent.
    e. The gatehouse courtyard area walls are 6' tall to hide the mechanical equipment from view. The mechanical equipment is 34" tall and sits on a 24" frame. No "cage" is needed over top of this as there are openings in the wall for observation.
    f. Monitors above the windows should be wall mounted. Provide backing support in the wall above the windows to accommodate mounting of Base provided monitors.
    g. Roof color shall be Valspar Shelburne.
    h. Move the under counter refrigerator to the plan east wall, under cabinet, by the exit door.
    i. The window to the Badging area should be a pass-thru type will voice box.
5. Structural review:
    a. Gatehouse is a metal stud support on shallow foundations. Ballistic resistance is provided by the brick veneer.
    b. Canopies are steel moment frame structures.
    c. All structures will have cold-formed steel truss roof systems with metal deck and standing seam roofs.
6. Plumbing review:
    a. Single toilet room with one toilet and a sink.
    b. The sink will be supplied by an instantaneous water heater mounted below the sink.
    c. The plumbing hose bib on the side of the building should be moved to the back of the building in the courtyard. It will be used to clean out equipment.
7. Mechanical review:
    a. A roof-top unit will supply heat to the gatehouse. It will be mounted on a stand in the courtyard, and ducted up the outside wall, then run above ceiling.
    b. An electrical wall heater and exhaust fan will be provided in the toilet room.
    c. The gatehouse BAS system should remain tied into the basewide system.
    d. Separate utility meters – one for the gas company and a second meter that can tie into the BAS - will be necessary to integrate consumption metering into the BAS system. The Base indicated this was acceptable.
    e. The gas utility (Semco) will install the gas service to the meter.

8. Electrical review:
    a. Canopies will have can "down lights".
    b. Electronic lane open/close signs will be provided at the front face of the canopy.
    c. Lights on site to be 4100K, 25' poles and all bronze finishes.
    d. Will need to know what load is on building so that base knows what size generator to provide. M&H to provide this information when known.
9. Technology/Communications review:
    a. Run fiber optic out to each guard booth – not Copper as currently shown.
    b. Trench camera at CVIF canopy to be hardwired. Documents to indicate and in-ground box (approx. 12"x12" with internal receptacle and data jacks)
        i. Locate monitor for camera in the CVIF guard booth.
    c. Cameras tying into Advantor system. Base to provide review comments on Advantor cameras and stand-alone cameras.
    d. Place camera downstream of AVB to catch any vehicles hitting the AVB – also, have a camera pointing north to catch that portion of the drive.
        i. Provide a pair of single mode fiber to each site camera.
    e. Technology to show rack units on the drawings
        i. Comm cabinet – will likely need to two cabinets – one for the UPS. Will need them to have a fan and reject the heat to the exterior of the building.
        ii. A minimum of 16 rack units will be needed.
        iii. Will need to supply a 30A 110V outlet along with a 20A 110V outlet.
    f. If restroom is considered a shelter in place location a phone line would need to be installed within the restroom.
    g. Base looking to add an approximately 40' tall tower behind guardhouse for radios.
        i. The tower will be considered real property.
        ii. Will need to include lightning protection and an obstruction light on the tower.
        iii. The tower must be located within 300' of the cable termination, so within 200' of the guardhouse after accounting for tower height and run through the building.
        iv. Provide (1) 4" conduit out from comm rack to antenna base for cabling.
        v. Tower location options, with base elevations will be provided to the Base (CMSgt Reynolds) for review.
        vi. FAA will need to review this, must submit a Form 7460.
10. Civil review:
    a. Grading/layout
        i. Coordination is ongoing with the City of Battle Creek regarding improvements to the intersection of Skyline Drive and Hill Brady Road
            1. The city plans to reconstruct the intersection in 2024. Therefore, the entry facility will be constructed first and should therefore be designed to match to the existing traffic signal intersection. The design should also look to blend with the future roundabout, however, that design will not be established prior to B-2 submittal
        ii. The existing 8" high pressure gas main running parallel to and west of Skyline Drive impacts the site design relative to grading and storm sewer drainage. The main is shallow and would be very costly to relocate
        iii. 5% roadway slope discussed where commercial vehicles travel after gas main pipe. Could avoid by raising the whole site – but then there are wetland impact concerns
        iv. Base is aware of the slope and we will stick with what is shown on B-1 documents

v. The site is crowned roughly through the longitudinal center and is crowned to drain to each side. The profile of the roadway is cut down from the existing roadway and lowers the existing grade at the gate house by 3-4 feet. The site lines from the gate house will be continuous through the site to allow for threat assessment.
vi. A mountable island was added to the CVIF approach to help segregate traffic and control speed

b. Drainage
    i. Storm drainage plan was discussed
        1. The system layout is impacted by the shallow gas main. It limits how drainage is moved through the site to the storm water basins. It also impacts the size of the basins such that two are required for the needed capacity
    ii. North of the roundabout, connect the median storm sewer outfall into the nearby manhole to allow for flattening of the slopes in the median area
    iii. The base bid includes replacing the existing single corrugated pipe arch with two 78 inch diameter corrugated metal pipes – slightly increase the capacity
    iv. Culvert replacement options discussed
        1. Not going to line existing pipe – too expensive
    v. ABI 3 is to replace the base bid corrugate metal pipe with concrete – however more hydrology study needs to be done to verify if a single large concrete pipe is sufficient. Pipe velocity will increase requiring more energy dissipation (riprap)
c. Security
    i. Perimeter fencing was discussed
        1. Areas that abut other military property need to be analyzed to see what type/kind of fencing will be required. Might not all have to be vehicle barrier type.
        2. Coordinate with the Base about ownership, also research Calhoun County GIS data
        3. Relocate the western perimeter fence out of the wetland
    ii. Gate locations at the roundabout were discussed – locations preferred were off the north end roundabout approaches.
    iii. Preference is for the fence to be offset at least 8’ from round about drive for snow plowing – snow area. Provide a mow strip and access for mowing equipment (drop curb head)
    iv. Gate type will be sliding/cantilever type – not swing gate type.
    v. The concrete knee wall at the AVB will be enhanced to have a similar appearance to the knee wall around the gate house. The wall will be stepped to conform to the roadside slope.
    vi. Have simple button system for deploying the AVB – each guard shack needs its own button
        1. The AVB will have a sensor system that prevent deployment momentarily if a vehicle is at the barrier. This does not impact use for threat vehicle approaching from a distance
        2. An approach lighting system is intended to be incorporated with the AVB system

d. Installation features
    i. A new Base name sign will be located at the entrance and will be located on ANG property.
    ii. Provide a new digital sign similar to what the base has now.
        1. Take single mode fiber out to sign.
        2. Location will likely be at the AVB area – on the knee wall.
        3. Sign will be ABI – infrastructure will be base bid.
    iii. The Base entry sign should be located offset right after main entrance approaching the roundabout so it is visible to entering traffic. Power to be provided to the sign
    iv. The barrier controls will be coordinated in greater detail with the Base. An emergency button should be provided at each guard booth.
    v. No drop arm on inbound lane near gatehouse
        1. Drop arms will be manually operated
        2. CVIF drop arm will stay where it is shown on B-1 documents.
    vi. A single 30' flagpole should be added. Can be located in the median by the visitor parking stalls.
    vii. Do not remove the existing roadway pavement north of where Skyline Drive intersects with Sentry Drive. Grade the area as needed for drainage

11. The project design schedule was reviewed.
    a. The updated plan is to complete and submit B2 Prefinal by May 28.

Respectfully submitted,

MEAD & HUNT, Inc.

Jeremy Bluhm, PE

cc: All attendees

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A2 Concept Development Meeting Minutes

Project Name: Construct Main Base Entrance
Mead & Hunt Project No.: 3141900-113782.01
Project No.: MBMV099170
Date: 1 October 2019

Attendee	Representing	Phone	E-mail address
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The attached report represents this writer's interpretation of items discussed during the meeting. Any corrections or additional information should be brought to our attention for clarification.

Items discussed were as follows:

1. All personnel in attendance were introduced.
    a. Pat Casey is our new architect on the project, as Jason Pelletier has left Mead & Hunt. Pat has experience with Main Gate designs, recently completing the design for General Mitchell's new Entry Control Facility (ECF) in Milwaukee, WI.
2. Where are we in the project?
    a. This is the Concept Development Meeting. Mead & Hunt took the selected option from the A1 phase and began to look at it in more detail, looking at the fit the concept on the site, and working through major design selections.

3. The site layout of the ECF was presented.
    a. The site is about a half-mile long.
    b. Specific limitations for the site design include the wetland areas on either side of Skyline Drive midway between Hill Brady Road and Sentry Drive. This forced the Gatehouse and checkpoint to be located where they are toward the southern portion of the site.
    c. The primary requirements for the lead up to the checkpoint are the ability of the site layout to slow speeds of incoming traffic, and for security personnel to be able to see all incoming traffic from the intersection.
    d. As traffic enters the entry drive, there will be a roundabout in case anyone entered accidentally. This will provide the opportunity for those vehicles to exit prior to reaching the checkpoint. The roundabout was sized to allow a WB-67 (full-size tractor-trailer) to make the turn-around. The roundabout center island includes mountable curb and a truck apron for the trailer off-tracking.
    e. A concern of the Base is the amount of queuing space available for contractor vehicles. 2 lanes are preferred from the roundabout to the split in lanes leading to each check area. The second lane should be identified for contractors and signage included for that intent. A second guard booth is wanted and will be provided at the commercial vehicle lane, before the drop-arm, so identification can be checked prior to moving the vehicle into the search area.
    f. The commercial vehicle inspection area will be beyond the checkpoint. There is ability to divert passenger vehicles from the CAC-holder lanes over to the search area as needed.
    g. If a vehicle at the checkpoint is rejected, there is a pathway around the Gatehouse to the exit lane, which will maintain line of site.
    h. All road areas except for around the Gatehouse will be asphalt as base bid. Pavement at the Gatehouse and vehicle inspection area will be concrete (areas with a large amount of stopping and turning).
        i. Additive Bid Items in the cost estimate include replacing additional amounts of asphalt pavement with concrete pavement in the approach and response zone.
    i. The Gatehouse and checkpoint elevation south of the active vehicle barrier (AVB) will be cut down to make that area wider and more capable of accommodating the proposed layout. It will be lowered about 5 feet, which should not affect sight line capabilities. Straight line grades will be developed for clear sight lines in the approach and response zones.
    j. The run-up from the checkpoint to the AVB is approximately 500 feet. This provides the necessary response time for security personnel to deploy the barrier.
    k. The active barriers will be drum-style wedge barriers.
    l. Concrete barrier knee walls will be provided down the slope on either side of the roadway at the barrier location to prevent vehicles from trying to circumvent the barrier.
    m. A tire shredder should be added in the outbound lane by the gatehouse.
    n. There is a single 78-inch diameter corrugated metal pipe that runs under the road north of the proposed checkpoint location. This pipe is old and will be replaced with reinforced concrete pipe. The size and layout will be determined.
    o. The DD Form 1391 limits the total quantity of new pavement to be 11,739 SY. This is not enough to repave all of Skyline Drive to the old entrance. An existing 600 LF section of roadway is shown as being left in place, with some repair, and will be included as an additive bid item to reconstruct the full roadway to Sentry Drive.
    p. The corner of Skyline Drive turning onto Sentry Drive is being shown as a 15 MPH corner for large truck traffic. It will be more like a 25 MPH corner for passenger vehicles.

4. Overwatch position:
    a. The overwatch position should include a concrete pad capable of supporting a portable tower, with pavement available to back the tower into place and park a vehicle.
    b. The cost estimate includes an additive bid item for a prefabricated booth at the overwatch position. This can be removed from the estimate.
5. Fencing:
    a. Fencing should be extended all the way to Dickman Road and tied back into the existing Base perimeter fence to fully enclose the new lease area.
    b. The existing Base perimeter security fence should be replaced after new fencing is installed.
    c. The fencing along the roadway past the vehicle barrier will not need the high-tension cabling if it is included in the installation perimeter fence.
    d. Can remove existing fencing at minimum in the wetland areas.
6. A generator is shown behind the Gatehouse. This will be a portable generator, as a permanent generator has not been authorized. A connection and transfer switch will be provided on the back wall of the mechanical courtyard for ease of hookup.
7. Landscaping presented showed a new sign in a few optional locations. The Base preference is to locate the sign on the west side (incoming) of the entry, in front of the fenceline.
    a. The LED sign near building 6914 should be relocated to the entry, after the gatehouse checkpoint.
    b. All landscaping plants must be extremely low maintenance (no watering needed, no replanting/cutting). The Base would prefer to pave the inner roundabout space so they don't have to mow/maintain it.
8. The Base is coordinating with the City of Battle Creek to install a new roundabout at the intersection of Skyline Drive and Hill Brady Road. There are currently safety issues at that intersection, so a roundabout will help.
    a. The timing on the roundabout design and construction is not yet known. If it is done before the planned FY23 construction of the new ECF, the entrance will tie into the roundabout. If not, the design will tie into the existing stoplight intersection.
9. Communications:
    a. Provide a 4-pack concrete encased ductbank from the last existing comm manhole on Sentry Drive all the way down to the new Gatehouse. A 6-pack concrete encased ductbank will run between the last existing comm manhole and previous manhole on Sentry Drive.
    b. The manholes should be 4'x4'x4' concrete manholes with racking.
    c. Three cell Maxcell innerduct should be provided in the conduit.
    d. Winstream owns all comm items along Skyline Drive up to the old west entrance, and the cabling up to the CE building 7020.
10. Other utilities:
    a. New electric and gas services will be pulled from mains in the area of the Gatehouse rather than running 2000+ feet from the Base entrance.
    b. Sanitary sewer will need to tie into an existing sewer main. Will provide a backflow prevention device at this location.
    c. Water will tap into an existing nearby water main.
    d. All new service feeds will need to be metered.
    e. A 2" conduit will be provided between the gatehouse and CVIF in case a future sub-panel is needed at the CVIF.
11. Gatehouse review:

a. The total SF is over the 300 SF authorized in the 1391 for the gross square footage. The net square footage is under 300 SF.
    i. The total SF includes the separate prefabricated check booths.
b. The DBIDS location will include a computer, monitors, scanners, and printer. Need connections (power/comm) for all those. 1 cpu, 2-3 scanners, printer, min 6 outlets.
c. Adjust the interior ceiling height to allow for monitor installation above the windows.
d. The signage on the front barrier wall is not necessary.
e. The front barrier wall should have a brick façade to match the rest of the architectural style of the Base. Same with the barrier walls by the AVB.
f. Base would like the canopy to extend all the way over the check area for the contractor lane.
    i. The total area of canopy is limited to 2400 SF per the DD Form 1391. Any extension of the canopy here would result in a decrease of canopy size at the commercial vehicle inspection area.

12. Contractor vehicle search canopy:
    a. Base would like to have a small pit in the concrete slab to house a camera for inspection of the underside of vehicles. Camera size is only 8”x8”x4”. Base will provide size of pit needed.
    b. Base would like to have brackets attached to the steel framework on which they can mount mirrors for inspection into the back of trailers and haul trucks.
    c. An electric feed should be provided to the security booth at the inspection area.
13. The cost estimate was presented and reviewed.
    a. The current working estimate is $MASKED. The base bid is currently $MASKED
    b. The estimate includes five (5) Additive Bid Items (ABIs). Two of which will be removed (outside plant cabling – this is MILCON, so must be included in Base Bid, and booth at overwatch – not wanted by the Base).
    c. The estimate includes inflation to 2023.
14. The project design schedule was reviewed.
    a. Assuming the Base is able to present to NGB in October/ early November, Type B services can be rolling by mid-November, and the B1 CDDM will be mid-January.

Respectfully submitted,

MEAD & HUNT, Inc.

Jeremy Bluhm, PE

cc: All attendees

Battle Creek ANGB New Main Gate A1
Concept Proposal Meeting Minutes

Project Name: Upgrade Main Base Entrance
Mead & Hunt Project No.: 3141900-113782.01
Project No.: MBMV099170
Date: 20 December 2018

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Mac Crawford	Mead & Hunt		Mac.crawford@meadhunt.com

The attached report represents this writer's interpretation of items discussed during the meeting. Any corrections or additional information should be brought to our attention for clarification.

Items discussed were as follows:

1. All personnel in attendance were introduced.
    a. Luke Senz is a new M&H team member.
    b. Dave Philips will not attend meetings but will still be involved for oversight and quality control.
2. Recap of initial concept discussion:
    a. The new Main Gate will be located on the west end of the base. The Air National Guard is acquiring land lease for the land covering the old Skyline Drive.
    b. Two options for gate/checkpoint location:
        i. South, near current intersection of active Skyline Drive with Hill Brady Road.
        ii. North, at the old secondary entrance location.
3. The land acquisition is proceeding. The new deed is at MDOT for signature, then will go to the City Commissioner, then finally be sent to the Air Force for signature.

   a. The timeline for final approval is anticipated to be mid-February. It has been moving smoothly thus far.
4. Reviewed the project parameters, as identified in the DD form 1391.
   a. The Gatehouse will be 300 SF.
   b. The covered inspection area is 2,400 SF. This includes 800 SF for canopy at the Gatehouse, and 1,600 SF for the large vehicle inspection canopy.
   c. Total paving for roads & parking lots is 11,739 SY. This will be tight due to the amount of abandoned pavement along old Skyline Road that will need to be replaced.
   d. New vehicle barriers will be included, and security fencing will be installed around the new site.
   e. The Base is working with the City of Battle Creek on a MCCA to upgrade the intersection at Skyline and Hill Brady
   f. The City of Battle Creek is aware of the Base's potential plans. Mead & Hunt will reach out to the city to get the communication lines open.
   g. Standby Power (generator) will be included for the gatehouse.
5. 4 personnel work the gate at a time.
   a. All non-CAC-card holders are subject to search.
6. Project NEEDS identified at the design charrette/kickoff meeting were recapped:
   a. Queuing capacity for vehicles at the checkpoint.
   b. Co-location of the Guardhouse with the Contractor Inspection area.
   c. Good sightlines from the gatehouse down the entry lanes, so incoming traffic can be observed entering the Base.
   d. Ability to complete pass and ID tasks at gatehouse.
   e. Capability to work on countertop – do not want a countertop full of video screens, etc.
   f. An overwatch position located beyond the Gatehouse.
7. Project WANTS identified at the design charrette/kickoff meeting were recapped and agreed upon:
   a. Reduced straight line runup to the Gatehouse/checkpoint.
   b. A rejection lane prior to gatehouse to allow vehicles to turn around without reaching the checkpoint.
   c. A controlled rejection lane after the checkpoint, but prior to the final rejection barriers.
   d. Multiple checkpoint lanes at the Gatehouse.
   e. Storage space in the Gatehouse.
   f. Future expansion capability (from a site perspective).
   g. Visitor parking, with protection from traffic, for those accessing the Gatehouse for passes.
8. Project CONCERNS identified at the design charrette/kickoff meeting were recapped.
   a. The new entrance road and gatehouse will be constructed in proximity to the munitions complex. The munitions complex currently does not hold any significant amounts of munitions but could in the future if a mission change brings munitions to the Base. This would put the gatehouse and entry drive within the quantity-distance arcs of the munitions complex.
   b. The single point of access to and from the east side to west side of the Base is the bridge which crosses over the railroad tracks.
   c. Wetlands are located on either side of old Skyline Drive which will be reutilized as the new entrance road. Want to avoid impacts to the wetland areas.
   d. Timeframe for intersection approvals with City of Battle Creek to complete the intersection rework at Skyline and Hill Brady Road may not align with Base construction plans. Will need to accommodate that potential during design.

9. The three layout options for the Gatehouse were presented.
    a. Option 1 is the primary option. This has a curved wall in front with the main window. Option two is a rectangular building with windows on three sides. The third option is again curved in front, this time symmetrically, with bump-ins where the doors exit the building.
    b. The toilet room has been sized to accommodate space to make it ADA compliant. These dimensions may be able to be reduce if the Base approves it but will need to apply for a variance. This is preferred to create extra space for public and to keep them set apart from the rest of the building.
    c. The vehicle canopy will not be tied into the building structure.
    d. The barrier wall in front of the building should wrap all the way from curb to curb. A knee-wall should be added along the sidewalk on the incoming side to be extend from the barrier wall all the way to the end of the sidewalk at the back of the building, with a gap by the door to allow personnel movement.
    e. The options all have items missing that were requested by the users. Much of this happened because of floor plan examples presented at the design charrette were approximately 400 SF in size, while this project has only allotted 300 SF for the gatehouse.
    f. An overhang over the exterior door entering Pass and ID (plan left) is preferred in case there is overflow waiting for passes.
    g. The countertop sink shown in the break area cabinetry can be eliminated. Personnel can use bathroom sink.
    h. The door swing on the exterior door (plan right) should be changed so the door will swing open to be between security forces and oncoming vehicles.
    i. Glazing should be extended as close to the corner of the building as possible.
    j. M&H will investigate if the fire alarm panel is required to be in separate space or if it can be located in the main room.
    k. The elec/tech room should be reduced in size to house fire alarm only. The Technology systems (COMM) cabinet can be located under the counter behind a lockable door.
    l. The back half of option 3 (elec/toilet/corridor) combined with option #1 front is the preferred option by the Base. This is dependant on where the gatehouse is ultimately located and the layout of the enter and exit roads and parking area.
    m. The canopy column was discussed in relationship to the gatehouse door to the drive lane. The preference is to have the column in line with the front of the door frame/column.
10. The island that contains the gatehouse should be all concrete - no grass or stone to minimize required maintenance.
11. Bollards should be added at the commercial gate to allow closure of those lanes at night.
    a. The preferred option is a pop-up bollard. Can also be manual type removable bollard.
12. Site Layout Concepts were reviewed. Concept A is considered the primary concept.
    a. Concepts A and B locates the gatehouse and checkpoint on the north side of the existing base entrance off old Skyline Drive. Concept C locates the gatehouse and checkpoint south on old Skyline Drive nearer the intersection of Skyline and Hill Brady Road.
13. The total quantity of pavement replacement/addition is approximately 3,000 CY over the allowance numerated on the DD Form 1391.
    a. The Base intent was not to redo or repave the entire old Skyline Road.
    b. M&H will investigate if existing Skyline Road can be re-used. However, the top layer was already diamond blade ground, which causes issues with the reinforcement mesh rusting.
14. Will want to have a single lane up Skyline for much longer than currently shown. There is no need to split into multiple lanes right before approach zone area.

15. The AVB type needs to be determined. The design right now accounts for 2.0 second deployment time.
    a. The preference is to move both AVBs closer to the intersection beyond so that they are together.
    b. A secondary way to deploy the AVB is desired in case personnel at the main gate are compromised.
16. Temporary type barriers should be available for traffic control when the gate is closed. Maj Finfrock will provide M&H locations as well as infrastructure requirements.
17. Drop arm barriers will be used for general traffic control.
18. Sidewalks will need to be at least 6' wide to accommodate snow removal equipment.
19. Passive barrier options were discussed.
    a. Cabled fence is preferred along the Skyline Drive road. 18" high curb is not.
    b. Natural ditch and tree cover should be used in the passive barrier design where possible.
20. Various types of active barriers were discussed. Barriers which impart full damage (wedge or pop-up bollard) versus partial or minimal damage (net-style).
    a. The Base decision is to go with wedge style barrier.
21. Full curb is preferred for traffic control from the entrance intersection through the checkpoint.
22. The preference is to work with the City of Battle Creek to put a roundabout at the intersection of Hill Brady and Skyline Drive and tie the entrance into it.
    a. A roundabout of that size will cost approximately $MASKED. The MCC allowance in the 1391 is $MASKED coordination and cost sharing with the City will be paramount.
23. The cost estimate was presented and reviewed.
    a. The current working estimate is $MASKED.
    b. The estimate includes four (4) Additive Bid Items (ABIs) which will likely be revised as project design progresses.
    c. M&H is comfortable with budget and project being in alignment.
24. The project design schedule was reviewed.
    a. The project is currently planned to be done in design by the end of September.
    b. The Base mentioned a memo issued recently indicated that projects designed now but are not scheduled to be funded until a future FY can be moved into current funding schedule if design is done and contract can be signed yet in 2020.

Respectfully submitted,

MEAD & HUNT, Inc.

Jeremy Bluhm, PE

cc: All attendees

Battle Creek ANGB New Main Gate
Charrette Minutes

Project Name: Construct Main Base Entrance
Mead & Hunt Project No.: 3141900-113782.01
Project No.: MBMV099170
Date: 7-8 November 2018

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The attached report represents this writer's interpretation of items discussed during the meeting. Any corrections or additional information should be brought to our attention for clarification.

Items discussed were as follows:

1. Transportation Management office information:
   a. Base sees 1-2 large vehicles (semis/delivery) per day. More will show up during construction projects on Base.
   i. Typical vehicle is a regular 53-foot box trailers, or flatbed trailers.
   ii. FedEx/UPS, etc., vehicles show up on average twice a day, plus occasional random other times.
   iii. Future mission changes could affect these frequencies.
2. A traffic study was completed for the main gate. It includes traffic data from a drill weekend.
   a. No specific info is included on trucks or commercial vehicles broken out in the study.
3. The bridge that all vehicles will need to cross to get to the east side of the Base has a good rating for heavy loads.
   a. The concern was when large amounts of heavy truck traffic will be using the bridge, such as when the taxiway and apron are replaced.
4. A separate general contractor gate is not wanted. It should all be together at one entrance.
5. The gate roads need to be able to allow travel by fire engines (P19/tankers) coming from off-base.
6. Guardhouse – four options were reviewed.

a. Visibility from the guardhouse is key. Need to be able to see both lanes of traffic from the guardhouse.
b. Storage space in the guardhouse would be a nice to have.
c. Screens/monitors should be located above the window to keep the workspace uncluttered.
d. Will a DBIDS computer and card machine be included? Can be located under the work counter.
e. The countertop will need space for hand held ID scanners
f. The gate is typically manned by four security personnel at a time.

i. 2-3 would be engaged in searching incoming traffic.
ii. 1 would be checking in-bound primary lane IDs.

g. During peak entry times, two would be at the main entry lanes performing ID checks, with two performing vehicle searches.

i. Peak times are typically 0530-0800 at the main gate, and 0700-1530 at the contractor gate.

7. All non-CAC card holders must enter through the contractor lane and pass vehicle inspection and personnel inspection.
   a. On drill weekend, 90% of vehicles entering the Base are CAC card holders.
   b. On typical days, 70% of vehicles entering the Base are CAC card holders.
8. Site:
   a. Michigan DOT does not want entry to the base from Dickman Road due to safety concerns.
   b. The two site options are putting the main gate down close to the entry off the Skyline/Hill Brady intersection or up on the north side of the old Base entrance off old Skyline Drive.

i. The concern with the old entry location is the proximity to the munitions storage complex.

   c. Layout:
      i. Two inbound lanes are preferred, with the first splitting into two ID check lanes at the guardhouse checkpoint, and the other lane splitting into two at the contractor inspection station.
      ii. POV inspection areas should have larger lane widths for inspection, and a larger island for completing personnel inspections.
      iii. A rejection lane prior to the guardhouse is preferred, as well as one after for vehicles which are denied entry.
      iv. Parking lot for the guardhouse visitors could be across Skyline from the building.
      v. Need room for SF vehicle parking by the guardhouse, and an overwatch location.
      vi. The memorial by the flagpoles at the existing entry point can be relocated to the new main gate location.
   d. At guardhouse, would like to have the protective wall extending all the way around the side by the location of ID check.

Respectfully submitted,

MEAD & HUNT, Inc.

Jeremy Bluhm, PE

cc: All attendees

Battle Creek ANGB New Main Gate Kickoff Meeting Minutes

Project Name: Upgrade Main Base Entrance
Mead & Hunt Project No.: 3141900-113782.01
Project No.: MBMV099170
Date: 7 November 2018

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The attached report represents this writer's interpretation of items discussed during the meeting. Any corrections or additional information should be brought to our attention for clarification.

Items discussed were as follows:

1. Introductions
2. Key personnel and points of contact were identified:
   a. Battle Creek ANGB:
      i. Maj Nathan Finfrock, DBCE
   b. Mead & Hunt:

i. Jeremy Bluhm, PM
ii. Jason Pelletier, Architect
iii. Scott Hasburgh, Civil/Site Design

3. Project Design and Meeting Overview:
   a. Purpose/goal of meeting
      i. This meeting is intended to formally introduce the design phase of the project as well as the project team (Design Working Group), set the project expectations, criteria and parameters, and overall review/verify overall project scope. Review of the project schedule and setting next steps will also occur.
   b. Overview of Design process
      i. Type A is the concepting part, starting with multiple layout options and a Basis of Design. Once a site layout and floor plan are agreed upon, the concept development will further design/detail the option and present at the concept development meeting.
      ii. Type B will take the approved concept and build out construction documents. A construction document development meeting will be held at the halfway point of CD development to review with the Design Working Group and obtain further input. The B2 prefinal submittal will be a 100% complete set of documents, submitted for final reviews.
   c. Project Goals
      i. The Base has established the need of a new main entrance to the installation. The current main gate poses a safety hazard, as there is no queuing space at the entry, backing up vehicles on a busy Dickman Road. Also, the main gate and contractor gate are geographically separated, requiring additional staffing to maintain both locations.
4. Participant expectations:
   a. Attendance and participation at the project meetings is requested, as these are key times to provide input on the design and needs/wants of the project.
   b. Reviews of the project design submittals at the various phases is key and provides an opportunity to comment on the proposed items. Timeliness on the reviews will help in keeping the project on schedule. Maj Finfrock will coordinate reviews for the Base.
   c. Communication protocol:
      i. Requests/information should be filtered through Maj Finfrock on the base side.
      ii. MSgt Stocking, the contracting officer, should be copied on all correspondence.
      iii. Jeremy Bluhm should be copied on all correspondence going to Mead & Hunt.
5. Project Criteria/Parameters:
   a. General scope of the project is a new Entry Control Facility, including 300 SF guardhouse, 2400 SF canopy to cover ID check and inspection areas, anti-vehicle barriers, back-up power for the facility, new roadwork, security fencing, lighting, etc.
   b. Skyline Drive was removed due to problems with the intersection at Dickman Road. MDOT does not want to have an intersection there. Traffic to the Base should come from the south/Hill Brady Road.
      i. The Base does not have a lease to the property containing vacated Skyline Drive. They are in the works of acquiring this property.
      ii. Need to verify which Government agency has authority of the intersection at Skyline and Hill

Brady. MDOT, the county, or city of Battle Creek.

iii. The initial preference is to use the Logistics Drive approach as the road to the entry point for the Base, rather than directly off the intersection of Skyline and Hill Brady.

c. Considerations for the ECF should include future expansion capability and reducing straight-line runup to the checkpoints.
d. Two lanes at the checkpoint are acceptable as long as there is sufficient queuing space behind it.
e. A traffic study was completed regarding the location of a new ECF at this location. This study will be forwarded to Mead & Hunt for review.
f. One concern with the possible locations of the gate in this area is the proximity to the munitions storage complex. The quantity-distance arc currently maintains a 550' radius from specific buildings within the complex. If the Base were to get a flying mission again in the future, that could increase to a 1250' radius. This would encompass everything on the west side of the base, as well as some on the east side of the railroad tracks.
   i. This project could limit the maximum potential of the storage complex in the future.
   ii. Project should proceed without worrying about the larger arc.
   iii. The Base will provide the arc drawings to Mead & Hunt.
g. An option to consider would be the use of the Munitions administration building 7010 as a future location for the Transportation Management Office (shipping/receiving for the Base).
h. The Main Gate sign needs to be included.
i. All signage for the ECF should be included.
j. The secondary guard booth should be a pre-fabricated unit which would be considered equipment, and outside the bounds of the 300 SF for the guard house. Another pre-fabricated unit could be placed at the vehicle inspection station.
k. ATFP considerations should be incorporated whenever possible.
l. Fire protection is not required in the guardhouse due to its small size.
m. Backup power should be a generator with 100% capacity. The 1391 lists $MAKSED or the generator and associated work. The generator will be diesel per UFC 4-022-01, section 5-8.2.1.
n. The existing main gate would be maintained as a secondary entry, if ever needed.

6. Maintenance of the existing bridge over the railroad tracks is outside the scope of this project but is an important item to consider due to the increased traffic load using the bridge once the project is complete.
7. The project budget MCC is $MASKED.
8. The Environmental Analysis is being completed as a part of the ongoing Installation Development Planning effort.
9. The project construction date has been moved from FY23 up to FY21. It could move again (up or back).
10. Scheduling items:
    a. The schedule is showing an A1 concept proposal meeting on December 26. This is not a good date for anyone, so the meeting will be moved to the week prior to Christmas.
    b. An updated schedule will be provided at each phase.

Respectfully submitted,

MEAD & HUNT, Inc.

Jeremy Bluhm, PE

cc: All attendees

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Mead
&Hunt